

Inescapable Frameworks: Ethics of Care, Ethics of Rights and the *Responsible Research and Innovation* Model

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Abstract Notwithstanding the EU endorsement, so far Responsible Research and Innovation (RRI) is discussed as regards its definition, its features and its conceptual core: innovation and responsibility. This conceptual indeterminacy is a source of disagreements at the political level, giving rise to a plurality of outcomes and versions upheld within the same model of governance. Following a Charles Taylor's suggestion, this conceptual opening of the RRI model can be explained by the existence of plural, clashing moral frameworks: discourse ethics, Aristotelian ethics, care ethics, dignitarian ethics, rights-based moralities etc. Given the diffusion in the RRI literature of references to care ethics and its justification of participation and responsibility, I will compare the conceptual premises of this philosophical line with those of ethics of rights, which have been criticised by advocates of care ethics. I will argue that public engagement based on only needs cannot lead to responsible outcomes since it produces however the exclusion of some needs, covered instead by rights. In order for participation to be effective, rights or an alliance between the two perspectives is required.

Keywords Ethics of care . Ethics of rights . Responsible Research and Innovation . Human rights . Participation . Responsibility . Vulnerability

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So our moral reactions in this domain have two facets, as it were. On one side, they are almost like instincts, comparable to our love of sweet things, or our aversion to nauseous substances, or our fear of falling; on the other, they seem to involve claims, implicit or explicit, about the nature and the status of human beings. From this second side, a moral reaction is an assent to, an affirmation of, a given ontology of the human.

Charles Taylor, *Sources of the Self. The Making of the Modern Identity*, Cambridge University Press, Cambridge, 1989, p. 5 (From the Chapter: Inescapable Frameworks)

Introduction

In 1989, in his capital book *Sources of Self* Charles Taylor investigated the hidden foundations of our moral choices¹. According to Taylor (1989, p. 5) '[m]oral argument and exploration go on only within a world shaped by our deepest moral responses'. The making of our modern identity with its uncertainties, conflicts, contradictions, leaves the Self, deprived of a reference point, in a state of *malaise* in front of an increasing complexed globalized world. The global challenges of terrorism, immigration, international politics, and most importantly, technoscience, need a compass, which is missing today. This basic dimension of the Self makes the existence of clashing moralities which informs it (called values ontologies) a precondition of our political choices, even in techno-scientific issues: using an expression of Charles Taylor (1989), they are 'inescapable frameworks'.

¹ In this work, by *ethics*, I mean 'moral principles that govern a person's behaviour or the conducting of an activity'. See <https://en.oxforddictionaries.com/definition/ethics>. By *law* I mean 'the system of rules which a particular country or community recognizes as regulating the actions of its members and which it may enforce by the imposition of penalties'. activity'. See <https://en.oxforddictionaries.com/definition/ethics>. By *politics* I mean 'the activities associated with the governance of a country or area, especially the debate between parties having power'. See <https://en.oxforddictionaries.com/definition/ethics>. By *right* I mean a claim conferred by a norm (moral or legal) to an individual vis-à-vis another subject (addressee) so that the second subject is obliged to give, act or not act. A *constitutional right* is therefore a claim conferred by a constitutional norm to a citizen vis-à-vis a public or private subject. A *human right* instead is a claim conferred by an international norm to an individual vis-à-vis a State (Ruggiu 2018a, p. 9 nt. 1). However, since a human right has also a moral dimension, when an international obligation cannot have any application (e.g. in the case of transnational corporations operating abroad in countries where the protection of human rights is not enforced because States did not sign human rights treaties, or their regulation is not adequate, or the government is too weak to enforce rights), the obligation can nevertheless find an application on voluntary basis thanks to the spontaneous adhesion of firms to soft law documents.

Therefore, regardless of the fact that Taylor does not refer directly to technology innovation, following his illuminating perspective, decisions relating to governance of emerging technologies, and the discussion over them, can be justified by a reference to these moral worlds even in fields where there is an apparent general agreement, such as RRI.

RRI aims at creating a framework of responsibility by enlarging citizens' participation in innovation issues and making innovation ethically acceptable. However, so far no shared definition has been found, thus impeding the development of a clear model of governance in Europe. For example, René von Schomberg (2013, p. 63) defines it as

a transparent, interactive process by which societal actors and innovators become mutually responsive to each other with a view to the (ethical) acceptability, sustainability and societal desirability of the innovation process and its marketable products (in order to allow a proper embedding of scientific and technological advances in our society).

Richard Owen and his colleagues, instead, define RRI as 'a collective commitment of care for the future through responsive stewardship of science and innovation in the present' (Owen et al. 2013, p. 36). There is also no agreement with regard to the main features of this model; even its conceptual premises appear unclear. As noted, innovation is a quite slippery concept deserving more inquiry, as well as the idea of responsibility which lies behind RRI (Blok and Lemmens 2015, p. 32; Pellé and Reber 2015). Which idea of innovation is behind it? What kind of responsibility does it entail?

This conceptual indeterminacy paved the way for the proposal of different political solutions, all equally legitimate and justified, based upon a multitude of different ethical frameworks which can give rise to different outcomes within the same model. Utilitarianism, ethics of Kantian origin, dignitarian ethics, virtue ethics, environmental ethics, discourse ethics, rights-based moralities, all coexist within the same moral horizon, but lead to different meanings of responsibility. These multiple moral justifications can open up solutions differentiating one from another at the political level, which way may even be incompatible.

Recently Timmermans and Blok (2018) stressed, for example, the need for developing a critical inquiry into the hidden axiological assumptions of RRI. In fact, despite an apparent consensus, RRI is a broad umbrella under which we can identify several different approaches.

From the perspective of governance theory, for instance, at least two different tendencies can be detected within the RRI model, a socio-empirical and a normative one, which have two different conceptualizations of participation, and necessarily lead to different outcomes at the political level (Ruggiu 2015a; 2019). This reflects the difficulty in gaining a solid consensus for this model. Uncertain frameworks produce uncertain innovation policies, which cannot but be ineffective.

A thorough inquiry on these deep ethical possibilities can therefore strengthen the RRI model at the political level clarifying its purposes and perfecting its tools, notably participative ones. This connection between political and ethical dimensions, therefore, needs to be highlighted in order to improve our practices relating to responsibility in the field of innovation.

In particular, given their stress on the centrality of public engagement in the building of responsibility in technology innovation, positions referring to ethics of care are worth bringing to our attention. And, since this scholarship often presented its view of responsibility in innovation in contrast to the legal tradition based on rights (*inter alia* Grinbaum and Groves 2013; Groves 2015; Send 2018; Wickson 2016), in this article I will discuss its reasons in comparison with those upheld by ethics of rights.

Given the numerous versions with regard to care ethics and ethics of rights, I will focus, in particular, on the work developed by Groves and Grinbaum on one part, and on that of legal hermeneutics on rights on the other.

In this analysis, critical hermeneutics (Roberge 2011) provides us with the method for developing this inquiry over the presupposed moral assumptions lying within the RRI discourse. Critical hermeneutics show the meanings that are behind actions, namely the hidden ideological-moral views, focusing on their practical consequences in our practices at the societal level. This is particularly fertile where action at the political level, such as governance of technology innovation, leads to outcomes, which may result in them being less robust or even conflicting.

Therefore, I will analyse the ways these two ethical traditions (care and rights) may collide, by addressing some of the limits of the demand for needs, for steering responsible behaviour by enlarging participation. The perspective of care has, in fact, a paradoxical outcome: despite the fact it aims at including needs during public engagement, it risks excluding some relevant stakeholders' needs from participative tools (public fora, consultations, stage-gate processes of deliberation, forms of co-design of innovation etc.), thus weakening the responsibility framework which RRI aims to build. This raises the question of justice at the heart of care. We should, instead, find a way to include these needs and this can be reached via the concept of human rights which implies the idea that some needs have to be protected at the highest level by the law.

In this regard, I will also argue, contrary to what the scholarship on care holds (notably Grinbaum and Groves 2013; Groves 2015), the logic of rights (in particular in its hermeneutic version) and that of needs do not exclude each other in principle, nor do they exclude mutual support in the development of responsible strategies for research and innovation.

These are the main steps of my argument.

First, I will show that within the RRI model we can detect two different tendencies: the socio-empirical and the normative approach. Then, I will argue that the political level, where these approaches develop, is deeply linked to the level where the ethical frameworks meet. At this level, on the one side, in order to stress some significant differences, I will compare the arguments of care ethics when arising in the philosophical debate, with those arising from the Grinbaum's and Groves' version in the context of the discourse on innovation. On the other, I will analyse ethics of rights, in its hermeneutic version, as a foundation of the trend which introduces human rights in RRI. Finally, I will conclude that there are spaces to integrate their respective proposals in this context.

2. The two conflicting souls of *Responsibility Research and Innovation*

2.1 The 'new governance' paradigm and Responsible Research and Innovation

RRI arose in Europe in order to face the challenges of emerging technologies as a case where the 'new governance' approach (Stoker 1998; Scott and Trubeck 2002; Eberlein and Kerwer 2004; Lyall and Tait 2005) to the techno-scientific context has been applied (Ruggiu 2015a, p. 219; 2018a, pp. 59 ss. and 208 ss.).

