Governance of Responsible Innovation

GREAT – 321480

Model of Responsible Innovation in Research			
Deliverable No.		**D 5.3**	
Workpackage No.	**WP5**	Workpackage Title	**Gap Analysis and Proposition of Framework**
Task No.	**T5.3**	Task Title	**Development of a Model of responsible innovation**
Start Date:	**M25**	Revision Date:	**January 2016**
Authors		**Robert Gianni**	
Contributors		**Philippe Goujon, Bernard Reber, Veikko Ikonen**	
Status (F: final; D: draft; RD: revised draft)		**F**	
Distribution		**Public**	
Document ID / File Name		**GREAT_D5.3_ModelOfResponsibleInnovationInResearch**	

Table of Contents

Executive Summary:

This deliverable summarizes all the previous achievements of the GREAT projects and defines a reference model for the application and implementation of Responsible Research and Innovation. It represents one of the main tools for the explicitation of the concept of RRI as understood within the GREAT Project. The Guidelines will translate the results together with the suggested measures described in this deliverable.

The following text has moved further in the analysis of an ethical governance for RRI. Relying on theoretical insights proposed in WP2, on the basis of the governance models proposed in D. 3.3 together with the two fold validation through case-studies and simulations techniques, we have outlined the main features of a RRI model. In a first step we have analysed once more, but at the end of a validation trajectory, the current approaches aiming at the definition of RRI. Through a critique based on the equilibrium, between validation and application of norms, and among different social domains, we have highlighted that the most important approaches tend to privilege one particular aspect, mostly the validation, i.e., objective, overlooking the importance of a contextual and therefore appropriate, i.e., subjective, impact.

Accordingly, instead of focusing on the development of abstract and impersonal procedures, which would fall into the same shortcomings, we proposed a model based on the dialectic between deliberation [1] and a reflexive participation, a remodelled example of comprehensive proceduralism. In this way we have emphasized the importance of promoting a co-constructive or co-creative governance model of responsible practices.

We have also promoted some practical tools in order to reach this objective. However, it is not simply a tool, or predefined action that could guarantee the successful achievement of RRI, but the contextual development of ethical issues on the basis of a pondered equilibrium among different 'logics' and different social domains.

The six keys, proposed by the EU Commission, can play a concrete role in pursuing such reflexive attitude.

1 See: Reber B., « Les risques de l'exposition à la délibération des autres », *Dialogue et pouvoir*, *Archives de philosophie du droit*, Tome 54, 2011, pp. 261-281; « Argumenter et délibérer entre éthique et politique », dans Reber B. (dir.), *Vertus et limites de la démocratie délibérative, Archives de Philosophie*, Tome 74, avril-juin 2012, pp. 289-303.

Introduction

The following deliverable represents a summary of previous investigations but also the final step of a research process on the notion of Responsible Research and Innovation. Because the main aspect that we have tried to understand is what kind of governance can provide Research and Innovation with the two main aspects necessary to make it a new consistent normative framework. These two aspects as we have emphasized in several occasions are the legitimacy of its norms and their efficacy. After having defined the framework in which RRI operates (or should do so) and after having understood a political methodology able to exploit the ethical and democratic potential embedded in this notion thanks to the deliberative intuitions developed in D. 5.2, we now need to assemble these indications and apply them to RRI in order to show how the process could and should work. This deliverable thus is both, the proposal of a theoretical model of RRI and its pragmatic application.

We will follow a path that is articulated along three steps.
Firstly, we will go back to the **different proposals concerning RRI** frameworks in order to scrutinize them from the new perspective gained after the empirical studies. We will highlight how they all turn out to be incomplete because of their highly procedural nature, which does not manage to include a clear and explicit normative grounding.
This will lead us to a more general understanding of the limits of previous "paradigms" and the general (although we find exceptions) tendency of promoting an objective, procedural side, disregarding the subjective aspects.
Secondly, we will briefly recap an approach that tries to politically overcome those limitations according to an ethical perspective. In this sense we will recall the **deliberative approach to ethics** as outlined in the two previous deliverables.
Lastly, we will show the main **features** of this model following comprehensive proceduralism and how it responds to the challenges of legitimacy and efficacy embedded in RRI.

This model does not intend to represent a substantive solution to the problems of RRI but only the basic guidelines in order to tackle them in a context-based way.

Governance Paradigms for Science and Society and the novelty of RRI

One of the issues that we have previously underlined, with regard to the substantive aspect, is the question concerning the criterion we could adopt when deliberating, in order to develop responsible approaches to research and innovation. That is, how can we decide which norms, values or rules can guide us in a situation in which an ethical issue generates some kind of moral or epistemic clashes calling for reflexive participation?

What have emerged quite clearly during our investigations are the dangers connected to the term responsibility, because of its breadth. The concept of responsibility can play a positive role in responding to the development and emergencies connected to the technological progress.

One of the main aspects that underlie the distance between science and society is the difficulties of governments and institutions in general to respond to those changes (Dewey, 1954). Institutions that should embed shared values and norms fail to keep up with developments that are most of the times unforeseen. Accordingly, individuals are faced with these developments of which they often do not understand the consequences or the potential impacts. Given the impossibility for individuals to be omniscient (Dewey 1954, p.158), the already existing epistemic conflicts and moral clashes (Von Schomberg, 1993), and the difficulty of institutions to respond in an appropriate way to novelty, progress is seen as a technological, blind development aiming at pure economic exploitation. The outcome is in fact the impossibility by individuals to understand whom and according to what reasons drives developments in R&I.

The tendency to conceive as a potential threat something that cannot be understood is nothing extraordinarily new. But such distance, which most of the times is only perceived and not detected, leads to a scenario where individuals withdrawal from reality. “There is a social pathology which works powerfully against effective inquiry into social institutions and conditions. It manifests itself in a thousands way; in querulousness, in impotent drifting, in uneasy snatching at distractions […] ways which depress and dissipate thought all the more effectively because they operate with subtle and unconscious pervasiveness” (Dewey, 1954, pp.170-171). The role of institutions thus is exactly the one of mediating between highly technical knowledge and the society that will have to cope with that knowledge. Institutions should

assume this pedagogical role by providing the tools and the capacity of individuals to reflect.

Nevertheless, the dilemma remains on how to merge the increasing speed at which novelty arise, which causes problems to the institutions to respond promptly, and the necessity of the latters to play their envisaged role. The crucial point is how to merge the two criteria of legitimacy and efficacy in a process that seems to be untameable.

As we have seen in D. 3.3, we can divide governance approaches according to a fundamental paradigm on which they rely. Each governance approach entails a specific idea, follows a particular goal and embodies a different form.

a) The technocratic-instrumental paradigm is the combination of a technical expertise provided by a restricted community and of the instrumental power of technical skills for the determination of social rules.

b) The ethocratic-normative paradigm combines an ethical expertise, provided by a restricted community, and the normative power of moral will for determining social rules.

c) The epistocratic-cognitive paradigm can be defined as the combination of epistemic expertise together with the cognitive power of scientific knowledge.

d) The democratic-inclusive paradigm is the combination of democratic participation and inclusive power of political opening to society in the determination of social rules and choices.

The common trait of the first three paradigms is to maintain the dispute at an epistemic level without facing the actual scenario of science and society, caught in epistemic debates. Instead of looking for shared, constructive and intersubjective solutions, calling for a substantial change, these three paradigms develop along a fragmented, atomistic understanding of society.

	Technocratic-Instrumental Paradigm	Ethocratic-Normative Paradigm	Epistocratic-Cognitive Paradigm	Democratic-Inclusive Paradigm
Idea	Optimality of means	Justification of norms	Selection of the best	Participation of society

Stake	Efficiency of decisions	Legitimacy of rules	Wisdom of choices	Inclusion of citizens
Form	Technical positivism	Ethical universalism	Epistemic elitism	Political neutralism or neutrality
Example	Saint-Simon, Comte, Popper	D'Holbach, Kant	Plato, Mill	Rawls, Habermas, Latour, Bourdieu
Limit	Axiological appraisal of choices	Empirical context-testing	Hierarchic determination of wisdom	Hermeneutical relationship to traditions
Norm-related problem	Factual 'devaluation' of norms, unethical reduction	De-contextualised abstraction of norms, no effective impact	Cognitive embedding of norms, epistemic closure	Neutralization, formalization of norms contents

In D. 3.4 we have understood that we find two main problems when it comes to the development of research and innovation. These problems are obviously tied to one another. The first one is that cultural values are not taken sufficiently into account. The second one is that we seem to lack institutional mechanisms able to develop research and innovation accordingly. If the latters are left for the individuals to manage, without any wider understanding of the aims and meaning of a technology, then the process cannot be developed according to a social breadth and will be the outcome of a partial perspective.

