

Chapter 10

Responsibility, Technology and Innovation: The Recognition of a Capable Agent

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The idea that innovation must be conducted in a responsible manner is not new and has been constantly affirmed at least throughout the last four decades under different labels, such as technology assessment, stakeholder engagement, ELSA (ethical, legal and social implications of research), “midstream” modulation of science, and, lastly, RRI (Burget et al. 2017).

Innovation is today the main production system that aims at overcoming the problem of resources and that can better account for the necessary flexibility in a global dimension. Within the paradigm of innovation, we find different modalities such as disruptive or incremental innovation, according to the degree of novelty expressed by a certain product or process. We can also distinguish innovation according to the moment at which is implemented in the pipeline (Bessant 2013). Benoit Godin has made an extraordinary account of the history of innovation, as well as the challenges that innovation brings to our societies (Godin 2006). However, due to a number of negative events and given its actual holistic nature (Pavie 2018; Prahalad and Ramaswamy 2004), in the last decade, the often-implicit normative objectives of innovation have been brought to light more evidently. Such objectives vary depending on the geographical context and disciplinary domain. Among the various examples it is worth mentioning the model of frugal innovation, which is becoming increasingly important in middle and low-income countries (Pansera and Owen 2018; Schroeder and Kaplan 2019). Frugal innovation aims at providing disadvantaged parts of the population with goods that might not be considered essential but that are nevertheless important to guarantee a fair access to technological products. Accordingly, materials like for instance phones and fridges are deprived of their unnecessary trimmings and sold at a lower price.

Technological artifacts have for a long time raised concerns with regard to their ethical and societal impact. More recently, the paradigm of innovation, which has become the predominant productive model, has increased these concerns because of its highly flexible and contextual and often disruptive nature. Therefore, since a decade governance approaches in Europe like the one adopted by the European Commission, have been supporting soft regulatory approaches promoting responsible postures (EC 2012). Although the debate about the understanding of the practical meaning of a framework such as Responsible Research and Innovation (RRI) has not yet found a sufficiently broad consensus (Burget et al. 2017), it is possible to denote its peculiarity in opening the decision-making process to forms of inclusion based on stakeholder engagement (Pansera and Owen 2019). In this sense, RRI extends the capillarity of a participatory approach to spheres that could hardly be efficiently integrated in the decision-making process (Fisher and Rip 2013). In other words, it is possible to denote how RRI aims to represent a sort of contextual translation of the major guiding principle of European public policies, the precautionary principle, which recommends an attitude of care and prudence when designing innovative products and processes.

According to Bernard Reber (2016), the Precautionary Principle is often understood as a form of inaction or renunciation to decisions in the name of precaution (Reber 2016). However, he argues that the Precautionary Principle always implies an active decision which ultimately relies on political assumptions. What is different in the governance inspired by the Precautionary Principle is how the decision is reached. In this sense, along with Reber we can distinguish two basic forms. The first, which is mainly used in the United States, is based on a utilitarian calculation of risks and benefits. The second, on the other hand, which is more common in the European context, is based on deliberative forms of consultation on the basis of rights (Reber 2016, 132-133).

Drawing a parallel with RRI, and following Paul Ricoeur, it is to this second communicative model that we must look if we want to design an innovation that is responsible. But whilst the claim to responsibility is widespread, causing a “responsibility overload,” the almost intuitive meaning of the word “responsibility” is not always fully substantiated as if it was self-evident. On the contrary, responsibility is an eminently contested subject as regards its

precise meaning and its normative content (and subsequent implications). In order to better understand the implications of the constant appeal to responsibility we could move from the reflections made on *The Just*, where Ricoeur reconsiders the semantics of the idea of Responsibility (Ricoeur 2000).

1. Revisiting the Semantics of Responsibility

Ricoeur's contribution is important for the framing of responsibility in technological innovation because it enables moving away from focusing only on the negative consequences of an event. In particular, in his study on responsibility Ricoeur proposes to reconnect the idea of responsibility to the semantics of moral imputation, therefore regaining the sense of the connection between the agent and the action more than that of the attribution of its (typically negative) consequences.