In Europe, the difficulties surrounding biotechnologies, which ultimately led to one of the most restrictive regulations in this field worldwide, was caused by an endemic lack of trust by the public due to: a lack of transparency by European public institutions (Metha 2004), as well as a lack of participation (von Schomberg 2013, p. 60 ss.). This led to an increasing demand for more democratization both in the ethical debate, which should not be restricted only to experts (Tallacchini 2009), and in governance, which should thus return to society (Jasanoff 2003). Since the innovation actors are distributed at the global level, many are able to contribute to its success. This led to a crisis of monopoly in the public sector in the field of technology governance with a progressive erosion of the State's powers and implied the need of involving increasing sections of civil society. Participation is, therefore, the new source of legitimation of public action in innovation. This also caused a progressive dismissal of traditional approaches inspired by command-and-control style, and the development of new routes which face increasing uncertainties in a modern society (in occupational, environmental, techno-scientific fields).

Enterprises, funding organizations, policy-makers, laboratories, researchers and even the civil society at large, are all key actors in the governance of emerging technologies and can influence it. Therefore, in a world where risks are increasingly distributed (Beck 1986), everybody needs to take the responsibility for the consequences of innovation (von Schomberg 2013). All stakeholders have to take part to decisions relating to innovation. Innovation issues have to enter into the public debate.

The goal of these approaches, therefore, becomes to trigger processes of *inclusion* through the responsabilisation of stakeholders, which can be pursued through the use of several tools, mainly voluntary (Dorbeck-Jung and Shelley-Egan 2013).

RRI can thus be deemed as a case of ‘new governance’ in the field of technoscience, since it aims at building a responsibility framework by transforming innovation practices resulting from their alignment with social and ethical needs (Timmermans and Blok 2018).

Four key ingredients can be found in the RRI model: inclusion, anticipation, the focus also on the loss of opportunities, ethical acceptability (Ruggiu 2018a, pp. 212-213).

First, this model aims at involving actors in order to include a plurality of views, values and perspectives on innovation (Stilgoe et al. 2013, p. 4; Owen et al. 2013, p. 38).

Second, it aims to anticipate the assessment, as well as the management, of risks, via enlarging the number of decision-makers, through voluntary means (mainly self-regulation) (Barben et al. 2008; Kearnes and Rip 2009). Because of this, some talk of ‘RRI by design’ (Owen 2014).

Third, the assessment of a given field must not be focused only on risks, but also on the potential loss of opportunities that an excess of precaution can cause (Stilgoe et al. 2013, p. 3; von Schomberg 2013, p.55).

Finally, choices must be socially desirable, namely anchored on a shared ethical framework (van den Hoven, et al. 2013, p. 58; von Schomberg 2011, p. 48).

This model therefore produces a framework which is simultaneously *responsive* to inputs, which stem from society (Blok 2014), and *reflexive* because it leads society to reflect on the solutions that it wants to give to issues raised by the techno-scientific progress (Owen et al. 2012).

2.2 *The two souls of Responsible Research and Innovation*

However, while RRI has gained the attention of the whole academic world and has been endorsed even at EU level (e.g. Horizon 2020), becoming a sort of lingua franca for scholars and policy-makers, paradoxically a shared definition does not yet exist (Owen et al. 2013, p. 27). This has consequences at the political level, since the two main definitions mentioned above lead to two different RRI conceptualisations (Ruggiu 2015a; 2019; Lubberink et al. 2019, p. 4). This is also confirmed by the fact that there is neither any agreement on its main features, as its conceptual bases have not been deepened sufficiently. What we mean by innovation is disputed (Blok and Lemmens 2015), so long as what we hold to be responsible from the ethical standpoint is open to discussion, making apparent the existence of latent divergences (Grinbaum and Groves 2013).

This deep indeterminacy makes the practical applicability of the concept of responsible innovation highly problematic, leaving open multiple possibilities which are not always compatible

with one another. Notably, this conceptual indeterminacy paves the way to (at least) two tendencies in RRI, whose combinations, shades, and mixes can be many.

Two different *souls* can be identified within the same framework (Ruggiu 2015a; 2019). They exist because RRI includes two ends (inclusion and ethical acceptability) whose realisation tends to move in much different directions in their relationship to responsibility. The identification of these two main tendencies, therefore, can help develop an understanding, by simplifying the debate on RRI. They are the *normative* and the *socio-empirical approach*².

The main difference of these two approaches rests in the different conception of the goal of *inclusion* in RRI. One (socio-empirical) conceives it as the means for socially producing those ethical values, which should be put at the basis of innovation. In other words, values to which anchoring innovation are built from the *bottom-up*. The other (normative) considers participation as the target of those values, recognised at the constitutional level, according to which any governance tool (including participatory tools) should be anchored. These two approaches therefore differ in the way they consider the participatory processes, being either as the basis of a *bottom-up legitimation* of responsible outcomes (socio-empirical) or as one of the governance tools which should be shaped according to constitutional values (normative). This makes values the end stage of the process in one case (socio-empirical), or its starting point in the other (normative).

In other words, the different conception of inclusion directly affects the construction of the ethical acceptability of innovation in RRI. This has a societal origin for the socio empirical approach in one case, or a normative one in the other (Ruggiu 2015a; 2019; 2018a, pp. 213 ff.). This *genetic difference* on the origin of values traces two different polarities around which the RRI model can develop.

The normative approach stresses the institutional origin of values as ‘anchor points’, which are established at the constitutional level. For example, within the European Union, they are expressed by the Treaty on the European Union enucleating the EU objectives: techno-scientific progress, market competition, sustainability, fundamental rights, protection of health and the environment (von Schomberg 2013, p. 57). These goals address a set of values such as truth and integrity (technoscientific progress), autonomy (competitiveness), respect for nature, human person principle and rights. The constitutional origin of these norms is their source of legitimation (top-down). In this sense, they are called ‘normative anchor points’ since their origin is normative (legal) and not social (although they might be expression of societal needs, which are thus fixed at the normative level).

² Lubberink and his colleagues (2019, p. 4) talk, instead, of a *normative* and *procedural approach*.

Their main function is to shape all governance tools from the top, driving for instance participatory tools, such as consultations, to ethically acceptable outcomes in a given political community³.

For the socio-empirical version, values have a mere societal origin, they are culturally-sensitive and, therefore, vary in accordance with the context (cultural, geographical, as well as technological). Society is their source of legitimation (bottom-up). In this sense, they are ‘societal anchor points’ (Ruggiu 2019, p. 60). Since each technological context poses specific ethical issues, it has its own values (Owen 2014, p. 7). What counts here is the process for the identification of ethical values according to mere procedural ethics (Macnaghten and Chilvers 2013; Lubberink et al. 2019, p. 4; Ruggiu 2015a, p. 222; 2018a, p. 218; 2019, p. 61). This process must be open, democratic and inclusive. Besides, its outcomes vary each time depending on the inputs given by the engaged actors. The process of values negotiation is thus the main value at stake and it can be summarized by this short formula: ‘getting the right people at the table, and one will get substance’ (Heydebrande 2003, p. 328).

These different conceptualisations of participation lead to two different viewpoints of what the meaning of responsible should be: care for the future (Grinbaum and Groves 2013), respect for the fundamental ethical principles (von Schomberg 2013).

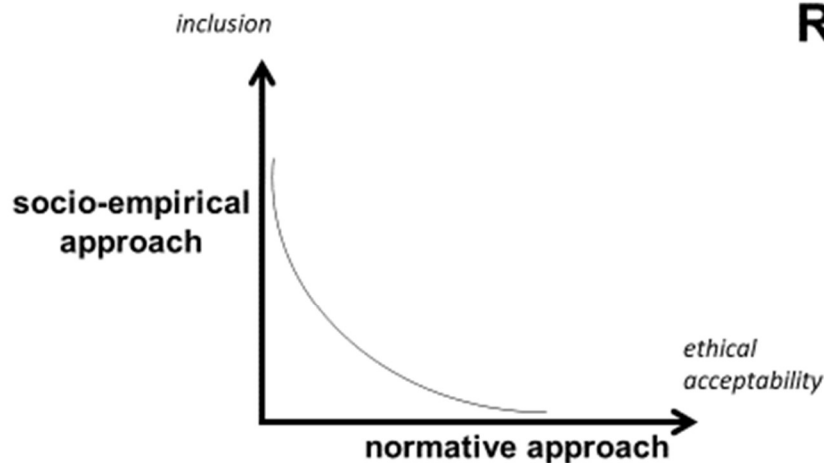
The literature on RRI therefore tends to be polarised around these two extremes, although it is worth noting that the socio-empirical approach clearly appears to be prevalent in the academic world.

Both approaches share the same features of the model (inclusion, anticipation etc.), but tend towards maximize mainly one aspect (inclusion or ethical acceptability) thus leading to different outcomes that can sometimes clash (Fig. 1). There can, though, be mixes and different combinations of the two approaches which encompass the two poles of the RRI field (Ruggiu 2018a, p. 214).

Figure 1

³ An example of how rights can work as normative anchor points in the case of human enhancement is given by Ruggiu 2018b.

RRI



The normative approach tends to increase the ethical acceptability, while the socio-empirical approach tends to increase the level of inclusion. Within the RRI model the two approaches move in different directions.

An example of the socio-empirical approach is the SPICE project funded by UK Research Councils which tried to develop a deliberative framework on geoengineering (i.e. the deliberate manipulation of the earth's climate) based on a more democratic basis by articulating public engagement according to 'stage-gate architecture' (each step of the process presupposed the fulfilment of the requirements of the prior stage). The aim of this framework was to trigger a broad societal reflection on the purposes innovation, to build an inclusive deliberative process according to procedural approach, and to make policy more responsive (Stilgoe *et al.* 2013, p. 10).