But these two problems are only expression of the plurality that crosses society and that needs to be addressed in a structural way. It is not sufficient anymore to make an assessment on a technology or to rely on a technical judgment.

Until now several attempts were proposed in order to close this gap but they turned out to be insufficient for different reasons. Either they were too procedural, failing in

the possibility to grasp substantive aspects and losing efficacy, or they were too strongly based on a specific normative asset, being unable to include wider or alternative perspectives. As explained in D.2.2 and D.2.3, Technology Assessment, Constructive Technology Assessment, Participatory Technology Assessment, Value Sensitive Design, Corporate Social Responsibility are only some among the numerous important evaluative methodologies according to which the function and impact of a specific technical issue can be measured (Gianni, 2016; Owen et al., 2013).

The concept of responsibility is supposed to help in reducing this distance by providing a tool that can be flexible enough to be adapted to different circumstances without losing its general aim that is to produce progress for society.

Embedded in the acronym of RRI, responsibility should be able to entail both legitimacy and efficacy. RRI is, how we have seen on D. 2.2 and D. 2.3, a new framework addressing an old problem (Gianni, 2016). Passing from science and society RRI is supposed to incarnate efforts of developing science with and for society.

However, the concept of responsibility is still highly disputed and sometimes partially defined considering its wide polysemy (Ricoeur, 2000; Owen et al., 2013; Vincent et al., 2012; Gianni 2016). As we have seen also in D.2.2, responsibility has different acceptions defining its timing, its moral character or its cognitive borders. As stated by Reber & Pellé, "first, the various interpretations of responsibility - more precisely moral responsibility - that have been developed for decades by moral philosophers are of different relevance to understand the problem of RRI. For instance, the **causal** (logical) dimension of responsibility has to be distinguished from dimensions of **blameworthiness, liability or accountability** (here, some authors oppose causality and moral responsibility, while others defend compatibilist positions). Or, next to definitions that insist on **sanctions**, other understandings claim for a focus on **positive capacities** such as **care** or **responsiveness**. […]Responsibility is conceived as imputed to someone for his or her actions, whose negative outcomes or harms have to be compensated or **repaired.** In this **legal-oriented** interpretation of responsibility, it is possible to distinguish between **blameworthiness** (when A can be blamed for an outcome X, for instance, a car accident) and **liability** (A is liable to pay for the damages caused by outcome X). In both cases, someone is held responsible for her actions or decisions that happened to break the law or to infringe a social or a moral norm"[2]. D. 2.2 emphasized all the

2 D. 2. 2, p.10; Pellé S., and Reber B., From Research Ethics towards Responsible Innovation, ISTE-international-Wiley, 2016; Pellé Sophie and Reber B., « Responsible Innovation in the Light of Moral Responsibility », Journal on Chain and Network Science, Special Issue: Responsible innovation in the Private sector, 15 (2), 2015, pp.107-117..

problems connected to a purely negative conception and the necessity of shifting towards a more positive understanding of the term.

"Although this conception of responsibility is a bedrock of social order, it encounters several limits that come from its general **neglect of the internal capacities** of individuals to mobilise their will to act in a responsible way. It is backward looking and relies on a norm coming from outside that has the potential of influencing someone's action through the threat of sanctions. This leads to a misconception of responsibility in at least three ways. Responsibility is (a) bypassed, (b) diluted, and (c) amalgamated with accountability:

a) Focusing on the possibility to impute future damages on the basis of the available knowledge contributes to build a perspective of responsibility that is purely instrumental. There is no normative involvement of actors as the only driver of their behaviour will rely on the **fear of financial or legal penalties**.

b) The second type of problems derives from the **individualistic** overtone of negative and backward looking interpretation of responsibility, based on a strong linkage between individual and outcomes. While considering innovation or research, it is often difficult to isolate who is cause of what. This problem, sometimes labelled as the "**many hands**" issue also results from the future being uncertain or ambiguous, the consequences of emerging technologies being often impossible to forecast. Again, the purely **consequentialist** approach of responsibility collides with its own frame: in seeing responsibility as the result of a calculus (the assessment of the outcomes), one is confronted with the time, space and interactions limits that seem reasonable to assess guilt.

The complexity of the problem is illustrated by the shift that occurred in our use of terms such as 'Responsible Research' and 'Responsible Innovation', which relate to the field of technology, applied science and engineering. From the purely individualistic interpretation of responsibility, we moved to a conception where the adjective "responsible" is now also ascribed to **the complex network** of actors, institutions, public policies that is entailed in an innovation process.

c) The s**anction-oriented interpretation of responsibility** shows that there is a conceptual displacement from imputation to risk by which responsibility ends up as conflated to accountability. Indeed, the idea of solidarity against risk that led to the advent of insurance systems in the 19th century and to 20th century's welfare state contributed to alter the pure understanding of responsibility as implying **obligation and repair in the case of fault**. The institutionalisation of the management and prevention of social risks (by means of insurance and social-security systems) replaced the reparation of an individual fault. As for the dilution and avoidance of

responsibility, the conceptual reduction of the analysis into a paradigm of accountability and risk prevention, implies a consequentialist framework that is confronted with the limited possibility of evaluating outcomes. […]In this context, the current conceptions of responsibility that focus on **responsiveness, care, or moral capacities**, offer a way to overcome some of the difficulties we pointed out with negative meanings of responsibility. More positive and prospective understandings of responsibility assume that individual not only pay for the (possibly wrong) things they did but engage in a process through which they take care of others (other human beings, future generations, non-human beings or the environment). In this sense, positive meanings of responsibility will provide with relevant foundations to a conception of RRI" (D.2.2, pp.11-13).

However, as shown by Gianni, all the different acceptions cannot be taken in an isolated way, but need to be understood as components of one broader and more flexible concept (Gianni, 2016). Moreover, the political management of the concept allows room for doubts and scepticism (Ewald, 1986). The baleful hypothesis is that the adoption of such reference is made in order to promote and establish an individualistic model based on (neo) liberal economic assumptions. Responsibility is then seen as conceiving individual contributions in ways that are disentangled from societal and institutional structures charging subjects with faults and duties of which they should not be responsible for. The threat is seen in using responsibility as a moral justification for economic or elitist purposes instead of developing social forms of equality. This kind of operation is detected by Ewald in the political management made by liberal waves in France until the end of the 19th Century. The politics of responsibility was based on two assumptions, according to Ewald, "that no one dumps his charges on others, and the possibility of collaborating for economic purposes" (Gianni, 2016; Ewald, 1986). In this sense Ewald emphasized the economic exploitation of the concept of responsibility serving as a legitimization for a specific and partial vision of the world.

Other approaches define responsibility as the legal and moral reference (Hart, 2008; Kelsen 2005; Van de Poel, 2012; Vincent, 2012; Ricoeur, 2005;) to assess R&I, but they do not indicate any normative reference in order to apply responsibility outside of a legal framework. Thus, they cannot propose efficient solutions to overcome the reduction of responsibility (and ethics) to legal compliance.

Nevertheless, other interpretations of the political usage of responsibility are equally possible and are similarly valid. As we have suggested in D.2.2 and D. 5.1[3],

3 http://www.great-project.eu/D5.1.

responsible research and innovation can be understood as a development of previous paradigms and as an institutional effort to promote an ethical attitude with respect to new challenges. Accordingly, responsibility would be the transcendental reference in order to interpret all sorts of approaches to research and innovation without the need to establish rules, norms or frames. These, as we have briefly hinted at, cannot be predetermined because they would lose both, legitimacy and efficacy. Furthermore, they could be inapplicable given the constant presence of disruptive innovation, which requires highly original solutions.