This way Ricoeur wants to depart from the traditional legal approach, where the designation of a "responsible" person is framed formally as a function of the imputation of the consequences to a legal subject (not necessarily the actual agent nor a human one). By contrast, in Ricoeur's view, linking back the idea of responsibility to the relationship with the agent helps in distinguishing more clearly two aspects: that of the obligation to answer to the victims of damages and that of the designation of the responsible subject. What Ricoeur has in mind is to bring back the active meaning of the term responsible and to unveil the often-paradoxical nature of a notion that links individual and collective agency. This conceptual distinction opens the theoretical possibility of re-articulating the semantics of legal responsibility out of the retributive logic.

In contrast with the legal-positivistic stance inherited by Hans Kelsen's *Pure Theory of Law*, where responsibility is constructed as a purely formal concept (Kelsen 2009), Ricoeur indicates the primary root of the idea of responsibility in the idea of moral imputation, stating that the founding concept has to be sought outside the semantic field of the verb "to respond," by looking closely in the semantic field of the verb "to impute" (Ricoeur 2000, 13).

The root meaning of the verb *imputare*, recalls Ricoeur, is to attribute an action to somebody, who is considered as its authentic author: it is a sort of moral calculation (*putare*) in which the action is placed on one's moral account. In order to attribute an action to somebody as its author it is necessary to explore his or her role in producing the event and therefore recognizing him or her as the author of the action.

The reasons behind this ascription, therefore, go back to the entanglement of the subject with the action, which is not only externally attributed but also self-reflexive, as part of the self-comprehension driven by the attestation of the capacities at the various levels of the constitution of the Self (Ricoeur 1992). This is an important philosophical move as the self-understanding of the subject as a responsible agent is an essential element of the responsibility idea (Dierckxsens 2017, 584).

This semantic renewal is particularly relevant when talking about responsibility in innovation, as it implies that the responsibility of the innovators shall be engaged in the first person. This means that responsibility could not be identified simply with a procedure or a technical device, but instead holds also an unavoidable element of personal commitment, which is the element ensuring the orientation of responsibility towards the future.

Indeed, many uncertainties surround the attribution of responsibility in the context of scientific and technological innovation, mainly due to the long-term impacts in the future of the choices made. In particular it is hard identifying the author of the action, or determining the extents of the effects for which one is made responsible; moreover the relation of responsibility is troubled by the loss of reciprocity between the agent and the victim of the action (Ricoeur 2000, 28–31).

For these reasons, the orientation of responsibility towards the future cannot rely only on the anticipated calculation and allocation of the negative consequences of innovation along a risk-based model, but has to embrace more frankly a virtuous commitment toward commonly shared societal values, in particular by defining standards of the acceptable risks and societal benefits of innovation.

2. Turning Responsibility Towards the Future

In order to adequately take into account the societal issues posed by technological innovation we need, says Ricoeur, to orient the very idea of responsibility towards the future so that the idea according to which

we are eminently responsible for what we *have done* (a retrospective orientation that the moral idea of responsibility has in common with the juridical idea), must instead be substituted with a more deliberately prospective orientation, where the idea of prevention of future harm has to be added to that of reparation for harm already done. (Ricoeur 2000, 31)

This idea would not be fully clear, nor very original, if it was considered from the perspective of the “outputs” of the mechanisms of legal responsibility, where it has been implemented under the form of indemnization through the mechanisms of insurance. Instead, however, what Ricoeur has in mind is that of reconnecting the idea of responsibility to that of an agent (through the semantics of moral imputation) in order to recover a central role for the acting subject. In the following, we will examine more closely the contribution of Ricoeur’s philosophy to this relevant shifting of the meaning of responsibility in a prospective sense.