An example of the normative approach is the 2008 Code of conduct of the European Commission for responsible nanosciences and nanotechnologies research⁴ (CoC), drafted by the Directorate-General for Research led then by René von Schomberg, which basically anticipates the key features of the normative approach. The 2008 CoC is indeed the result of the shaping action of EU goals. First, on the basis of EU goals a number of principles aimed at governing nanotechnology were set in a draft document, called the consultation paper⁵. Then, on the basis of this a consultation among the main stakeholders was held in 2007. Finally, following this consultation the final version of the code was reached.

3. The unescapable frameworks of RRI

⁴ http://ec.europa.eu/research/science-society/document_library/pdf_06/nanocode-apr09_en.pdf.

⁵ http://ec.europa.eu/research/consultations/pdf/nano-consultation_en.pdf.

3.1 *The ethical dimension of the responsibility*

The opening of RRI in terms of the possibilities at the political level can be explained by the existence of an underlying composite ethical dimension. This dimension leads to a wide range of ethical justifications of RRI, which act as a reference framework of the set of decisions taken at the political level. Their direct influence on the dimension of our identity, makes moralities, or, as called by Taylor (1989), values ontologies, able to orient our decision-making, which determine our preferences and attitudes almost regardless from our will (Ruggiu 2015b). According to this fruitful perspective, moral ontologies (the values by which we identify ourselves) orient us in our moral space (Taylor 1989, p. 5). This multiple axiological basis thus explains the plurality of political divergences which can be found within the sphere of our political life.

The focus on this ethical level appears, therefore, crucial for trying to solve the ambiguities that we find at the political level which underlie the RRI model.

In this sense, this work of critical analysis has a pragmatic aim. In this regard, Timmermans and Blok (2018) stressed the fact by developing an inquiry over the hidden ethical presuppositions, unexpressed axiologies linked to RRI can strengthen the functioning of this model by freeing it from irreflexive habits, conceptual weaknesses, errors, as well as apparent or deep disagreements, hiding themselves in the same political horizon.

For example, several ethical justifications of the idea of responsibility in RRI can be proposed legitimately in this ambit. Utilitarianism, dignitarian ethics of Kantian origin, discourse ethics theorised *inter alia* by Habermas, virtue ethics of Aristotelian origin, environmental ethics, rights-based moralities, can all claim to ground the idea of responsibility which is behind this governance model. In this sense, following the Taylor's insight, political divergences within the RRI debate can be explained with a preference for a specific moral horizon.

For instance, scholars adopting the socio-empirical approach tightly intertwine the concept of responsibility with that of public engagement, underlining the importance of an early consideration of societal *needs* in decision-making processes. In this sense, the attention to the process, being as democratic and inclusive as possible, aims at building a level of responsiveness which is able to collect the multiple inputs stemming from the society. This capability of representing the needs of stakeholders within deliberative processes is considered crucial to this approach, thus leading this scholarship to consider responsiveness as one of the key features of the RRI model (Stilgoe et al. 2013, p. 1572). In this context, responsibility cannot but mean to care for the needs of society with regard to its future (Stilgoe et al. 2013, p. 1569) or, in a more suggestive manner, to *care for the future* (Grinbaum and Groves 2013; Owen et al, 2013, 36). According to this perspective, to create responsive frameworks, therefore, becomes a method for making society reflect on the purposes of

science and innovation (Stilgoe et al. 2013, p. 1572; Owen et al. 2012, p. 755), that is, to develop shared visions of the future (Groves 2015).

The reference to caring thus addresses an evident ethical tradition: that of care ethics which can, therefore, be deemed as a good candidate for starting our critical analysis of the ethical axiologies hidden behind the RRI debate.

On the other side, scholars, who referring to the normative approach, tend to consider responsibility strictly interconnected with the pursuing of institutional goals, which are the aims established by public institutions (e.g. parliaments) at the constitutional level, by such means as fundamental rights. Von Schomberg (2013, pp. 61-62), for example, considers the lack of protection of fundamental rights, such as privacy, as a clear case of 'irresponsible innovation'. Following this illuminating insight responsibility cannot be defined outside of an ethical justification of rights.

This link between the discourse on care and that on rights is not incidental, since, as we will show below (see section 4), there is a consolidated trend in ethics of care, which counterpoises the consideration for needs, and care, to the legal tradition based on rights (e.g. Grinbaum and Groves 2013; Groves 2013; 2015 etc.).

Positions belonging to care ethics are widespread in the RRI debate (Groves 2013; 2015; Blok et al. 2016; Sand 2018; Hühn, 2018; Kamishima et al. 2018; Preston and Wickson 2016; Wickson 2016 etc.). Notwithstanding their differences, a common trait is the emphasis on the shortcomings of traditional forms of regulation (Grindbaum and Groves 2013; Groves 2015; Wickson 2016, Sand 2018). In particular, the work of Groves and Grinbaum clearly expresses this view of the conflicting relationship between care and rights.

It is worthwhile, therefore, following the pathway which puts the care at the centre of RRI in opposition to the discourse on rights in order to understand how the idea of responsibility is differently built. In particular, it is illuminating the origin of care ethics with regard to the problematic relationship that exists between needs and vulnerability in the field of innovation.

4. Ethics of care

4.1 The criticism by ethics of care of the liberal model of justice

Ethics of care arose in contrast with what is considered to be the 'clear failure of the model of justice of liberal origin', especially in the North-American context.

According to White and Tronto (2004, p. 447) the problem of modern liberal societies is not the existence of different cultures and traditions but the unequal access to rights caused by Neoliberalism.

In this sense, according to ethics of care the universality of liberal rights might be nothing more than a myth.

The (Neo)liberal model of justice proved to be inadequate with respect to the 'underlying reasons of rights': needs. There is a clear contradiction between the application of rules of an abstract nature (establishing rights) and the use of ad hoc standards, sensitive to the concrete situation (needs) (Kelman 1987, p. 3). This cannot but reduce the space for the application of the model of liberal justice.

In this context, there are entire societal sections in need. However, they risk being deprived of their access to rights and, above all, of the ability to meet the needs that are behind rights. While only a small group of privileged people can know their rights and use them to meet their needs, a large part of the population is deprived of the access to rights and consequently they do not have the same opportunity to satisfy needs. These people are in a situation of vulnerability condemning them to a permanent dependence that should be satisfied by the care work organisation created by public institutions (Fineman 2008). For this reason, the welfare system of liberal-democratic countries made up of care organizations working for the less advantaged is characterized by the invisibility of care and the inaccessibility of the rights (White and Tronto 2004).

However, as pointed out by this scholarship, the current organization of care work cannot but perpetuate the invisibility of care for a small privileged group, appearing only when those who are in difficulty have some needs to be claimed (White and Tronto 2004, p. 433).

According to White and Tronto (2004), there is an erroneous conceptualization at the base of the (Neo)liberal system. This model of justice, in fact, is grounded on two conceptual illusions: the autonomy of the rights holder and the alleged universality of these rights.

The tradition of rights is here criticized due to the erroneous equating of autonomy and the economic self-sufficiency. In our societies it is the market which provides the unit of measurement of our autonomy and, therefore, of the overcoming of our need state. It is a matter of fact that everybody has needs, but only some of them are met through the private tools of the market (White and Tronto 2004, p. 440). This cannot but produce a sort of 'privileged irresponsibility' since, in the current division of work, the care work tends to involve only a given section of population, by freeing a small group from its responsibility of care services, though neglecting its intrinsic value (White and Tronto 2004, p. 443).

The (Neo)liberal model of justice appears to be so closely linked to the idea of autonomy that it cannot see the multiple linkages between rights and needs that are hidden under its abstractions. In this sense, the purported universal ownership of rights in the (Neo)liberal system might be strongly criticised with reference to the functioning of the judicial system for the protection of rights.

As noted, there is a close link between the judicial remedies laid down by the legal system and the rights that can be claimed in this system (Scheingold 1974, p. 5). The fact that a certain claim is acknowledged by the judicial system, indeed, does not mean that it is generally recognized, nor that it has produced a social change (Scheingold 1974, p. 7). In other words, the acknowledgement of a claim can never eliminate the need for which that right is an expression: its *underlying reason*. This only leaves unchanged the social dimension from which that need is arising.

Once acknowledged the impossibility of emending the (Neo)liberal model of justice centred on individual rights, has led to (some) care advocates to call for the radical substitution of the language of rights with the language of care, namely needs (e.g. White and Tronto 2004). Since rights can never meet their ‘underlying reasons’, even via the judicial system, therefore, we cannot but recognise the complete failure of this model of justice.

5. Care ethics in the field of innovation

5.1 From the criticism of the consequentialism to the responsibility as care for the future

This polemical account on rights has been given new life by scholarship referring to care in the field of the techno-scientific advance, but shelving the initial attention to the theme of justice given to it by care ethics. This critical point is well expressed, for example, by the virtues ethics of Grinbaum and Groves. According to their particular version of ethics of care, our approach to innovation is largely affected by a key error.