However, Ewald's preoccupation cannot be disregarded by abandoning responsibility to single individuals. If this aspect is clearly an important contribution leading to more pervasive ways of producing ethical R&I, it is also true that these individual efforts must be embedded in institutional measures of governance. To pretend that responsible behaviour are a matter of individuals, detached by the institutional conditions that enable them, means to lose the power to improve R&I in an ethical way.

In D. 2.2[4] and D. 2.3[5], we have briefly listed and criticised some of the attempts to express a correct interpretation of RRI. In those documents we were hypothesizing that most of them could not exhaust the needs and guidelines that a science with and for society entails. The reason motivating our analysis was that those attempts failed in addressing the context and its value-based perspective. On the contrary, they all preferred proposing some key words or procedure as the right functioning of RRI without taking into account if those same procedures would work in practice. They were all trying to propose a legitimate approach presuming that efficacy would come accordingly. Our empirical investigations showed us that the "legitimacy" of a process is not a necessary condition for its efficacy, and that the meaning or ways in which these two aspects can be achieved needs to be reformulated. If the case-studies approach helped us in understanding the moral necessity of inclusiveness in research and innovation, the simulation methodology applied in WP4 revealed that context participation has also a strong functional usefulness. CSOs collaboration, as an exemplification of this kind of approaches, is one but fundamental aspect for the scientific and ethical development of RRI. "CSOs are chosen as attractive partners for projects due to various capabilities they own: on the one hand, they contribute special RRI capabilities that help the projects reflecting upon societal needs and ethical issues, on the other hand, they provide SCI capabilities that help the projects in knowledge production. Having special RRI capabilities as well as

4 http://www.great-project.eu/deliverables_files/deliverables03

5 http://www.great-project.eu/deliverables_files/deliverables02

professional/scientific SCI capabilities makes the CSOs “masters of two trades”: hybrid CSOs” (D. 4.4, p. 46).

In this deliverable we are then going to reanalyse the main attempts to define RRI also from this efficacy perspective so to emphasize eventual limits and potential solutions.

Understandings of Responsible Research and Innovation

Among the different conceptualizations we chose to emphasize four of them as the most evident attempts aiming at proposing an understanding of RRI. These four proposals are different and resume the most common approaches to define responsible research and innovation. We could not include other examples but we believe that these four attempts express a wide range of possibilities.

René Von Schomberg

The first proposal that stands out among all the others because of its recurrence and its influence, is the one developed by **René Von Schomberg.** Von Schomberg developed a conception of RRI synthesized in a definition that is often taken as the reference model. According to him, “Responsible Research and Innovation is 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)” (Von Schomberg, 2013, p.63). This definition, often cited in other articles, covers most of the issues at stake with RRI. Von Schomberg places a strong emphasis on the processual aspect of RRI and he emphasizes how is exactly from a correct process that RRI could emerge rather than a product. Meaning that if we follow this procedure we will definitively obtain responsible products.

The bases for such trust are to be found in a communicative and rationalistic ground where we can identify the rules for promoting inclusive and reflective approaches. The activation of a responsible process of R&I is possible only if social actors and innovators or scientists engage in a reciprocal communicative manner, aiming at finding a solution to specific problems. Accordingly, communication must be settled at an early stage because guiding research and innovation becomes harder at a later stage. The degree to which such process can turn out to be successful will thus be determined according to a set of communicative criteria together with formal

references like the ones of acceptability, sustainability and social desirability. Leaving out of consideration the fact that these criteria could accord with each other and not stand in a clashing position, the clear reference to what these criteria means is not immediately evident. The substantial side of the matter is solved by Von Schomberg with the strong reference to "European values, needs and expectations" (Von Schomberg, 2013). For Von Schomberg, the normative references on which we can draw on are the one embedded in treatises developed and accepted at the European level like the Chart of fundamental Rights of the European Union[6], the Lund Declaration, or the Lisbon Treaty[7].

The particular and more general reference, to which Von Schomberg looks at in these documents, is the "societal perspective". "Economic prosperity and the anticipation that innovation yields positive anticipated impacts (such as the creation of jobs and growth) crucially become dependent upon the social context. The idea is clear; to steer the innovation process toward societally beneficial objectives. […] The Lund Declaration defines a type of justification for investment in research and innovation toward particular positive outcomes and underlines a justification for research and innovation beyond purely economic terms"(Owen et al., 2013, p.59).

It might be true that perhaps Von Schomberg refers to ethics as the legal compliance present in those treaties as he says that: "in an EU context this refers to a mandatory compliance with fundamental values of the EU Charter on fundamental rights (right for privacy, etc.), and the safety protection level set by the EU" (Von Schomberg, 2013, p.64). But it is also true that his reference to social desirability appears to go beyond this interpretation meaning that it "captures the relevant, and more specific normative anchor points of the Treaty on the EU, such as 'quality of life' equality among men and women' and so on" (Von Schomberg, 2013, p.64). For Von Schomberg it is not a matter of constructing new norms or institutional devices but to finally and better apply already existing normative references to the process of research and innovation. "[It] would simply require a consistent application of the EU's fundamental values to the research and innovation process, as reflected in the Treaty on the EU" (Von Schomberg, 2013, p.64). Through this procedure of application of 'European values' to European research and innovation, the latter should become responsible.

For Von Schomberg, the main strategy is to include in RRI aspects that can go beyond mere economic calculation, towards more general societally beneficial

6 http://www.europarl.europa.eu/charter/pdf/text_en.pdf

7 http://www.vinnova.se/upload/dokument/Verksamhet/UDI/Lund_Declaration.pdf

objectives. Accordingly, this reference will serve as a way to assess the goodness and rightness of an innovation process.

The theorization proposed by Von Schomberg touches different points of the questions at stake with RRI. It is not by chance I believe that this model is one of the most cited and used in literature and scientific debates. He is surely one of the few, if not the only one, to provide the discussion not only with the need of a normative stance at the basis of RRI, but also with a clear indication on where to find those norms and values. The normative need for driving policies is an aspect that makes explicit how RRI cannot work only in a procedural or even less in a mere functional way. As he had already emphasized earlier on in his production, the normative anchor point cannot be limited to legal compliance because, although fundamental, cannot by principle address certain problems. Von Schomberg also does not dismiss the importance of an economic understanding of research and innovation but he clearly points out how this cannot be technically driven. In this sense, he grasps the importance of taking into account contextual issues although this 'context' must be the one framed in EU charts and treaties.

Also from a procedural point of view Von Schomberg's conception has the merit of adopting tools and methodologies coming from previous models. The suggestion to look at Technology Assessment, Precautionary Principle together with the use of Codes of Conduct, appears as a thick intuition for the development of RRI.

In other words we can observe an attempt to merge a highly procedural methodology, base on communication, with values and norms present at the European level.

Although Von Schomberg's proposal is one of the most interesting and articulated, we still have the impression that this determination of the relations between innovation and society remains within a dichotomic trajectory that does not enable to raise towards an ethical dimension where the contextual issues can be acknowledged in a thick way.

It is true that he does refer to social desires and needs, to the ethical acceptability, but it also true that these aspects can be seen as clashing issues. The definition of what social desires could imply is a problem that cannot be addressed by resorting to a procedure. The pluralism embedded in the European association is hardly manageable, without the risk of manipulation or imposition, according to a communicative structure that does not depart from a contextual dimension.

This critique does not move from the worry for a legitimacy that is not guaranteed by communicative procedures. It is grounded in the fact that any procedure that

ignores or exploits contextual issues will not gain the necessary efficacy for the process to work.

We might object to this that Von Schomberg gives an important role to the values of European citizens given his focus on treaties embedding those values. However, It might be useful to underline a factor that undermines this reference point. “The Treaty of Lisbon, for instance, to which Von Schomberg refers, is a chart of norms and values that have not passed a large, democratic screening, given that they were edited by a minor group of policy-makers and never went through a general agreement like a referendum. Therefore, to use these values, established by a political elite, a minority, in order to solve problems that concern society at large, appears as an instrumental and quite naive way of gaining legitimacy, not to say efficacy” (Gianni, 2016, p.26) Hugh Baxter has brilliantly reported the strong criticism made by Habermas on this apparently minor aspect that undermines every reference to the Treaty. “Habermas’ language, criticizing the undemocratic character of the Lisbon ratification process is extraordinarily strong. While the “intention” of both the Constitution and the Lisbon Treaty was “to promote a higher level participation of citizens during the constitution-founding process”, there was, on the contrary, the clear appearance of the “elitist character of a political process which is remote from the populations” establishing the decoupling of Europe from the will formation of its people (Baxter, 2011).