3. Retrospective and Prospective Responsibility

Responsibility can be directed both to the past, as it is usually understood in legal terms, and towards the future (which is more frequent in ethical terms). In order to understand the difference between these two orientations, we could follow Peter Cane suggestions, suggesting that when we speak of responsibility in terms of accountability, answerability and liability, we look backwards to conduct and events in the past. These concepts are at the core of what we could call “historic responsibility.” By contrast, when we refer to responsibility through ideas such as roles or tasks we look to the future and in this sense we sketch “prospective responsibilities” (Cane 2002, 31).

The difference between the two lies in that retrospective responsibility is substantiated by an *ex post facto* judgment over a given situation, it is mainly linked to ideas such as liability or damage and is therefore characterized essentially in reactive terms. By contrast, the idea of a prospective responsibility refers to the notion of going beyond the perspective of complying with some pre-established duties, and to proactively assuming responsibilities for a certain state of activities even when specific duties are not (or cannot) be established in advance (Cane 2002, 48).

This way of thinking about prospective responsibility is relevant in the context of a reflection on technological innovation since it allows to situate the discussion beyond the reference to the established paradigms of *fault*, which constitutes the “standard” model of responsibility, based on the idea of liability, and that of *risk*, based on indemnization. It points more clearly in the direction of the idea of *precaution*, exemplified by the Precautionary Principle, which aims at articulating responsibility in situations that are not adequately covered by the usual means of risk management in reason of the radical uncertainties they generate, involving fundamental value judgements, as is the case of contemporary technological innovations (Stirling 2017).

In more recent times the well-established liability model and the risk model have been integrated by the precautionary principle, since the unpredictable long-term effects of technological innovation defy the possibility to find an identifiable author of the action (by attributing the fault) or the possibility to rely on knowledge in order to anticipate its possible outcomes (through risk management measures).

The Precautionary Principle is a normative reference invoked precisely in the situations of radical uncertainty generated by the processes of techno-scientific innovation. In particular, precaution is invoked “where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.” (United Nations Conference on Environment and Development 1993).¹

It emerges clearly that the precautionary approach is fundamentally different from the standard legal approaches to responsibility as it leads to incorporate considerations going beyond the textual dictates of positive law (Boisson de Chazournes 2009, 163), disrupting the logic of the two former models of legal responsibility. Instead, the precautionary logic configures responsibility along the ethical idea of a decision in a given situation (Ewald 2001), which reconnects responsibility to the agent and more fundamentally focuses its semantics on the engagement of the agent. This element makes the case for the relevance of the reflections of Ricoeur on a responsibility strongly connected with the agent.

4. Responsibility as Responsiveness

The qualifying feature of this sense of responsibility is the distinctive element of personal commitment, which goes beyond the “morality of duty” typical of the law and rather aligned with a “morality of aspiration” distinguishing ethics (Fuller 1969). Along with Graham Haydon we could designate this as “virtue-responsibility”, which refers to some personal quality of the agent, be it a capacity or a disposition (Haydon 1978, 46). This implies the idea of “taking role-responsibility seriously” (Cane 2002, 32) as it makes reference to a proactive engagement that extends further than simple compliance with an obligation.

This declination of responsibility closely echoes the prospective idea of responsibility evoked by Ricoeur, in particular as it is eminently proactive rather than reactive, and is essentially characterized as a disposition of the agent, since it implies “a willingness to understand and confront the other’s commitments and concerns with ours, to look for a possible terrain of sharing. It entails readiness to rethink our own problem definition, goals, strategies, and identity” (Pellizzoni 2004, 557).

In its prospective declination, responsibility counts more as an attitude than as an obligation, and therefore it is strictly linked with the identity of the legal subject, in the sense of his or her self-understanding as a responsible agent in the multiple relations with the others. As a capacity or disposition, responsibility is more relevant in that it is assumed in an active or even

proactive manner, more than as something that is ascribed to the subject afterwards and from the outside.