The modern age is the time of the advent of the consequentialist worldview, which reduces human action to its consequences (Grinbaum and Groves 2013). As clearly pointed out by Groves (2015), consequentialism is a form of living, an *ethos*, which fundamentally affects our ethical structures, as well as our practices, that level, which is known as *ethicity* (or, in Hegel’s words, *Sittlichkeit*). This approach also informs regulation and our baggage of rights, making them unable to function in front of the epistemic and moral uncertainty implicit in the advancement of technoscience (Groves 2015, pp. 326 ff.).

Innovation produces risks and in postmodern societies these risks are increasingly distributed (Beck 1986). However, not all risks are known and controllable by science. Several risks are unknown and escape our capacity of rational control (Groves 2015). This is because science does not have all data at the time of the commercialization of the research, as well as because some of these risks exist only as future risks and depend on many variables, and therefore unpredictable, such as the combination of known risks, as well as the environment (Blok et al. 2016). Besides, these risks hit us in waves: initially as known risks, then as unforeseeable consequences when they suddenly

materialise at a point in time. This situation causes a state of moral uncertainty with regard to our capacity of reflecting over the impact of innovation, called *reflexive uncertainty* (Groves 2015, p. 322).

Regulation reflects this worldview since it operates according to a mere retrospective logic by regulating human behaviour in the light of past conduct, and is thus inadequate vis-à-vis the future brought about by innovation, which obviously ‘will not reassemble the past’ (Groves 2015, p. 321).

For this perspective, this same shortcoming also operates when rights are at stake. According to Groves (2015, pp. 326 ff.), owing to *reflexive uncertainty* human rights can tell us what is right today in the light of past behaviour. They cannot tell us what is right when innovation brings with it unforeseen scenarios, for example in the case of disruptive innovation.

There are two more shortcomings affecting human rights, according to the Groves’ view.

First, human rights as universal principles as conceptualised by Rawls are not able to cover those cultural differences that different traditions entail such as in the case of the BRICS nations (Brazil, Russia, India, China and South Africa), which might encompass different values (Groves 2015, p. 327). Finally, the logic of rights is not able to be applied where the right holder is yet to exist such as in cases where there is no reciprocal relation to us (intergenerational relations and the environment) (Grinbaum and Groves 2013, p. 131; Groves 2015, p. 327). These, in fact, lead us to acknowledge society as an entity tying together its present and future.

In conclusion, these shortcomings make individual rights unfit to drive technology governance.

The retirement of rights and regulation in front of the challenges of technology innovation thus leaves a vacuum vis-à-vis innovation which can be filled only by care. In fact, to avoid the undesirable outcome of *organized irresponsibility* (Beck 2000), there is the need for a new foundational pact on the purposes of innovation and build a different vision of the future (Groves 2015, p. 327; Owen et al. 2013, p. 31). Since control is an illusion fostered by the false belief that science is neutral, defining societal priorities in innovation becomes a mere political question (Grinbaum and Groves 2013, p. 133).

As efficaciously noted by Latour (2005, p. 6), ‘matters of science’ are nothing less than ‘matters of concerns’ for the whole society, which therefore must take back the control of techno-scientific issues, putting them at the centre of its deliberation. Society must be called to express its viewpoint on the future, its vision, through the ‘deliberative engagement’ (Groves 2015, p. 329). This would ensure, on the one hand, an improvement in anticipating the impacts of innovation, and, on the other, greater responsiveness, in acquiring societal inputs in the near and far futures as well as bringing a broader spectrum of perspectives on research, development and commercialisation (Groves 2013, p. 189).

The reconstruction of the 'bond between science and society' is reached through the transformation of institutions and practices (Groves 2015, p. 329). In this sense, instead of establishing new rules and principles in a top-down manner, it is possible to 'render external governance internal to future-creating processes of innovation' by directly changing our behaviour responsibly (Groves 2015, p 327).

Only by adopting a virtue-based ethical perspective of clear Aristotelean origin, can epistemic and moral uncertainty be better handled (Grinbaum and Groves 2013, p. 131). The point is not, therefore, to impose responsibility from the top as rules do, but to change the agents' conduct from the inside, following virtuous behaviour inspired by responsibility (Sand 2018). This would work both in governance processes through voluntary assumptions of responsibility (e.g. voluntary codes) and in innovation processes via forms of co-design where end-users become in their turn innovators (Groves 2015, p. 330).

To respond to the question 'how should we live' vis-à-vis innovation means responding to the question 'how we collectively decide which risks and uncertainties are worth bearing' (Groves 2015, p. 327). This is what 'taking care for the future' means, namely taking care of future generations like a mother does for her children (Grinbaum and Groves 2013, p. 131). Our relation with the future is indeed more akin to a family relationship, which is shaped through caring because what we become in the future is in a dependency relationship decided upon what we decide in the present. Exactly like children with their parents.

Here responsibility derives from the vulnerability of future people to our actions (Grinbaum and Groves 2013, p. 130). The relation between caregivers and dependents constitutes the model of responsibility between present and future people, since it generates non-reciprocal responsibilities. However, there are some differences since dependents of caregivers are present persons although vulnerable. Whereas, the responsibility of society for technology is towards unborn people.

There is a strict connection between care and practices. Care comes from the Latin word *cura*. Caring involves the notion of doing and intervening added to a strong sense of attachment and commitment to something (Puig de Bellacasa 2011, p. 89). This meaning emerges when care is turned into a verb (like 'I care'), denoting a *practice*. This implies that we have to rethink our practices distorted by consequentialism, especially those at the centre of innovation (Groves 2015).

To change practices in innovation according to care means to change our imaginary which is deeply shaped by the consequentialist view.

Accordingly, following Taylor's genealogy of the Self, Groves (2013) attempted to draw a great narrative of the modern imaginary through the centuries, which cannot be wholly analysed here. What

is worth noting, however, is that according to Groves (2015, p. 323) this counterfactual, future-oriented expert knowledge has to be replaced by a knowledge modelled on visions.

The importance of visions is that they have a performative dimension. In other words, these representations of the future tend to modify the present in accordance with our expectations of the future. Deliberating on the transformation of the society due to innovation thus means sharing a vision of what the present society wishes to become in the future (Grinbaum and Groves 2013, p. 119). Visions shape governance as well as our practices in innovation. In this sense, for understanding what we are doing through visions, we need to adopt a hermeneutic approach, uncovering the (often controversial) meanings of new technologies in a public debate in order to trigger a true reflection on the unintended ends of innovation (Grunwald 2014).

This critical work is aimed at modulating the purposes of innovation according to the societal needs. Therefore, reflecting upon innovation implies embedding the real needs of those who will experience the consequences of innovation (future generations, for example) and inevitably involves how we see our responsibility towards tomorrow. Thus, only a bottom-up process of the production of innovation according to the expectations of those who use technology, namely society, can trigger a significant change of perspective (Groves 2015, p. 329).

This also triggers a transformation of the meaning of responsibility. According to Grinbaum and Groves (2013, p. 119), to responsibly act in the field of innovation means to reflect on the responsibility to the future, thinking about which research and innovation society aims to create. When responsibility is reduced to the level of liability, responsibility fails to cover that dimension, implicit in innovation, which is future-oriented. Innovation, instead, entails the acknowledgement of our intrinsic limitation towards the future. Finitude plagues our capability of knowing and morally acting. We have to take decisions under imperfect conditions affected by inescapable uncertainties. In these conditions, society must hold also unforeseen and unpredictable consequences (Grinbaum and Groves 2013, p. 139). Therefore, it must reflect on whether or not it wants them, and how it wants to handle them.

This leads to an (apparent?) paradox. In a world where advanced technologies become *naturalized technologies* (Grinbaum and Groves 2013, p. 128; Nordmann 2005), namely human artefacts able to develop, the object of care becomes technology not humans (Groves 2013, p. 130).

If this conclusion seems surprising, we should think of robotics, Artificial Intelligence systems, or organisms created by synthetic biology as paradigmatic expressions of the techno-scientific progress. As noted by Latour, 'it is not technology unethical in itself or becomes a monster, but rather the stop of caring about it, to abandon it as Dr. Frankenstein abandoned his creation' (Puig de Bellacasa 2011, p. 90; Grinbaum and Groves 2013, p. 138). In this context, caring thus becomes

caring for the destiny of our technology so that it loses its original individual meaning. Responsibility is now a fully collective endeavour.

This responsibility does not require that the individual be good or not good according to a deontological framework, but that their conduct is good for the world in which s\he lives (Grinbaum and Groves 2013, p. 132). Policy frameworks inspired by RRI thus tend to imagine responsibility as being articulated on a much larger scale: that of innovation trajectories, stakeholders and societies understood in intergenerational terms.

This leads the whole society to become engaged in the design of its future, in its care, transforming governance of innovation into a societal process of *co-design* of innovation. Responsibility must, therefore, mean a process of construction of a common vision of the future within the whole society by enlarging inclusiveness of deliberation processes (Groves 2013, p. 197; Simakova and Coenen 2013, pp. 259 ff.).

This paves the way to a process of deep transformation of our ethicity by reshaping our practices and institutions through the rediscovery of virtues (Groves 2015, p. 322). By recovering Aristotle's legacy centred on the ideas of virtue (ἀρετή), practical wisdom (φρόνησις) and happiness (εὐδαιμονία), we can shift from the abstraction of the action to the disposition, which shapes the good behaviour of individuals (Grinbaum and Groves 2013, p. 140). 'An honest person does not act in a honest way because of the expected punishment or reward or another external cause, but because he or she values honesty' (Blok et al. 2016, p. 14-15). Therefore, to foster good practices we have to start from the imitation of virtuous persons. This entails the study of life of most virtuous individuals in order to understand their specificity (Sand 2018).