Therefore, this document, that is the result of an elitist procedure, should be one of the references for promoting and assessing a process like RRI, which is meant to be based on inclusion and engagement. It is not difficult to understand that the values and substantive references needed to understand the social desirability or societal needs will then be the expression of some experts-driven decision. In other words, the contents on which a procedure can be unfolded are contents that are established by means of the same procedure but a restricted level. It appears difficult then, to hope for such process to gain the efficacy is looking for. If a reference to the context is made, this context is an artificial construction that perhaps does not reflect the reality. But there is also another aspects emerging from the proposal of a pre-established model like Von Schomberg’s one. Even not considering the conditions of establishment of a Treaty, any fixed model could encounter difficulties when faced with disruptive novelties. The necessity to address innovation with a normative reference does not mean that those norms should be predetermined or unchangeable. On the contrary, is exactly the process of formation of those norms that could open the way for their application.

This kind of procedural approach also share the faith in a kind of necessary positive outcome given certain conditions. It is a shortcoming that emerges from the hope

that different social actors will necessarily interact and agree if they do so by means of abstract and neutral procedure. However the distance between the justification of a norm and its application it wide especially when it comes to two norms, which at first sight appear correct and then clash (Habermas, 2003; Gunther, 1993; Gianni, 2016). In some ways, we could detect an incomplete attempt for wanting to elaborate a perspective that is inclusive and favors engagement, but in not aiming at re-formulating the political structures and processes by which society develops and which undermines those objectives.

Besides, the role of an institutional dimension can be underlined in a more marked way, pointing at, as rightly suggested by Habermas, the importance of the production and democratic management of processes. The conditions of application of a process or product should be conceived as conditions of possibility themselves. That it to say that, the institutional arrangement should drive concretely the emergence of values and the construction of norms, avoiding their exploitation or imposition.

Owen et Al.

Richard Owen, Phil Macnaghten, Jack Stilgoe, Mike Gorman, Erik Fisher and David Guston, constructed another definition of RRI that has found the favours of the scientific community. They defined 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). Their definition partially relies on Von Schomberg's one and is intentionally kept broad in order to facilitate further reflexions on the concept of RRI, considering the early stage of its development (Owen et al., 2013). Nevertheless, they indicate some specifications through the ingredients that should compose RRI. RRI is supposed to *anticipate* both intended and unintended impacts of R&I. It must *reflect* on underlying purposes, motivations and potential impacts, what is known and what is not known, and associated uncertainties, risks, areas of ignorance, assumptions, questions and dilemmas. It should then "*deliberate* visions, purposes, questions and dilemmas collectively and in an inclusive manner". And lastly, as a crosscutting attitude, RRI needs to be "*responsive* to issues related to R&I in an iterative, inclusive and open manner" (Owen et al., 2013, p.38).

As we were introducing above, these four 'dimensions' of RRI, anticipation, reflection, deliberation and responsiveness, are understood in a way which "aligns well with the definition of RRI proposed by Von Schomberg" (Owen, 2013, p.39).

However, there are indications that differ from Von Schomberg's communicative conceptualization. Owen et al., open the semantic space of responsibility, highlighting its existential articulation and giving continuity to the tradition that sees in responsibility an ethical imperative (Jonas, 1979). In particular the reference to care implies a different vision of the concept of responsibility that affects also the general understanding of the model (Grinbaum, 2013). The concept of care recalls deep existential grounds that touch the agent in his intimacy as a human being[8]. To take care of something is one of the acceptions often adopted in order to express an understanding of responsibility that goes beyond current laws and regulations. It is an invitation to personally commit to an action in order to cover all those aspects that usually not imposed by predetermined frames. Every agent, in this sense, in order to care about the management of science and innovation, must take in charge his own acting in considering future consequences. The consequences of actions, according to this understanding, will affect the entire current and future collectivity.

Owen et al., conceptualization appears deeply interesting for this reference to individual commitment in a sense that goes beyond the framed, the 'given'.

However, as they explicitly stated, the authors do not propose more precise ideas with regard to the political and institutional applications by which such perspective should be realised. Furthermore, it is not clear how we should tackle and solve the thorniest problems, which have made throughout the years other similar attempts insufficient. The epistemic conflicts, the moral dilemmas and the space of meaning that goes into the realm of norms do not hold a central place in Owen et al.'s conceptualization. All the solutions will emerge thanks to a set of rules or indications pertaining to their procedure. In other words, the indications on the norms composing those decisional processes that should steer the procedures are not explicitly addressed. In this contribution there is an opening to subjective issues but it is not made explicit what is this 'subjective' content. We believe that we need to start thinking of a normative solution that could be able to guide the immanence of the dialogue and of the assessments, in order to enable the institutions in charge to operate according to a legitimate and most of all efficient reference. As much as we find this opening to discussion and reflection on the basis of a reciprocal care a fundamental and fascinating suggestion, we also believe that we need to help the policymakers in a moment when RRI is passing from its definition to its implementation.

A more grounded approach, relying on past paradigms and trying to insert them into a RRI framework is the one proposed by Armin Grunwald.

8 See, Sartre 1993; Heidegger 2008; Levinas 98; Block 2014; Gianni 2016

Armin Grunwald

Armin Grunwald sees a difference in the understanding of RRI according to its methodological domain. For Grunwald RRI is an umbrella term that stimulates the inclusion of ethical and social issues through integrative approaches to research and innovation. For Grunwald it is important to understand RRI as the historical overcoming of previous methodologies without the necessity to disregard them. On the contrary, RRI needs to represent a sort of integration of innovation practices, engineering ethics, technology assessment, governance research and science and technology studies [STS], *via* a hermeneutic approach. RRI should try to give new life to innovation processes and to technology governance according to responsibility reflections in all of its three dimensions [governance, moral and epistemic] in particular, making the distribution of responsibility among the involved actors as transparent as possible. Finally, it should support "'constructive paths' of co-evolution of technology and the regulatory frameworks of society" (Grunwald, 2011, p.26).

In Grunwald's account we do not find a definition of RRI, but rather a concrete and pragmatic explanation of the methodological paths that we need to follow to make the best out of European science heritage. The basic idea that Grunwald wants to promote is that RRI should represent the answer to the moral clashes, epistemic dilemma and empirical disagreements through a hermeneutical turn, i.e., by means of interpretation (Grunwald, 2011). Given their increasing and successful adoption, Grunwald identifies in technovisionary projections of the future, a feasible and highly efficient solution to help solving the clashes rising from epistemic uncertainty. Because of the scientific and political inefficacy of adopting a consequentialist approach, like the ones present in prognostic orientations, Grunwald suggests to move towards narrative practices able to comprise the different sides at stake in RRI.

Another aspect that we need to emphasize in Grunwald's thought is the fact that he is perhaps one of the few to address responsibility, within the notion of RRI, in a thick way[9]. "Whether for other accounts it is important to describe what a responsible approach to R&I would entail, for him is responsibility as such that needs to be questioned. Grunwald thus identifies three dimensions of responsibility, [empirical, ethical and epistemic] which need to be addressed in a complementary way. In fact, Grunwald believes that the 'dark shade' usually associated with responsibility by scientists, stems from conceiving it only as an ethical issue.

9 We find other examples analysing the concept of responsibility but it is quite rare to find conceptions tackling the two sides together.

Conversely, responsibility cannot be only identified with its ethical dimension but needs to be addressed in a wider way, encompassing also the epistemic and empirical side" (Gianni, 2016, pp.30-31).

"Debates over responsibility in technology and science frequently focus on the ethical dimension while considering issues of assignment processes and epistemic constraints secondary issues. However, regarding the analysis given so far the ethical dimension is important but only part of the game. It might be that the familiar criticisms towards responsibility reflections [see above] of being simply appellative, of epistemological blindness, and of being politically naïve, are related to narrowing responsibility to its ethical dimension. Meeting those criticisms and making the notion of responsibility work is claimed to be possible by considering all the three EEE dimensions of responsibility together" (Grunwald, 2015).