In contrast with liability or accountability, responsiveness implies behaviors and practices that extend over and above legal requirements and which therefore has to be fulfilled with voluntary, extra-legal engagements: this takes responsibility far from the logic of responding to a charge (reaction) typically associated to legal responsibility, and gets it closer to the logic of responding to a call (response) not linked to legal duties and obligations.

Ricoeur's reflections can help in disentangling yet another declination of the proliferating responsibility rhetoric, and in distinguishing what are the conditions for unfolding the potentialities behind the idea of "responsible" innovation, in particular figuring innovation in other terms than a purely technical advance and introducing the reference to wider historical and societal dimensions (what once was included under the idea of "progress," which includes a wider societal vision, richer than the idea of "innovation," which is more technically framed).

5. Recognizing Responsibility Towards the Other

This prospective declination of the idea of responsibility requires a subject recognizing its responsibility towards the Other. This way of framing responsibility attracts into the discussion the ideas of identity and recognition, on both of which Ricoeur's reflection offers significant contributions, since it calls into consideration the self-comprehension of the agent and its relationship to the others.

In particular, considering responsibility and its subject through the idea of recognition leads to frame responsibility within intersubjective dynamics; in doing so, Ricoeur follows closely Honneth's "struggles for recognition" but he draws different conclusions, as for him recognition does not necessarily lead to conflict, but contemplates also, besides the conflict, the possibility of a pacific confrontation.

In *The Course of Recognition* Ricoeur states that recognition involves simultaneously the other person and the norm: “as regards the norm, it signifies, in the lexical sense of the word, to take as valid, to assert validity; as regards the person, recognition means identifying each person as free and equal to every other person” (Ricoeur 2005, 197).

This implies that the responsible subject cannot be entirely defined as the designatory of the formal legal imputation of responsibilities, since this way the legal subject, in Ricoeur’s words, acquires a “dialogical and institutional structure” marked by the triadic relation “I-you-third person,” which is mediated by different “orders of recognition” (Ricoeur 2000, 5–6).

Following Ricoeur’s explicit suggestion, the capacities of the self need to be actualized through the “continual mediation of interpersonal forms of otherness and of institutional forms of association in order to become real powers to which correspond real rights” (Ricoeur 2000, 6). The connection between universal rights and the capacities of the subject of rights is the product of a concrete “struggle for recognition” (Ricoeur 2005, 152–153) which is mobilized by the indignation subsequent to mis-recognition. Here it emerges clearly how responsibility is to be understood primarily in terms of a capacity of the self which is both reflexive and intersubjective, rather than in the purely legal terms of imputation: The term *responsibility* therefore covers self-assertion and the recognition of the equal right of others to contribute to advances in the rule of law and of rights (Ricoeur 2005, 200).

Taken in this perspective, responsibility appears as a specific form of capacity (responsiveness) characterizing a fully-fledged subject of rights, namely the idea of responsiveness, which is strictly interconnected with the narrative identity of the Self, this way taking the idea on responsibility beyond the limits of the strict morality of the duty, in the direction of an ethics of care.

6. The Semantic and Pragmatic of a Capable Agent

Ricoeur has repeatedly stressed the need to understand responsibility as the last stage of a triadic ethical concept that is triggered by the linguistic relationship between two actors. It is precisely

language that represents the first stage of the process of making an individual responsible, since it is through the recognition of one's ability to designate oneself that one becomes a person. On the basis of Strawson's analyses, Ricoeur adds to this basic process of individuation, the abstract form in the semantics of psychic predicates, i.e. the fact that certain characteristics can be recognized beyond their concretization in a specific person. Through the institution of language that entails universal characteristics, Ricoeur aims to transpose to the "other" the recognition of the characteristics of an individual. Accordingly, a subject can assume that a certain type of property that he attributes to himself can be equally found in other subjects. This construct is formed on a semantic basis of recognition that emancipates itself from the I and the You in favor of the Self. The figure of the Self makes it possible to formulate a communicative reflection between the I and the other as a unifying figure of differences. This is how the Self plays a crucial role in the construction of the "ethical person." Only through the recognition of this initial but essential link can, according to Ricoeur, the ethical personality be developed in the direction of a responsible approach.