Doing is the best way of learning responsibility. In our practical life, we need to cultivate and promote those personal characteristics, virtues, which lead to responsible behaviour (Grinbaum and Groves 2013, p. 131). Here the law becomes almost unnecessary since partaking in practices leads stakeholders to spontaneously hold responsibilities (Groves 2015). Those involved in research and innovation therefore partake, in a variety of ways, in the preparation of their *technological children* (their artefacts) for maturity (Grinbaum and Groves 2013, p. 131). The tale of this pathway of responsibility can inspire other behaviour and foster imitation. In this sense, narratives such as the famous novel of Mary Shelley (*Frankenstein: Or the modern Prometheus*) becomes strategic (Grinbaum and Groves 2013, p. 140). Understanding the examples stemming from cases of successful innovation, as well as its failures, therefore represents the best way for learning responsibility.

5.2 Learning from examples: a case of co-design

An illuminating example of co-design occurred in 2014 when a group of parents of 4 and 5-year-old children suffering for type 1 of diabetes, created for them the Nightscout Project⁶, an innovative do-it-yourself mobile technology system for this type diabetes (Lee et al. 2016). This continuous glucose monitoring system (CGMS) was the outcome of a collective work where end-users of technology drive innovation.

First, the father of a child patient, a software programmer, developed ‘a computer code that would enable him to access the blood glucose readings from the CGMS receiver to the computing cloud through a smartphone. With the data in the cloud, the blood glucose levels could be viewed by the parents from anywhere to provide a continuous monitoring solution. When the father successfully transmitted his son’s blood glucose data to the cloud, he sent a tweet of his achievement through the social media platform’ (Lee et al. 2016, p. 1447).

Then, the group made the computer code an open source. This included: the smartphone application for transferring data from the CGMS to the cloud, the web application to display values stored by the CGMS, and the watch face of a wearable device which displays the values on an open source. The group also created a website which hosted the code, do-it-yourself written instructions and information videos for setting up the system and a private Facebook group, called CGM, which ‘rapidly increased to more than 15.000 members in the United States within 18 months, and has expanded to include more than 4.000 members in a number of other countries’ (Lee et al. 2016, p. 1447).

This bottom-up, patient driven approach to healthcare represents an important lesson for a new era of medicine powered by patient engagement, mobile technology, cloud computing, and social media (Lee et al. 2016, p. 1447).

6. Some objections to ethics of care

6.1 Indeterminacy of care, the persistence of a state of vulnerability, the question of justice

Three objections can be raised to (the version of) care ethics analysed above: indeterminacy, the recipient of caring or the persistence of a state of vulnerability, and the question of justice.

First, care is an indeterminate concept (Louden 2007, p. 206). Which care is good and which is not? There are many forms of care. There is not only the one which ties the mother with her child. There are less understandable forms of caring such as treating pets like humans, nepotism, and even mafia, which is a criminal organisation rooted in family bonds etc. We need criteria for distinguishing these forms of caring but care does not have them.

⁶ <https://jamanetwork.com/journals/jama/fullarticle/2512793>.

These relationships are often driven by the particularity and the exceptionality of circumstances. When does the attention to the context lead to fair results and when does it not? Circumstances are not per se able to give good outcomes. At least not alone. They should, therefore, be preceded by criteria, which care ethics, however, does not provide to us.

As pointed out, however, ethics of care should not be considered as a self-sufficient moral doctrine. Against the objection of indeterminacy and normative generality, some scholars have responded by noting that care ethics can easily embed different ethical frameworks. In this sense, it can be deemed as a corrective to the RRI model in order to implement processes of public engagement by including the viewpoints of the most vulnerable and of specific cultures (Preston and Wickson 2016, p. 55). However, which forms of ethics should we consider as compatible and how can they be integrated?

Second, who are the care recipients neglected by our care for innovation? According to virtue ethics, the care recipient is technology. Nevertheless: what about the silent workers contributing to the success of our hi-tech devices from far away countries? What about the invisible population suffering the consequences of climate change triggered, for example, by geoengineering who are in another country and cannot partake in any process of deliberation that is held elsewhere? Finally, what about child patients, for example, in the Nightscout project, whose privacy is widely affected by the use of open source tools?

As this latter case shows, that innovative do-it-yourself mobile technology system did not tackle a set of crucial issues for the success of a technology (at least in Europe) such as privacy of child patients (Ruggiu 2019, p. 67).

Here, is privacy that mostly at stake. The key question on the protection of data of child patients, which were challenged by the adoption of an open source model and the use of social media, was neglected during the whole process of innovation. In this case, choices should have been accompanied by the parallel development of robust mechanisms for data protection, about which the project was silent. What guarantees did it adopt?

Participation and rights seem to be taking a clashing route. This experiment shows that the needs of some key stakeholders can elude participation and directly affect the responsibility framework it aims to create. In order to take into account the participatory tools, these needs would need to be considered from the outset. That same consideration which can be granted by the law protecting those needs as rights. This means that needs cannot disarm possible conflicts with the *underlying reasons*, hiding behind rights, namely needs themselves. We can thus conclude that from an ethical standpoint, despite participation needs cannot completely exclude conflicts with the specific vulnerable people, as the ethics of care pretends.

This proves the persistence of a state of vulnerability within care ethics despite its premises.

With regard to the third point, any rights violation is nothing less than the sign that its ‘underlying reason’, a need, is being neglected. The superseding of the (Neo)liberal model of justice centred on rights did not produce the meeting of all needs. Instead, some remain in a situation of invisibility. Exactly like in the (Neo)liberal systems targeted in the early criticisms of care ethics, there are vulnerabilities within the field of technoscientific progress, which risk being ignored despite participation. This means that in this context the *question of justice* has yet to be solved.

7. Ethics of rights

7.1 The multiple ethical justifications of human rights

The argument of virtues ethics for the translation of the concept of responsibility in terms of care was accompanied by the criticism of John Rawls’ perspective on rights (Groves 2015). The inability of the regulation of tackling innovation is due to the inability of rights as abstract and universalist norms in front of reflexive uncertainty. This would make care with its emphasis on needs a radical alternative to rights.

In political theory, there is increasing attention being paid to the role of human rights in the field of governance of techno-scientific progress, and in particular within the debate on RRI (Ruggiu 2013a; 2015a; 2018a; 2018b; 2019; Koops et al. 2013; Arnaldi and Gorgoni 2016; Leenes et al. 2017 etc.). This argument empathises the centrality of judicial practices in the concretization of rights, which, therefore, differently from the Rawls’ conceptualisation, belongs to an ethical framework which is neither abstract nor universalist.

The centrality of practices in human rights is due to two factors.

First, human rights are established by abstract and indeterminate norms, which need judicial practice for integrating their content through decisions which fix legal obligations, criteria for problem solving, methods of rights application, boundaries between different rights etc. At the international level this work is done by courts such as the European Court of Human Rights (ECtHR).

Second, since firms operate in faraway countries where international obligations on human rights hardly apply because States either did not sign human rights treaties, or do not have any adequate regulation in this field, or are too weak to enforce it, it is crucial to modulate their practices according to a non-legal paradigm, such as the Corporate Social Responsibility (CSR), which is centred on values such as human rights. In these contexts, corporations can however act by implementing the provisions of soft law documents aimed at introducing human rights into their business practices beyond the ambit of legal obligations, but on voluntary basis (Ruggiu 2018a, pp. 248 ff.).

All this eludes to the conceptual framework devised by Rawls. We would, therefore, need a different ethical justification for human rights, one which emphasises their context-sensitivity, thereby following Groves' main objection to rights-based ethics.

Beyond that provided by Rawls, there are other philosophical justifications of rights, such as Finny's new natural law theory, Ronald Dworkin's conceptualization of *rights as trumps*, the discourse ethics by Jurgen Habermas, Raz's moral theory etc. As opposed to what advocates of care ethics think, rights cannot be linked to one ethical tradition. Besides, they make several criticisms of the Rawlsian approach which can be shared.

The thought experiment of the 'veil of ignorance' was devised in order to preserve the main good of autonomy in the original position, which is the basic value of (Neo)liberal systems. Therefore, it is not surprising that the final outcomes of the veil of ignorance are those same rights of the liberal tradition: civil and political rights. Social rights, such as the right to health, labour rights, as well as the third generation rights, such as the right to a healthy environment, the rights of future generations (which are often decisive in techno-scientific advances), all of which are not part of the compendium of the rights of individuals for this minimalist position. This is the outcome of deciding to separate individuals from their context, where they discover their identity and those interests which they wish to be protected as individual rights: their needs of a social and ethical nature (Viola 2000, p. 102).

This separation from historicity led Sandel (1984), for example, to talk of an *unencumbered self*, that is, an individual radically separated from their preferences. The consequence was the universalisation of a particular conception of rights, the liberal one, and its rejection by different traditions (Taylor 1989). Therefore, it is a rejection of a *biased* universality. As is well known, MacIntyre (1981, p. 90) even equated the belief in rights as abstract, universal norms with the belief in witches and unicorns. This is the same criticism made by the advocates of care ethics (e.g. Groves 2015, p. 327).

In this regard, ethics of care is in debt to the neo-communitarian thought.

7.2 From non-knowledge to the discovery of rights-based morality

In the field of emerging technologies, the call for human rights derives from the state of *permanent temporariness* affecting technoscience.