Grunwald touches several different aspects that have a great importance for the development of RRI. He points out how RRI embraces previous and concomitant frameworks to assess technology or innovation in general [STS, TA, etc.]. He exhort for a collaborative and comprehensive approach among stakeholders. Grunwald has also posed the question of responsibility in a thicker way, broadening the issue from its moral dimension to the epistemological and governance one. And the attempt of solving dilemmas rising from epistemic uncertainty through hermeneutic practices has the major quality of trying to overcome cognitive barriers and 'discourse' exclusions (Ferry 2002). Narration can effectively remedy for the shortcomings of communicative reason and rationality in general, by including extra discursive aspects. It can help to make the 'unheard' emerge on the public debate and shape innovation according to a contextual framework that does not need to be expressed only in technical or cognitivist terms. In this respect Grunwald has well in mind the delicate relation between the justification and the application of norms.

However, it is not entirely clear to us the exact meaning of ethics that he adopts. Often the impression is that he intends morality (*Moralität*) instead of ethics (*Sittlichkeit*). If this was true then we could think of its repartition as different domains of the same community, i.e., the ethical dimension. Otherwise it would not be clear what reference it could assume to justify the relation among the three spheres. Perhaps, a hypothesis is that he would rather consider these three aspects united within a narrative process. However, such an understanding would keep his potentially suggestive theory within the borders of a procedural theory that sees in the adoption of procedure the necessary panacea to RRI dilemmas. Thus, he would not be able to overcome the antinomies arising from the context and would not

provide us with the necessary methodology in order to advance in the decision-making process.

Jeroen Van den Hoven

The last (but not least) of the four conceptions we thought were representative of the vast scenario is the one proposed by **Jeroen Van den Hoven** (Van den Hoven, 2012; 2013). His conception focuses, via the thorny issue of moral dilemmas, on the problem that causes most of the difficulties to any theory that wants to address the relation between science and society. For Van den Hoven, that deliberately engages only with innovation, Responsible Innovation [RI] is: 'an activity or process which may give rise to previously unknown designs either pertaining to the physical world [e.g. designs of buildings and infrastructure], the conceptual world [e.g. conceptual frameworks, mathematics, logic, theory, software], the institutional world [social and legal institutions, procedures and organization] or combinations of these, which when implemented expand the set of relevant feasible options regarding solving a set of moral problems" (Van den Hoven, 2013, p.82). Research is deliberately left out from the investigation as this conception focuses more on the concrete development of products rather than with the production of more generic or fundamental results associated with basic research.

If the other three conceptions hinted at the temporal importance for the management of the process, Van den Hoven puts a clear emphasis on it. A responsible innovation is one that acts on the design phase and not later, because then it is not possible anymore. However, this main aspect is not only connected to the technical and functional aspect of technology. Von Schomberg himself reported the costs of changing technology at a late stage with all its negative outcomes, as examples of irresponsible innovations[10]. Van den Hoven's stress on the temporal aspect is tightly linked to a precise understanding of 'technology' as value-based, as a technique[11]. For him technology is not morally neutral. The presumption that it could be so is only hiding implicit values already embedded in it. Asserting that technology does not depart from a value-based ground and often for determined purposes means to consciously or unconsciously omit the frame in which every technology is always framed. The role of RRI is then to make this relation explicit. "No technology is ever value neutral [Van den Hoven, 2012]. It is always possible

10 Von Schomberg talks of 'technology push', 'neglect of fundamental ethical principles', 'policy pull', 'lack of precautionary measures' and 'technology foresight'; see Von Schomberg 2013, pp.61-63.

11 I have expliclty highlighted this term to show the substantial differences that technique and technology embed, the former entailing a strongly normative and human-oriented root. See Mauss 2000; Durkheim 1997.

that a particular technology, application, or service, favors or accommodates a particular conception of the good life, at the expense of another, whether this was intended or not. There is, therefore, virtue in making particular values at play explicit" (Van den Hoven, 2013, p.76). Expliciting values underlying innovations will also make it clearer in terms of the purposes contributing to improve the functionality of the technology at stake. The example that Van den Hoven takes in order to emphasize a feasible way to solve moral dilemmas follows a dialectical methodology showing how the resolution of moral conflicts can kill two birds with one stone, improving the functionality.

The conflicts ending into moral dilemmas are generated by situations of "moral overload", meaning that, "one is burdened by conflicting obligations or conflicting values, which cannot be realized at the same time" (Van den Hoven, 2013).

According to Van den Hoven, these kinds of scenarios, quite common in the domain of research and innovation, can be solved by adopting a value-based perspective at a design stage. The conflict, for instance, between privacy and security, does not have to be neutralized choosing between the two, but rather with the production of a third option, which embraces the two and at the same time overcome them (Van den Hoven, 2012; Van Den Hoven, 2013). "The proposition of a 'third horn' shifts the perspective, managing to increase the functionality of an innovation by implementing it through the moral value embedded in the two conceptions. This approach radicalizes the question, going to the point of the issues generated by moral pluralism" (Gianni, 2016). Van den Hoven, that here applies his philosophical background, addresses the problem of how to achieve the efficacy of a process or product without losing the side of the legitimacy. Seeking for a third option that can be developed during the design phase considers different moral perspectives at play, but also improves the functional and economic value. The meaning of value is here taken in all its depth and polysemic nature.

The radical perspective that needs to be emphasized in Van den hoven is exactly the reformulation of the paradigm at the basis of the several approaches so-called 'rationalistic'. The Dutch philosopher emphasizes the presence of values, and in general of a moral ground in technology, contesting the Weberian and Habermasian dichotomy between technical knowledge and norms, between science and society (Dewey, 1954, Habermas, 1998). For Van den Hoven, who embraces the general framework of Value Sensitive Design, "values and moral considerations can, through their incorporation in technology, shape the space of action of future users, that is, they can affect the set of affordances and constraints of users" (Van den Hoven, p.79).

Van den Hoven's conception unveils also an active and innovative acception of responsibility. To innovate responsibly means to "expand the set of relevant feasible options regarding solving a set of moral problems" (Van den Hoven, 2013, p. 82), in order to increase the chances of reaching positive outcomes through technology. Van den Hoven constructs, on the basis of the paradigm of 'Value Sensitive Design', an approach that sheds light on morality and ethics in order to show its structural role in the development of progress. This approach has surely touched the roots of the problem. An ethical perspective here is one that seeks for 'thirds' able to comprise and overcome they components in order to form an entity that it is not a mere association of some kind of mechanical necessity. The third is the product of a merge that can only be possible through a reciprocal dialogue based on recognition. Thus, Van Den Hoven's theorization is surely a fertile path for the resolution of issues arising from moral pluralism.

However, we find one aspect quite that is puzzling for the successful achievement of such process. In fact, we detect an aspect that is still implicit and needs to be made explicit. Van den Hoven talks of the necessity of modelling technology according to perspectives that stem from the "sublation" of a moral conflict. In this sense two perspectives can be merged into a third one that overcomes them without loosing them. However, it is not clear what is the reference that could guide this dialectic. Because otherwise we should think that this procedure would necessary leads us to a positive outcome, option which is not a necessary condition. In fact we could find ourselves in a situation where we encounter a moral position contrary by principle to dialogue, or a relativist one, or a sceptical one. Besides, the resolution of moral conflicts requires an institutional dimension, especially if the ground of resolution is strictly practical. This institutional dimension, together with the understanding of what values we could or could not accept is still unclear.

Assessing Conceptualizations

What emerges from these conceptions can be summarized through the following points. Firstly, we did not find a conception that would make the link among the different acceptions and uses of responsibility in order to understand when and according to what reason we can choose one. Another point that arises from these models is the ambiguous relation of morality and ethics, because while they appear in almost all conceptualizations, are never explicitly explained. Or at least it is not clear what the difference is, if there is one, between ethics and morality, given that they often have a similar meaning in different texts. I believe that it is an aspect that

deserves to be discussed thoroughly, as all the conceptualizations make a clear reference to ethical issues or ethical aspects, etc. An ethical approach to science requires first of all a deeper understanding of the conceptual tools we are going to use in order to promote specific practices.