The next step, for Ricoeur, is the one that brings the subject into the practical sphere where relations with the other become the domain of the legal and moral sphere. It is here that responsibility is formed as the capacity to discern the right and the good. Responsibility is in fact triggered by the passage from the locutory act (I am) to an action aimed at exerting an influence externally. Inasmuch as one individual acts, he wields power over someone else. An action, according to Ricoeur, is always done by someone and suffered by someone else. It is to this dissymmetry that the action triggers, and to the violence potentially inherent in it, that responsibility is called to answer as a model of safeguard.

However, in the Ricoeurian architecture, with the advent of moral duties, the cruciality of the intersubjective linguistic dimension does not disappear, but rather passes from an abstract and semantic dimension to a pragmatic one. The bi-univocal relationship between language and action that Ricoeur never stops highlighting is of particular relevance for our analysis. On the one hand, Ricoeur urges a more substantial use of language to understand agency because, if not everything is language, everything in experience does not access the sense but under the condition of being brought to language (Ricoeur 1994, 82). On the other hand, language must be

solicited in its pragmatic dimension, where the illocutionary side represents its true nodal force and its ethical value. Affirmations such as “I promise” or “I will be responsible” imply a series of behaviors and actions that, while generated in a linguistic dimension, transcend it in the direction of a pragmatic ethics. The grammar of the Self applied to the sphere of practice, must be concretized in a dialogue that builds on the concrete and specific challenges of an interlocutory context (Ricoeur 1994, 84).

7. The Role of Institutions in the Pragmatic of Recognition

The difficult relationship between responsibility in a retrospective and fundamentally juridical sense, with the ability to go further, in the direction of care, of a virtuous approach, is what Ricoeur underlines with lucidity and to which he tries to offer a solution through a modular structure of the ethical personality. Similar to the linguistic relationship, the ethical process cannot be limited to the I/You relationship of the friendship model. First of all, this is the case because this model risks dispersing the ethical unity into fragmented forms of relationship that would not be immune from criticisms of relativism. Secondly, a model of ethical relationship based on the I/You couple requires a physical presence that today's global and plural societies make unrealistic. How can an I relate to the myriad of You present in the external reality in the same way in which I interact with a friend?

Ricoeur understands very well that the relationship between I and You needs a mediation in the practical dimension as well as it did in the linguistic one. The solution for him is to transpose his linguistic construction, where the semantic relationship between the “I” and the “You” is sublimated in the Self, to the practical interactions regulated by the moral and juridical sphere. To the relationship between You and I on the basis of a friendship model, Ricoeur then adds a third vector. In this way he manages to respond to the challenges of pluralism and allows us to think of a concept of responsibility capable of emancipating itself from its legal constraints without getting lost in the ineffectiveness of relativism. It is once again through the role of the institution that Ricoeur attempts to resolve the relationship between the I and the infinity of the You. According to Ricoeur, the institution plays different roles and somehow exemplifies the

role and complexity of responsibility as an agency. The institution is a sort of field where the “I” and the “you” meet and can interact following a series of rules that outline their space of action. A clear example that Ricoeur offers is language that, although used by two or more actors, also exists beyond its users. The rules of the language are therefore helpful to regulate the interaction and to delimit the space of *manoeuvre* within which issues must be evaluated. As in the game of chess, the use of rules does not predetermine the outcome of the game. As well in language, rule-based communicative exchanges cannot predict whether they will take the form of an altercation or an agreement (Ricoeur 1994, 89).