As recognised by Groves (2015), there is a non-eliminable legacy of *non-knowledge*, which is paradoxically produced by advances in scientific knowledge (Ruggiu 2013b). Any process of knowing always entails an irreducible core of non-knowledge accompanying new knowledge (Bataille 1998). This happens especially within the field of emerging technologies where there is an increase of scientific, social, ethical and even legal uncertainty. Within the governance of research

and innovation, this unknown core cannot be avoided and must be handled somehow. Contrary to what one may think, it has the same importance as scientific knowledge itself. Therefore, without the acknowledgement of the need for a specific ability to dominate the unknown, no truly aware governance can exist.

In his dialogues Plato talked of Socratic ignorance, 'I know that I know nothing', meaning that we can derive a form of wisdom from the recognition of our intrinsic limits. In the field of innovation, this experience has a paradigmatic trait. Technoscientific progress cannot be integrally reduced to a cost/benefits analysis, since it requires knowledge, which is not immediately available and will only be so at a subsequent stage. This means that we have to tackle a core of non-knowledge, which is crucial in innovation, but from the beginning it is able to elude our control. This risks impeding success in our attempts of governing innovation. It is not the knowledge production but the acknowledgement, the management and, finally, the *dominance* of this non-knowledge which is the very meaning of technology governance.

This epistemic limitation requests the change of our ethical approach to innovation by moving from individualist premises to a collective dimension. In modern societies of mass production and advanced technology, it is often impossible to separate out our ethical choices from those of others. Products and services generated by the advances in innovation tie the consumer's decisions to those of the producer, the engineer, the funding organization etc. together. Therefore, the morality of any decision no longer depends only on one individual (von Schomberg 2010, p. 61). This leads to the consideration of those interests (needs) which correspond to the others' rights, which morally substantiate our decisions, as well as our actions from the outset. We have the legitimate expectation that, even in uncertain contexts, our choices can be grounded in a framework, which does not lead to the sacrifice of others, no matter how far, and how invisible they are.

This expectation increases our awareness since it makes us understand that the rights of others essentially correspond to our individual rights protected at the constitutional level and which find a universal recognition in the human rights established in international documents. The legitimation of this ensemble of principles is grounded on what we decide to preserve at the political level, removing it from mere political majorities.

This framework of legitimation cannot but be carried over into the field of innovation (Ruggiu 2013a).

In societies characterised by increasing pluralism and multiculturalism and exposed to continuous conflicts within the field of innovation, non-knowledge needs criteria for orienting our navigation into territories yet to be explored. These criteria must be those at the summit of our

constitutional orders (Brownsword 2008). It would be incoherent, therefore, to claim them in any field except that of innovation with the justification of an epistemological insufficiency.

Setting principles on a case-by-case basis is unsatisfactory, since it institutionalises the incoherence in our moral epistemology. One day will be set according to a given values ontology, the day after according to another.

However, as seen, using abstract and universalist principles is not possible in highly variable contexts, such as when innovation is at stake. Participation alone, though, is not able to cover all the needs at stake, since not all parties can have the opportunity to be engaged.

In a state of moral uncertainty, we need a guide which is able to consider all the needs at stake, even those (initially) invisible. We need a tool which is able to follow changing scenarios, a flexible tool, which is at the same time stable and able to evolve in uncertain contexts (Ruggiu 2013a). This tool has to be established at the basis of any process of deliberation and able to shape moral practices, for example, of enterprises, innovators, foundations etc., subjects that might be opaque to the law, but can, however, be motivated morally.

Human rights can be this tool, but from a perspective other from that elaborated by Rawls (Ruggiu 2013b; 2013a). They are established as the basis of constitutional, EU and international orders. But since they also have a moral nature, they can orient the moral life of individuals beyond the border at which legal provisions stop through practices.

The perspective underlying the role of practices in rights is legal hermeneutics.

7.3 The hermeneutic version of ethics of rights and the narrative turn

Legal hermeneutics arose at the end of the Sixties, when Hans Georg Gadamer (1960) stressed the centrality of the application stage in human understanding and addressed the exemplarity of the law where interpretation is crucial for law-making (Gadamer 1960, p. 381). Practice is central in our approaching the world since it expresses our interpretation of the world, especially in highly pluralistic and multicultural societies like ours, where understanding becomes increasingly difficult and interpretation is the only way for tying together a political community.

According to hermeneutics, a human being is not only a Being-there, an entity which is ontologically located in the world (Heidegger 1927), but an entity whose being is structurally oriented toward the interpretation of the world (Gadamer 1960). The language is the *medium*, structuring our existence, our concepts and our worldview through continuous expectations (Gadamer 1960, p. 345). Language articulates the Fore-structure of understanding and this structure is always open to the future owing to the expectations existing within our linguistic comprehension (Zaccaria 1990, p. 81).

This means that, contrary to what neo-positivism maintains, the process of understanding does always imply an interpretation of reality. Since it does not have an objective nature, it always starts from a presupposed level of knowledge, which is called ‘pre-comprehension’ (Heidegger 1927, p. 419). Understanding is therefore grounded on knowledge, rooted in the language, where we find our concepts, ideas about reality, judgement criteria, methods for problem solving, and expectations. This means that understanding has a circular character since each interpretation starts from a prior interpretation, giving rise to the ‘hermeneutic circle’ of interpretation and pre-comprehension (Esser 1972).

Our existence is ontologically marked by expectations anticipating what we are interpreting.

In this light, prejudices, as such, are not bad (Gadamer 1960, p. 318). We always anticipate the outcome of interpretation through hypotheses, which are already articulated in the language, and are inter-subjectively shared in a given community of interpreters. In this sense, understanding is less a *kind of knowledge* and more an *ontological mode* of our (co)existence.

This level of common presuppositions provides a foundation and articulates our rationality according to a practical rationality of Aristotelian origin, *phronesis*, which must be made apparent now.

We have to acknowledge that we always have prejudices. These prejudices however have to be constantly thematised, that is, put into question in a rational way, in order to identify the wrong ones and substitute them with new ones according to a ‘trial and error’ method (Gadamer 1960, p. 349).

Any comprehension is anticipated by the pre-comprehension, implying the continuous formulation of hypotheses relating to the future. This makes hermeneutics the philosophy, which first thematised the subjects of anticipation, expectations and visions, central in the RRI debate (Grunwald 2014).

The discovery of the hidden presuppositions in RRI by Timmermans and Blok (2018) can thus be understood as an inquiry into the prejudices implicitly underpinning the debate on innovation. The analysis of these axiological presuppositions and their role in our interpretative conceptualisations of responsibility, thus needs a critical use of the art of interpretation (Roberge 2011).

Visions and interpretation find a common legacy in hermeneutics, as well as a possibility of rational foundation. As acknowledged by Heidegger (1927, p. 419), ‘(u)nderstanding is grounded primarily in the future (anticipation or awaiting)’. All the *things* and events, which we deal with in our life-world, are pre-interpreted by this anticipatory mode of our understanding (*pre-comprehension*). In other words, *past knowledge* is always the basis of our understanding of the future: of our visioning.

Expectations thus not only characterise our approach to the world, but find in the law, and in the practice of rights, an exemplary case illustrating the ontological mode of our existence (Gadamer 1960, pp. 376 ff.; Esser 1972; Zaccaria 1990; Pastore 2003; Ruggiu 2013a).

Any interpretation is indeed built on the flow of former interpretations constituting the ‘history of past interpretations’ (Gadamer 1960, p. 351). The awareness of the existence of an interpretative practice (the past) is the precondition of understanding. Any practice concatenates a series of interpretations in a common endeavour. This can be exemplarily illustrated by the law, and, in particular, by human rights. No abstract provision can exist beyond its judicial interpretation in the stage of application, concretizing its meaning in the light of the circumstances of our lives. However, each legal interpretation is rooted in a practice in which it shares concepts, methods and criteria of application which articulate the framework of rationality which contribute to its grounding. This is crucial for rights that stem from abstract and indeterminate provisions which might be, on their own, almost inapplicable (Ruggiu 2013a).

In pluralistic contexts, however, interpretation is always exposed to the risk of misunderstanding, the risk of Babel and the conflict over values (Weber 1922). Thus, it is crucial that belonging to a shared interpretative practice, of the existence of an ensemble of shared values that allow all other practices to coexist peacefully, is acknowledged. Owing to the permanent risk of disagreement, rights represent on one part, milestones that can find different applications, and the beginning for coexistence among different moral conceptions, and on the other, the foundation of pluralism itself in increasingly complex societies.

It is Paul Ricoeur (1983; 1984; 1985) who found the solution for overcoming the original indeterminateness of rights thanks to the ‘narrative turn’ he impressed to hermeneutics.

According to Ricoeur, Gadamer (1960) brought understanding towards a fatal anti-methodical parable, since he counterpoised interpretation (*comprendre*) to explanation of scientific nature (*expliquer*). Instead, these two poles need to be brought back together by acknowledging that interpretation is temporally oriented.

The discovery of time at the heart of interpretation allows the Gadamerian dialectics of interpretation and pre-comprehension to be overcome. The interpretation must now be rationally articulated in the threefold structure of *configuration*, *pre-figuration* and *re-figuration*, which opens a pathway to an appropriation of the future, and in particular the practice of rights (Ruggiu 2013a).