All these conceptualizations of RRI presuppose in a more or less explicit way a conception of responsibility that does not suggest their relation or their grounding criterion, or at least fails to move beyond in a stable and organized way. Meaning that either we find references to existing laws and rules on the basis of which we should reflect, anticipate, etc., or we find exhortations to care and individual efforts that do not define the practical and institutional conditions according to which these efforts could be more than vain attempts. In other words, all these attempts appear to be only procedural not settling the contextual conditions that always determine the successful application of a norm and therefore the efficacy of research and innovation (Gunther, 1993).

Many of these perspectives remain framed, more or less consciously, into a procedural dimension of RRI. Thus, they enable objective procedures that can hold together the various aspects involved which needs to be developed. However, the various subjectivities, embodied in values, interests and desires are transmitted within formal processes and lack that semantic of values that would not reach a sufficient criterion of legitimacy.

The limit of a procedural perspective, one that adheres rigidly to pre-determined procedures without considering contextual features, is that it does not take into due consideration that subjective aspect which is necessary for the agents to be able to recognise themselves and their values within those procedures. The proceduralism that wants to protect the dignity of individuality risks losing its braces, dissolving them in a grey procedure in which it is no longer possible to distinguish black from white. The joining link is an empty basin in which individuals do not find much left of themselves or of the other/others. In this way the distance and incommunicability remain because the claims are cancelled and not understood and developed. Without wanting to go into the various differentiations between moral or epistemic proceduralism, it is important to note how the constant adoption of similar methodologies in the difficult relationship between science and society is so common.

We believe that the constant necessity to adopt a neutral perspective is considered as the solution to the apparently irresolvable contrasts between two opposing factions. On one hand, we have an end-rationality [*Zweckrationalität*], blind to

normative appeals and launched towards an unknown future to conquer. On the other hand a value-rationality [*Wertrationalität*] confined in an extra-institutional public sphere, invincible hero of justice, exclusively guided by normative assumptions (Kalberg, 1980).

This dichotomy that for a long time has been relegated to the twin peaks of science and society today finds a third contender, allied to the former and more 'interested' than it like the economy. Perhaps, as Dewey has demonstrated, this process was since the beginning due to economic factors (Dewey, 1954).

The solution of clashes at a social level, is not a contingent choice made by society itself, but is indicated in the adoption of a language that can neutralize both claims. The consequent result would be that of obtaining a shared and therefore legitimate assumption and that this legitimacy automatically guarantees the efficacy of the assumption. The valuable attempts to resolve the contrast between two factions by the introduction of a third able to overcome them, soon reveal their limits owing to the emptiness in which the third faction tends to be manifested.

While the solution must surely be found in a third language, as implicitly proposed by all these theorizations [particularly by Grunwald and Van den Hoven], this third language must be one composed by subjectivities, within which the two contenders see themselves represented and they recognize each other so as to understand their relational nature. This joining link must be illuminated by both of them so that common assumptions and objectives emerge without the imposition of technocratic or profit-based imperatives. This medium must be able to adopt a common language and should be found outside the two worlds but must not be alien to them. It must be the substantive reflection in which the specificity of its contents can be found.

On the other hand, while the way to achieve this objective assumes the contours of a procedure, the latter must be begun and concluded by someone who is not the procedure itself in order not to fall into the proceduralist circle. In this sense, we need institutions that are able to set in motion the dialectic[s] between different dimensions. The institutions must be the joining link as they embody values, interests and individual preferences, but also the translation of those values into a comprehensive and recognizable language. It is recognizable owing to the fact that it derives from the same basic function and has the same objective. Society, formed by different social spheres, connects them much more than it would have us believe. The different languages, accordingly, are only a functional modality by which to reach the same objective. Thus, one of the main problems that arise in RRI is how to transmit knowledge produced by science to the layman that probably does not have the sufficient preparation to understand technical language. The solution to this problem is indicated by the EU Commission in the enhancement of scientific

education, by means of open access and similar measures. The main belief behind these actions is that if people are given the possibility to access information, implying their preparation and the availability of knowledge, they will automatically be able to choose the “right” option. If this is absolutely a crucial factor, this conceptual framework continues to underestimate the role of extra-rational or extra scientific aspects for the adoption of a product or process. As we have repeated extensively, to believe that clashes are only a matter of ignorance, or are caused by a limited amount of information means to deliberately ignore a crucial aspect of people’s lives and of society in general.

As brilliantly stated by Habermas, the scenario is still drawn according to a prominence of the objective, scientific world over subjective traits. “The advocates of what we might call "scientism" ultimately view only statements of physics as capable of being either true or false and insist on the paradoxical demand of perceiving ourselves exclusively in descriptions of the natural sciences[…] Scientism buys the supposed scientification of philosophy by renouncing the task of self-understanding, which philosophy has inherited from the great world religions, though with the intention of the enlightenment. By contrast, the intention of understanding ourselves *exclusively* from what we have learnt about the objective world leads to a reifying description of something in the world that denies the self-referential application for the purpose of improving our "self"-understanding”[12].

The subjective contribution, our self-understanding, does not have to stand against science but can gain fundamental aspects of who it is from scientific knowledge in order to develop a thick comprehension.

The Indicators for Responsible Research and Innovation

In the same wake of this cognitivist and procedural framework can also be understood another attempt carried by the EU Commission in the last couple of years.

In order to solve the RRI problem, the path is detected in the passage from a theoretical stance to a practical dimension. This shifts that could provide us with concrete results, must still be done following the criteria according to which RRI can be achieved and detected. But these criteria should now be defined in concrete terms, meaning that they should be able to work in daily routine and for all cases. These kinds of approaches play a double-role of defining the guidelines for

12 http://www.eurozine.com/articles/2015-10-16-habermas-en.html

implementing responsible processes, but also become the reference for assessing successful stories.

Among the various attempts to find these assessment criteria able to identify examples of responsible approaches to R&I, we can emphasize the investigation made by a group of experts that has already finished and proposed a list of indicators for RRI[13]. The indicators are aimed at assessing in an objective way, not only the processes by which R&I are developed, but also their results and the perception they produce. In other words these indicators are supposed to represent a reference point, perhaps even implying normative one, in order to understand if certain processes or products can be defined as responsible.

A certain complexity stands already in understanding exactly what are the things that we need to measure. "In order to arrive at concrete and attainable indicators, it is necessary to have a precise understanding of the outcome variables ('impacts') that the indicators are supposed to indicate" (Spaapen et al., 2015, p.9). However, if this could be easy for several fields, especially when it comes to quantifiable data, it appears more difficult when it comes to RRI. "RRI is young and unconsolidated in the sense that there is neither an authoritative definition nor a consensus on how to understand it" (Spaapen et al., 2015, p.9).

Anyway, keeping in mind the novelty of RRI, the experts tried to rely on the indications provided by the EU Commission where RRI aims are listed as making sure that: "societal actors work together during the whole research and innovation process in order to better align both the process and its outcomes, with the values, needs and expectations of European society. RRI is an ambitious challenge for the creation of a Research and Innovation *policy driven* by the needs of society and engaging all societal actors via inclusive participatory approaches (emphasis added)" (EU Commission, 2012). They built upon the work of the Expert Group on the State of Art in Europe on Responsible Research and Innovation (EU Commission, 2013). Furthermore, they took the definition provided by Von Schomberg and added into their consideration social justice and sustainability.

They have tried to assess the presence of these criteria in the six keys proposed by the Commission that accordingly should form RRI. It is interesting the understanding proposed by the experts regarding the six keys as field of pertinence of RRI and not as indications for the achievement for responsible practices. I think in this interpretation lies the complexity of accounting the crosscutting dimension of RRI

13 http://ec.europa.eu/research/swafs/pdf/pub_rri/rri_indicators_final_version.pdf. This project is not the only addressing these aspects but it is the only, as far as I know, that has already been finished.

identified by a correspondence with a list of specific actions, and this complexity is explicitly reported in the text.