8. Between Tradition and Innovation

However, institutions, by providing the actors with a set of rules where they can interact, express also another implicit function. In fact, the institution takes on the role of a link between tradition and innovation. On the one hand, it exemplifies all the innovations that have been made before and that have found a consensus in a given historical-geographical context. As Ricoeur sums it up beautifully: “To be born is to appear in an environment where words have spoken before us” (Ricoeur 1994, 86). On the other hand, original situations may require an innovation of the institution itself in order to represent an up-to-date instrument of dispute resolution. A process that respects tradition must be closely linked to innovation. An innovation that for Ricoeur must also turn to the past, to those promises that have not been kept, cannot disregard the use of this critical posture for the future and the challenges it brings with it (Ricoeur, 1994, 101).

It is therefore not difficult to draw a parallel between the role of the institution *tout court* and that of responsibility as a specific institutional arrangement. In fact, Ricoeur reminds us, institutions should not be understood in their purely legal or political sense but as pre-ethical entities that give meaning to human praxis (Ricoeur 1990, 125). Just as language, while maintaining more or less stable structures, is enriched by the contextual use of it, so too the concept of responsibility, clear in its restrictive dimension, develops new senses according to the context of its use. Even if two subjects or a subject faced with uncertainty know the rules within

which to move, they will be responsible for translating them into ethically appropriate actions (Gunther 1993).

In this sense, it is important to remember that for Ricoeur, the institution, or in its most recent variant, the symbolic order, is not immediately accessible to everyone. The vulnerability of those who are unable to access the symbolic order, to achieve their own autonomy is therefore for Ricoeur, the objective of the principle of responsibility (Ricoeur 2007). Ricoeur tells us: “To be able of entering into a symbolic order is to be capable of entering into an order of recognition, of inscribing oneself in a ‘we’ that distributes the and apports the authority of the symbolic order” (Ricoeur 2007, 88). Responsibility is always intersubjective, but this relationship must be integrated in an impersonal structure involving anyone (*chacun*) living under the same laws. And it is the dimension of politics that can best guarantee the necessary stability to the system as well as the access to this symbolic order. And it is here that the circle, which started from the semantic use of recognition, developed within the legal-moral sphere, closes with the formation of the ethical person through a cooperative basis of recognition.

The loss of credibility of traditional forms of authority requires “a patient reconstitution of a consensus of a different, less dogmatic, less univocal and hence more deliberately pluralistic type, meant to knit together tradition and innovation” (Ricoeur 2007, 87). The public space is what for Ricoeur, on the basis of the insights of Hannah Arendt, expresses the condition of plurality that results from the extension of interhuman relations to all those whom the relationship between the I and the you leave out (Ricoeur 2007, 73).

9. The Paradigm of Gift as Innovative Responsibility

However, we cannot omit to underline one last aspect that once again highlights the virtuous, subjective and active characterization of Ricoeurian responsibility, which translates the power of creative subjectivity of phenomenological origin into a stable structure. We have seen how responsibility has a hard basis of objective regulation of relationships. In this sense, responsibility in the sense of imputability or accountability is a relationship of reciprocity based on the principle of equality. However, according to Ricoeur, this understanding is reductive

because it risks ousting the creative contribution of the subject and his ability to go beyond the set of established rules. Accordingly, it risks limiting not only the practical effectiveness of responsibility in responding to new challenges but also the confidence in the positivity of its role. According to Ricoeur, therefore, in order for responsibility not to be reduced to an objective or repetitive relationship of reciprocity, and instead to be able to motivate creative and positive approaches, it needs to preserve its spontaneous and innovative nature. Within the analysis of recognition as an engine of interaction, in order to understand what can guarantee to it a sense and protect it from the criticism of being nothing more than a power struggle, Ricoeur proposes to take an alternative example to the logic of reciprocity.

The role of the gift with its paradigm focused on mutuality represents in his eyes this example. The gift is what for Ricoeur exemplifies a state of peace in the struggle for recognition because in some way it represents a model of recognition that has taken place. In this sense, the necessity of the gift in the architecture of recognition lies in its character of moral motivation. In other words, the tangibility of the gift and its alternative to the competitive model of commercial exchange makes it a source of inspiration and a moral impetus in the dynamics of recognition.