Configuration is the first stage in the application of rights, consisting in the re-assembling of a heterogeneity of factors constituting a violation as a whole in the plot, which Ricoeur calls ‘intrigue’ (*emplotment*). Each event (e.g. a rights violation) consists of a heterogeneity of elements (purposes of an action, the agent, the circumstances in which the action occurred, the reasons that triggered it,

the victim etc.). This heterogeneity can be reassembled as a whole in the plot. The emplotment interprets and configures them as *story*, and then builds them, for example in the legal field, as a *legal case*, which in the field of human rights is the victim's complaint of an abuse, which is translated by the judge in the final decision. The intrigue transforms a mere serial sequence into a *configuration* by bringing to light the common thread (the *fil rouge*) that makes it generally intelligible from a legal standpoint. Any narrative of a rights violation must be reformulated in legal terms in order to give human suffering a voice using the language of law. In this regard, a human right can only be understood in terms of violations (Ruggiu 2018a, p. 246). Without this translation with the language of actions, rights are semantically empty, as pointed out, for example, by Groves (2015).

Each configuration, however, never occurs in an epistemic vacuum that the discretion of the interpreter fills arbitrarily. It needs the conceptual background narratively structured as *pre-figuration* framed in light of a legal hypothesis rooted in the history of past interpretations: legal precedents. What Gadamer called pre-comprehension is narratively redefined as a 'pre-figuration' by Ricoeur. Pre-configuration has the aim of *rationalising* the act of interpreting by revealing the ensemble of principles, rules and criteria followed by a practice. It is not possible to understand what is in front of us without a pre-figuration anticipating somehow, at least partially, our action (Ricoeur 1983, p. 99). This means that any interpretation of a decision on a human right violation requires that the normative framework at stake in a given case is made evident by the interpreter through an analysis of the case law (Ruggiu 2013a; 2016). This framework made up of past violations (as well as by the responses given by judges) constitutes the meaning of a human right: its content. From this we can understand what obligations there are, how the State is obliged to act towards individuals, and what concrete actions can free the State from its responsibility of protecting a given right (e.g. Ruggiu 2018b).

However, the process of discovery of the historicity also presupposes the continuous redefinition of past standards in the light of new circumstances: what the care ethics advocates call context-sensitivity. Each interpretation presupposes, in fact, a *re-figuration*. In this sense, any act of interpretation will always be a re-figuration allowing the normative basis to structure, refine and ultimately evolve itself in the light of changing circumstances, such as new urgencies and new problems raised by social developments, as in the case of science and innovation. This allows interpretation to be responsive to inputs stemming from the society vis-à-vis progress.

As the Strasbourg Court reiterates, the European Convention on Human Rights (ECHR) is a *living instrument* evolving according to the changes in society⁷. Its provisions therefore are far from abstract, but are open to the tackling of new unforeseen cases. This implies a necessity to imagine, using *regulatory foresight* (Blind 2008), the future challenges, violations, vulnerabilities for rights,

⁷ *Soering v. the United Kingdom* (Appl. 14038/88), judgment of 7 July 1989 *Series A No. 161*, par. 105.

raised by the technological development. This allows rights to play a part in the increasing complexity of technology governance.

7.6 *The twofold temporal dimension of human rights*

Rawls' conception of rights has been radically turned upside down by the Ricoeur's narrative turn. Human rights find a twofold temporal dimension, which characterises their concrete universality (Ruggiu 2013a, pp. 207 ff.).

First, rights progressively define their meaning through the judicial practice (e.g. that of the Strasbourg Court). Provisions on rights are not general, abstract norms according to a universalist conception, but are strictly connected to the courts' interpretation, which continuously redefines their content in the light of the context. This process unveils a specific temporal dimension, which I call *tight-timed temporality*, a dimension where the time frames are close and the modification processes related to rights are relatively fast.

In this dimension, where practices in rights grow, rights can evolve in order to tackle the new vulnerabilities created by the techno-scientific advance. New challenges arise as result of societal evolution and push the law via the courts decisions to develop new responses to social challenges starting from a pre-existing framework of rules.

The tight-timed temporality therefore allows us to solve the question of human rights' indeterminacy since through the process of judicial interpretation we find rules and principles that are at the basis of their application, as well as the criteria, which accompany this process rationally.

This armamentarium of standards, methods, and criteria, can also guide the practice of NGOs such as human rights organizations by finding which concrete actions can implement rights in the field of innovation.

On the other side, in the dimension of treaties, human rights enjoy a sort of temporality, which I call *stretched temporality*, a dimension where modifications occur so slowly that they may appear static. Human rights are not abstract aspirations of human beings that can be found in logic (Rawls), in the human nature, in the natural law (Finnis), or among the rules of the moral discourse (Habermas). Human rights are historical.

They arose when the threats against the human being became intolerable (Bobbio 1990, p. XV). They were established at a precise historical moment, after the Second World War when we discovered the horrors of Nazi totalitarianism, such as human experimentation, which led to human dignity being put at the centre of their architecture. This moment has become paradigmatic for any human violence. From this, we identified several forms of vulnerability for the human being, which oriented our interpretation of future challenges. From that moment, in 1948, when the Universal

Declaration on Human Rights was adopted, human rights have been put in the dimension of historicity (they have been embed by the law) giving rise to an *oriented course* made up of subsequent waves and generations of rights (Viola 2000, p. 93).

First, civil and political rights of the liberal tradition were affirmed. Then, social rights aimed at the protection of labour and of union organizations, and the right to health. Finally, third generation rights, aimed at protecting the environment, of the human genome and of future generations' rights (Viola 2000, p. 27). Today this pluralistic ensemble of values represents the basis for overcoming possible conflicts in multicultural societies.

Besides, this course has been developed at the regional level in Europe with the ECHR, in America with the Inter-American Convention on Human Rights, in Africa with the African Charter on Human and Peoples Rights, giving rise to several culturally-sensitive interpretations of human rights, integrating new and original instances in the human rights tradition (Ruggiu 2016).

In this temporal dimension, once established, human rights have been removed from the movement of unstable political majorities deciding according to a case-by-case logic, and founded on a consensus of all nations at an international level. They became part of a temporality, which makes them similar to rocks sharing thus almost a geological time.

In this way human rights have been partially suspended from the level of historicity. They do not live however in a dimension of non-historicity, nor in a parallel dimension of a meta-historical reality. They are, thanks to their legal recognition, historical (legal). Using the terminology of Paul Ricoeur (2005, p. 21), they enjoy a sort of *trans-historicity*. From this standpoint, they do not change, nor can they disappear. Once affirmed, they no longer depend on the vicissitudes of the global consensus of nations at the international level. They are rooted in a constitutional dimension. States can decide to introduce new rights into the catalogue of human rights, but they cannot decide to abrogate them. They can, of course, violate them, they can decide not to protect them, but they cannot decide to eliminate them from the legal order, by abrogating them. Human rights might fall into a sort of oblivion, overtaken by a new era of modern barbarity.

This route leads us to recognise that they enjoy a sort of *historical universality*, an universality, which is always under construction (provisional) and requires their continuous interpretation through a practice sensitive to the societal pressures such as innovation.

The discovery of the *tight-timed temporality* at the level of practices gives us those flexible criteria, which can consistently inform the governance of emerging technologies. The discovery of the *stretched temporality* at the level of international treaties allows us to understand that these criteria correspond to a set of firm goals shared by the international community that persist in time and can orient choices in the field of innovation (e.g. Ruggiu 2018b). Thanks to them, human rights ensure

the *coherence* of governance facing an unforeseen or unknown future, helping us to protect of the same goals although in different contexts. In the rights-based communities there is the *integrity principle*, according to which rights must shape the activity of all public powers: legislative, administrative and judiciary (Dworkin 1986, p. 160; Ruggiu 2013a, p. 211). In modern times, this principle cannot but be extended to technology governance, even, where private actors are at stake, and therefore, even beyond the sphere of operating legal obligations. This allows governance to maintain the same trajectory while new, unknown risks become apparent, minimising the danger of abrupt and expensive changes of direction. In other words, human rights represent the preconditions of the robustness of governance tools within the RRI framework, of all governance tools, even public engagement (Ruggiu 2013a).

At this point, any definition of responsibility cannot overlook the protection of human rights, meaning that no responsible behaviour can be realised without considering (from the outset) positions that are fundamental to our legal order. This allows participation to become responsive to all needs at stake, including those that cannot be represented in processes of public engagement: vulnerable persons, such as children, elderly persons, consumers, workers and populations in faraway countries however affected by the consequences of our innovation. Outside this framework, we find irresponsibility.

This version of ethics of rights is relatively universalist, context-sensitive (open to different life cases), relatively pluralist (open to other ethical frameworks compatible with the same principles), flexible (modifiable according to the societal evolution), narrative (based on the narrative of rights violations), focused on vulnerability (it takes into account possible consequences that can affect vulnerable individuals), time-oriented (based on the vision of future rights violations). But, contrary to ethics of care, it is not indeterminate with regard to the criteria for evaluating human action.

In this framework, the question of justice addressed by ethics of care is preserved.

8. Are ethics of care and ethics of rights incompatible?

8.1 The responsibility as care for future and weak participation

The conceptual indeterminacy of RRI allows for several different ethical justifications for upholding ideas of responsibility, although they may produce incompatible outcomes. In particular, care and rights seem to follow different, if not clashing, routes (e.g. Nightscout project).