In fact, the basis on which this report relies, witnesses a sort of uncertainty in connecting a crosscutting framework to only six specific keys. The experts clearly understood the potential of RRI as an umbrella term, able to embed immanent values and interests. There are several references to RRI as a "cross-cutting issue" and indicators could not detect all the various dynamics of such an overarching function: This is because "as RRI is a dynamic concept, other ways might occur to implement RRI as a cross-cutting issue and support the dynamic development of RRI policies and practices" (Spaapen et al., 2015).

At the same time this generated several difficulties for them. On the one hand, the identification of RRI to six keys was seen as a reduction endangering the broad scope of responsible practices. They then highlight the discrepancy between the six keys in which RRI should be framed and the concept of RRI, where more flexible indications help to comprehend various attempts (Spaapen et al., 2015, p.10). On the other hand, they put in evidence the difficulty in trying to define an exhaustive and at the same time efficient list of indicators for such an overarching framework. The main difficulty emerges here probably from the complicated operation of translation of qualitative aspects into quantitative data. We do not want to judge the qualitative aspect, the result of which are at least outstanding, but we can surely underline the quantitative difficulty they had to face. The proliferation of contingent impacts is dispersive in order for be useful, for admission of the reporters ("the full set of 100 indicators is unlikely to be practicable or even interesting" (Spaapen et al., 2015, p.41). These tensions cut through the whole text.

The categories through which these indicators are framed, show us the dangers connected to the interpretation often made with regard to the relation of these six keys as fields of application. Thus we find in the report a repartition of indicators that poses a difference at the level of outcome, process and perception. Although in the document is often suggested an equilibrium among these three aspects, "public perception indicators are particularly important for considerations on legitimacy and justification, also of RRI" (Spaapen et al., 2015).

As much as the intention of the reporters are genuine, it seems evident the risk that such suggestion can generate. This perspective moves us to make a little excursus and take up some considerations of political nature. In RRI it is fundamental the role and the political function that the concept of responsibility has assumed throughout history, as showed by Ricoeur (Ricoeur, 2000; 2007) or by the analysis made by François Ewald (Ewald, 1986). Ewald underlined how the use of the term, embedded into an institutional frame represented the actualization of a specific political

paradigm. For Ewald responsibility implied a discourse register based on the growth of economic freedom.

Without the need to go into details with regard to such reading of the concept (Gianni, 2016), Ewald has nevertheless the great merit of having emphasized the ambiguous relations among politics, morality and institutional mechanisms that a concept of responsibility can embody. He showed us with accuracy how every institutional measure is the realization of a vision of the world and how the use of certain regulations could determine the path of progress. At the same time he made clear that in order to actualize a specific rationality we always need the institutional support. Furthermore, we can infer from his analysis the close connection between values, norms and development of the functional dimension. In other words, Ewald has unveiled the relations, often distorted, among different social spheres and the strong impact that this relation can have with respect to individuals.

The criticism that Ewald posed to that paradigm is the injustice that is connected with it because of the lack of inclusion and the increase of benefits only for a specific sector of society. The adoption of the criterion of responsibility was emblematic for him because connected to a specific political discourse. The fact that emerges is that the affirmation of one side of society not only will not manage to reach the acceptability, but also will not obtain any acceptance. For as much as we can agree with most of his thesis, I believe his conviction of the criterion of responsibility *tout court* is not correct and does not correspond, for instance, to the objective set by EU.

For this reason I think that the use of persuasive strategies, as emerging from the indicators report, could potentially lead towards ineffective directions. The objective of the EU in this moment should be exactly the one of covering the distance between science and society caused by a qualitative growth of technologies and by the adoption of processes that had for a long time excluded society and its requests. As greatly shown by the efforts made, and the path taken by the several assessment frameworks (TA, PTA, CSR), we need to pass from a model of governance based on the implicit or explicit impositions of technologies, to one where we the normative horizon is codetermined[14]. Among the various techniques adopted, the management of risk perception has surely been one of the most common in Europe. Institutional representatives that did not consider society as an efficient or valid partner to collaborate with in R&I domains, tried to bypass the obstacle through communicative strategies. From a functional point of view, the results of such an approach have not been successful, and will be neither efficient nor legitimate in an

14 For an interesting taxonomy of Governance approaches, see Lenoble & Maesschalck 2003; 2010; Gunther 1993; Dewey 1954. A 'substantial' reference to this model has been made in Del. 2.3.

age where epistemic conflicts arise even more than in the past due to information accessibility. From a moral and an ethical perspective, such position moves away not only from the necessary justification, but also from the very possibility of a just society. If the criteria of justification and therefore legitimation are identified with public perception, the whole social process of growth and development risks to be resolved into an immense and perpetual marketing strategy.

In order to understand better how RRI can be understood as an original framework is to further analyse the origins of the notion and highlight the development of the relation between science and society as meant by the EU Commission. Besides, this needs to be further strengthened by an attentive reading of the current indications concerning RRI.

Previous Assessment Paradigms and their limits

A common trait that we can once again detect in these several attempts to define RRI is perhaps that they do not manage to fully respond to the main aims set by the EU Commission. The framework programme has been developing since the Nineties in order to respond to the new upcoming challenges, and also improving according to lessons learned and new political or conceptual tools. The resort to Science with and for Society (SWAFS) is the last step of a long path that has tried to develop a more inclusive and effective way of producing scientific knowledge and innovations. RRI relies on previous paradigms but try to overcome their limits.

In this sense, previous paradigms aimed at assessing technological development in relation with society, all lack one or more aspects that RRI aims to cover.

What we have noticed in the different frameworks is a substantial incapacity to offer a pluralistic, therefore legitimate, and efficient perspective. Meaning that the various Technology Assessment, CSR etc., have tried to develop in a justified manner one aspect, not managing tough, to hold also the other. I believe that we can detect three of these attempts.

A first group has tried to use an epistemic perspective in order to gain legitimacy. If the problem was identified in the potential risks that certain technologies could pose, the solution was detected in a scientific assessment of potential consequences. By a technical judgment it was presumed to be able to overcome fears and misgivings stemming from ignorance. These kinds of approaches, applying a technology assessment, place their trust in the authoritative character of science as the objective and infallible criterion of knowledge. They also have faith in the necessary

match between scientific foresight and social acceptation, reducing the political decision-making process to the management of risks based on an algorithm. We do not find an explicit reference to the moral dimension apart from the interpretation that sees in the scientific certainty a morally legitimizing pass. Such approaches turn out to be inefficacious because unable to establish the connections between causal processes and free ones, and therefore cannot determine the necessity of consequential chains. In these terms, to talk about scientific objectivity, becomes more an aspiration than a reality. As it has been shown by recent events, the scientific foresight based on current knowledge it is not uniform but assumes a plural guise, often in open contrast among them[15].

A moral variation of this understanding is detectable in the adoption of universal and rational rules that imply the legitimacy of the approach because based on a moral law. This should generate the necessary acceptation by agents that exerts reason because those moral rules are expression of a rational, universal capacity. This side is often based on the epistemic knowledge and goes beyond it, looking for the moral correctness of the assessment. This is exactly the point of view expressed if we adopt a perspective that goes back the moral and political production of Kant. This position extends the side of acceptability according to formal, objective criteria, which will guarantee the acceptance and thus the efficacy of a technology. Also this approach is destined to be ineffective for two different reasons. The first is that, on a logical plane, we cannot consider the rationalistic moral perspective as the only one legitimate. Other conceptions, or moral acceptions, could be present with equal or even stronger force. Moral positions could enter into a conflict generating what Van den Hoven calls “moral overload”(Van den Hoven, 2012; 2013). The adoption of a universalistic perspective cannot account for the immanence and the reality that manifest itself in the discrepancy between reasons for actions and reasons to accept the reason itself. As stated by Moyar, “Agents are supposed to act for rule-based reasons, but those reasons (rules) are supported by other considerations that are not supposed to enter into the agent’s deliberation”(Moyar, 2012, p.14).