But what represents an interesting point for our analysis of a responsible agency architecture is the need, not only for there to be positive examples, but for responsibility to survive and respond to its nature via means of spontaneous actions, not linked to the logic of reciprocity, but inserted in the dimension of mutuality. These actions denotes Ricoeur, are crucial if we want to be bring back the unpredictable subjectivity, the *agape* within the impersonal relationship of global responsibility. This does not imply that we should disregard the objectivity aimed at maintaining an adequate level of justice. The gift, as well as charity and forgiveness, does not eliminate the reciprocity inherent in exchange, justice and the regulation of debts. It represents a surplus that somehow makes it possible for reciprocity to maintain its value necessary for reciprocity to remain alive. The logic underlying gift in Ricoeur's view, enables justice to be given "its boldness and momentum." The gift may or may not be reciprocated and no matter whether the attention is placed on the gift as an object or as a relationship, what takes on a nodal value is the guarantee, as Ricoeur suggests, that taking a responsible attitude of care always has value even if it does not necessarily have a price (Ricoeur 2005, chapter 5) .

10. Conclusion

Ricoeur's reflections on responsibility are highly fruitful in understanding the challenges that innovation poses to the agency already proven by the tensions of pluralism. How can we maintain, Ricoeur asks, a right balance between the necessary assumption of responsibility and its radicalization, which risks dispersing its motivational force? (Ricoeur, 2000, 33). How can we use the instrument of responsibility in a context of uncertainty such as that of technological innovation? The answer that the French philosopher offers us at the end of his reflections is one that suggests understanding the ethical person as the result of a relationship of recognition and interaction within the right institutions in an illocutionary manner. The resulting conceptual framework is one that promotes the linguistic interaction within structures that regulate relationships of recognition and stimulate the efforts of care towards himself and the others that every subject can put in place (Ricoeur 2000, 90).

It is clear that technical processes and thus innovation cannot be considered intrinsically responsible only through the concrete mediation of interpersonal relationships, in which the crucial role of the "responsible" subject cannot be substituted by the mechanisms of a formal framework, that technology can be evaluated in its responsibility. It is therefore clear that the concept of responsibility developed over the years by Ricoeur is embedded in an architecture of the capable agent, in a relationship with other individuals within the appropriate institutions. For Ricoeur, responsibility must be able to hold its various dimensions together and place them in a narrative relationship with other individuals (Gianni 2019). In this sense, Ricoeur's concept of responsibility can be well reconciled within the framework of RRI, which is able to combine respect for existing rules with the challenges arising from the uncertainty of innovation in a pluralist context. It is through the responsibility to mitigate the vulnerability of others and the relentless attempt to include the weakest or excluded ones that "responsible innovation" frameworks, such as RRI, will be able to respond to the challenges to which they are called.

The renewal of the concept of Responsibility proposed by Ricoeur acquires a deeper meaning with reference to the subject of this responsibility, a subject assumed in its ethical and

phenomenological constitution and not confined to a pure legal abstraction. In this respect, the renewal of the semantics of responsibility under the sign of the idea of capacity and imputation, with the contemporary revision of the fundamental legal anthropology under the sign of attestation proposed by Ricoeur, have a crucial theoretical relevance in articulating the legal idea of responsibility beyond the idea of obligation and reaction, along the idea of a projection of responsibility over the future, which is strictly intertwined with the idea of a capable subject recognizing and assuming its responsibility towards the Other.

Notes

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¹ Principle 15 of the Rio Declaration on Environment and Development (Rio de Janeiro, 3-14 June 1992). UN Doc. A/CONF.151/26, vol I, annex I, 1992. After having being consecrated as a general principle of European law by the EU Court of Justice, despite being originated in the context of environmental regulation, the precautionary principle is now enshrined in article 191 of the Treaty on the Functioning of the European Union (under the title dedicated to the Environment).