Care ethics leads to a form of responsibility as ‘care for the future’, which gives rise to a type of bottom-up legitimation of innovation. In this framework the more the process is responsive to societal inputs, such as societal and ethical needs, the more it is responsible, since in this way society is forced

to reflect over what it wants to become in the future. Care leads us to take the responsibility for future generations by adopting an inclusive perspective, which makes us care for our common destiny. However, as seen, there is no automatism between participation and responsiveness.

The hermeneutic version of ethics of rights leads to a kind of responsibility, which tightly intertwines norms and practices in rights, using the standards set out by courts in the application stage for tackling the unknown implicit in innovation. This allows for coherence in technology governance to be strengthened, according to a small number of principles protecting us and unknown others in a common situation of vulnerability: rights. This opens up, however, the possibility for conflicts with current societal needs, counterpoising the legitimation of rights (which derive from forms of representative legitimation established at the heart of the modern liberal-democratic systems) with forms of participatory legitimation.

Participation however is as widely disputed as it may seem.

First, it suffers from the indeterminacy of the concept of care on which it is grounded. Many forms of caring can be covered by participation. We need some criteria of application for distinguishing the right care from other, less understandable, forms of caring.

Second, participation is weak since it is not able to impede the exploitation by stronger players in the market, which are able to exploit the opportunities of public engagement more effectively than other actors. When public engagement is the only tool for creating responsibility, the question of how stakeholders are articulated, structured and act, becomes primary (Blok 2014). In other words, the bottom-up approach might not cover all needs at stake. As the Nightscout project showed, a process of innovation can be inclusive, and democratic, but it can ignore some key societal and ethical needs, which can become apparent later in the form of rights violations (Ruggiu 2019, p. 66). This can occur either because the stakeholder, who will suffer the consequences of our decisions in the future, had no chance to take part to the process of negotiation (e.g. geoengineering with regard to stakeholders in other countries) or because they are unable to represent their interests (e.g. the child patients in the Nightscout project).

Finally, care reveals the existence of a type of vulnerability in the form of participation, which raises the question of justice at the heart of ethics of care.

8.2 Building the bridges

Ethics of care and ethics of rights are not two reference frameworks necessarily destined to clash.

There are versions of ethics of care, such as ecofeminism, arguing that in order to supply those criteria requested for solving any hard case, it can be virtuously integrated by other ethical frameworks (Preston and Wickson 2016, p. 55). This position appears convergent with that of

upholding that ethics of rights does not have a ‘totalitarian’ vocation, since it aims at being compatible with almost all other comprehensive conceptions of the good life (Viola 2000, p. 139), and therefore, with care. According to this perspective rights are a coexistence precondition in multicultural communities and a condition for solving their political disagreements (von Schomberg 2013).

What human rights need, in fact, is that other ethical frameworks do not aim at their violation (*non-inconsistency requirement*), while they foster those solutions that better implement the respect of individual rights (*compatibility requirement*) (Ruggiu 2016, p. 115). In this sense, human rights are open to integration with those ethical frameworks, which can help to build a favourable environment for the flourishing of rights. This is the position, for example, expressed by Martha Nussbaum (1997).

In the techno-scientific field, the bottom-up approaches aimed at pushing innovation, such as co-design, can have great potential, because they shape products and services according to the users’ wishes. This helps to anticipate somehow the consideration of certain aspects, which can be relevant later in terms of the consumer rights. These approaches, however, need a corrective in order to integrate an earlier consideration of rights and to avoid counterintuitive outcomes, like the unforeseen harm to some rights, which reveal that some needs have not been taken into account in the participation process.

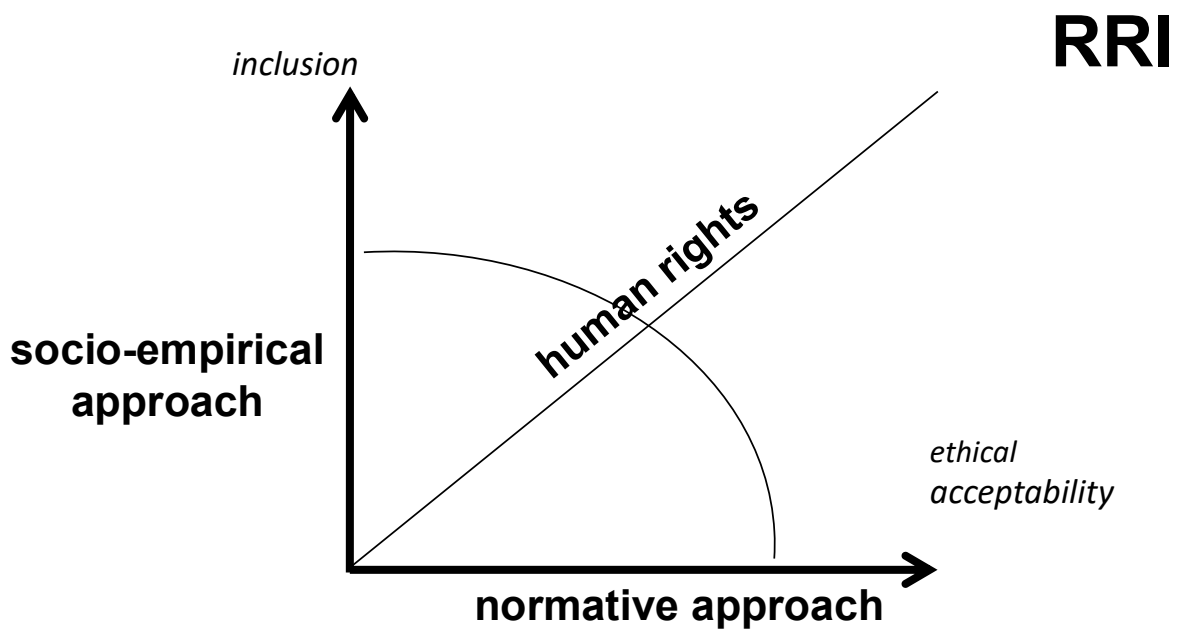
An example of this corrective can be the scalable dynamic analysis framework recently developed by a US team, which allows for the automatic evaluation of the privacy of Android apps (Reyes et al. 2018; Ruggiu 2019, p. 71). The research team engineered a system which was able to analyse mobile apps’ compliance with the Children’s Online Privacy Protection Act (COPPA). On the basis of this automatised analysis of the level of compliance with the right to privacy, each stakeholder (app developers, distribution channels, third-party libraries, and regulators) can take actions to prevent the potential violations that the system identified. This integration of computer engineering and legal knowledge of rights, therefore created an inclusive and reflexive framework where public and private actors could improve on a voluntary basis the design of the technology, reflecting over which actions are needed to better embed rights into their data processing systems, such as the Nightscout project.

The implementation of rights can also be exemplified by those practices reflecting a conception of the good life as affirmed in such movements environmentalism, ecology, ecofeminism etc. These practices can be considered as a form of anticipatory protection of interests strictly linked to human rights. In this framework, the right to an healthy environment as an anticipated protection for the human life can play a central role.

An example of this approach is Amnesty International, which deals with both environmental and human rights matters (Ruggiu 2018a, pp. 248-9). The case of cobalt sourcing practices by big companies in hi-tech industries⁸ shows that consideration of human rights can extend the participation in innovation to those invisible stakeholders who make our products possible, achieving a reward in form of a good reputation, which can be reflected later in the market in economic terms.

This represents a fair balance within the RRI framework between inclusion and ethical acceptability, which otherwise might collide (Fig. 2). The hermeneutic version of rights-based moralities disarms the risk of incompatibility between the two poles of RRI.

Figure 2



The balance between the two approaches within the RRI model is gained through the implementation of human rights. Here inclusion and ethical acceptability meet in the implementation of human rights practices.

Hermeneutics shows that both ethics of care and ethics of rights are not necessarily incompatible, and represent an opportunity for RRI to discover new forms of compatibility between needs and rights.

9. Conclusions

⁸ <https://www.amnesty.it/scarica-report-time-to-recharge-corporate-action-and-inaction-to-tackle-abuses-the-cobalt-supply-chain/>. Accessed 03 December 2017.

Notwithstanding a general endorsement at the political and academic levels, RRI is affected by a severe weakness: a conceptual indeterminacy exist at its basis, leading to a multitude of proposals of governance, political arrangements, as well as different outcomes.

Following the suggestion of Charles Taylor, this conceptual indeterminacy existing at the political level is a signal of the existence of a plurality of ethical frameworks, that orient our choices on innovation in ways resulting which often conflict with one another. These ‘inescapable frameworks’ of ethical nature are therefore the source of our political divergences hidden in the RRI debate. Several positions have emerged in this field, which address participation as a key ingredient of governance, with care as common denominator, and often counterpoise themselves to ethics of rights. By comparing a particular version of ethics of care (virtues ethics as elaborated by Grinbaum and Groves) with the hermeneutic version of ethics of rights, this article showed that care is not able, on its own, to found participation on ethical and social needs, since the processes of public engagement can leave out certain relevant needs of vulnerable groups of stakeholders, which are protected as rights in our communities. The emergence of rights violations despite the inclusiveness of the process of participation is the sign of the persistence of a question of justice which lies at the heart of the ethics of care, and which contradicts its initial premises. The article finally argued that an alliance between the reasons of ethics of care and ethics of rights can be a way of overcoming their mutual insufficiency and will strengthen participation in the RRI frameworks.

Conflict of interest statement

The corresponding author states that there is no conflict of interest.

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