The second reason, accordingly, is that the rules of acceptability are not always identical to the rules of acceptance that leads us to act, because the formers entail a logical limitation that action trespasses (Gunther, 1993; 1998; Moyar, 2012; Ferry 2002; Brandom, 1998). The consistent discrepancy between justification and application of a norm is a factor that undermines attempts of judging science only according to a procedural framework. Consequently, also from a political point of view, such framework risks to fail because of the distance between criteria of scientific legitimacy and social needs. In a period of loss of scientific authority, given

15 For a conceptual discussion on epistemic conflicts, see Von Schomberg 1993.

the conflictual proliferation of its positions, like exemplified by the GMO, Nanotechnology and other broad controversies controversies, also the political dimension run into the same problems, considered its instability of judgment and consequent difficulty in making decisions (Von Schomberg, 2013; Ricoeur, 2007; Arendt, 1991). If the criterion of objective distinction seems to be vanishing in favour of subjective assumptions of validity, and if we do not foresee alternative forms of objective realization, even the political dimension will tend to make decisions on the basis of subjective and partial criteria.

Those paradigms privileged the criterion of legitimacy presuming that from it should have necessarily stem the efficacy. Famous cases like, as we have said, the GMO one, have shown us that this is not a necessary condition and that often this equation has turned out to be wrong.

The subjective contribution is almost absent from these paradigms, which turn out to be incapable of translating all the individual needs into technological development. Technology, accordingly, remains the blind deployment of a procedural technique disconnected from the social context. Even its justification appears as an add-on necessary to unleash the process from external interferences. The paradigm of RRI must depart from this assumption for which legitimacy represent a crucial aspect but cannot be expressed anymore according to neutral criteria of a technical judgment without considering a subjective contribution.

Another modality is the one trying to incentive subjective and substantive aspects in the technological development and the consequent company management. CSR, for instance stands on an opposite plane according to which legitimacy does not come from the use of objective criteria but rather from the 'valorial substantivation' within management and development. Without the need to go again through the various exemplifications, this perspective takes usually into account a specific aspect and, by implementing it, often reaches the objective of efficacy[16].

As suggested by Pavie, the supposed religious origins of this framework, explain the incentive of subjective aspects (Pavie, 2014). Here we find in fact, a subjective contribution within a structure that, although acting in a collective way, remains subjective because expression of interests and motivations that are personal and not collective. Although these assumptions, like the implementation of environmental aspects, can find a large consensus in a social domain, often other aspects that are related to it, like retribution o labour conditions, are not taken into account in the same way. This makes these approaches a partial, subjective expression of the technological development that, although obtaining a lot on the side of efficacy, can

16Regarding the high efficacy of CSR, Pavie 2014; Block 2014.

lose on the plane of legitimacy because they do not have an objective perspective of justification. Thus, they cannot represent an actualized example of ethical development.

Another historical attempt, closer to incarnate the ideals of an ethical paradigm, is the one that becomes aware of the limits of a rationalistic approach in the assessment of the value(s) of an innovation. As introduced earlier, if the political does not find in the objectivity the necessary criterion fro acceptance, it will be relegated into the subjective realm. However, this apparent limitation to the conflictual relativity of the decision has been taken up as an opportunity by those who have tried to develop forms of subjective inclusion within objective practices, like PTA (Fisher & Rip, 2013; Grunwald, 2009). Inclusive structures have been merging with processes aimed at assessing the value and the consequences of technological developments with alternate results.

The problem here arises from the lack of an overarching aspect that can order the different perspectives. In other words, the contribution made by the plural subjectivity has not been sufficiently regulated according to institutional mechanisms. What is missing I think, is a clear normative reference that could entail not only a deliberation, but also an effective decision, justified according to subjective values translated into objective criteria. Accordingly, it is missing a reference to the transcendent value through which we could articulate the various immanent aspects connected to technology. The basic mistake of the objectivist approaches, although mitigated by participatory efforts, remains. The trust in the fact that a formal procedure, deep into its legitimate aspect, will necessarily generate the acceptance of value-based issues ends by running up into the same inefficacious situation of previous attempts.

All three perspectives stay in the dichotomy between science and society, between normative substantive aspects and formal procedures, between subjective contribution and stable objective structures. In these paradigms it lacks the reference to a concrete value or reference point by which connect these two aspects, as well as they make an error in wanting to find this value in reason or in a procedure. Even a sophisticated attempt like the one proposed by ‘Value Sensitive Design’, which describes with accuracy both, the importance of the subjective contribution and the procedure by which to solve moral conflicts, does not determine the reference criterion according to which we can develop third positions.

In a first step we have proposed the epistemic paradigms as a reference for assessing attempts to develop RRI. Through this approach we have understood the originality but also the limits of the most important of them according to their usage (D.6.4). Now we need to go further (or deeper) in order to propose our perspective of RRI based on the limits of current approach and the chances embedded in this new framework. We have emphasized the problems connected to a merely RRI must learn and keep in mind all these aspects. From this historical background, as emphasized, RRI has been generated in order to overcome those limits. The mechanism, initiated by the Commission through RRI, is to go beyond those unilateral positions through the concept of responsibility. It is clear to me that the genesis of a new acronym wants to express both the continuity but also the originality in developing a process about the relation between science and society. The adoption of the criterion of responsibility offers the possibility to gather the plurality of claims connecting them with each other. Responsibility presupposes the presence of an ethical understanding of society, which is determined through a subjective contribution in concrete institutional mechanisms. These must develop the objective side not through the simple reference to procedural forms, but by the construction of intersubjective practices that still must assume an objective aspect to be understood.

From a conceptual point of view, RRI must build on past problems and develop new processes, but how does it develop in concrete terms a responsible approach? Through which procedures the institutions could aspire to achieve responsible forms of innovation that manage to hold the double aspect of legitimacy and efficacy? I believe that we need to think of a process that can develop through three moments that are complementary and can recap the two parts of the question. The three moments are participation, reflection and a decision according to the criterion of freedom as expressed in its social and ethical sense.

We now need to go into details in order to explain how this could work in real terms.

Amongst the several methods that we have already highlighted, we need to choose those that favor a complementary approach to R&I, those means by which agents can exploit their personal capacities and promote their values.

It is quite obvious that our suggestions will not exhaust the possible options, as these tools must be seen as immanently founded and so passible of developments, improvements or changes. Some could also be dismissed in the future, or in some regional contexts, as non-expressing the needs and interests of a specific society.

The attempt we are trying to achieve here is only to provide some examples to concretize the general backbone of a concept of responsibility tied to current understanding of freedom. Responsibility, as we have said, is not only a status but it is first and foremost a practice, an attitude that must be actualized in concrete and immanent situations. Thus, defining them would mean to confine exercises of responsibility and reduce the concept to its conservative side. This would be far too distant from a notion, like the one of RRI that needs to promote innovation.

Therefore what we briefly need to follow here is a practical path, we could say a political one, in order to define what are the possible tools that should characterize RRI. This short reference will recap the guidelines suggested in D. 5.2 and apply them through the adoption of a third model able to comprise the subjective and the objective side of the question, i.e., comprehensive proceduralism.

We have defined in D. 2.3 the necessity of basing RRI on participation. Furthermore we understood how engagement is the right term in order to not reduce participation to a mere spectacle where individuals are only call to watch. Accordingly, we have proposed the adoption of reflexive process leading to make explicit the issues at stake and to make the context result determinant in the decision making process. What we proposed in a purely theoretical manner has revealed to be justified by our empirical analyses that have shown us how the exclusion of the context from deliberation leads to failures in different respects. From a functional perspective products suffer from the lack of determination by users making the technology less useful or even rejected for moral reasons. And it is exactly from what we might call an ethical point of view that the risk shows its real breadth but also the point on which to act. If we want to have a functionally valid and morally legitimate process or product we need to take into account the context that in the end is going to adopt or use those products or processes. The negative effects of such lack have not only been extensively described by sociological and philosophical studies, but are also quite evident in our recent history.

To explain what are the consequences of ignoring the context and why it is important to take it into account we can put in evidence its effects from an empirical, i.e., sociological point of view. Borrowing a medical terminology, we can exemplify society as an organism where the lack of an accord among the parts, their connection, generates phenomena of sufferance. If these phenomena extend in time, becoming chronicle, or they over-complexify, we might assist to those illnesses that John Dewey defined as “social pathologies” (Dewey, 1954). As brilliantly summarised by Honneth, a social pathology is deeper than a phenomenon of social injustice because it does not stand at an explicit level of privation of freedom. Whether the

latter explicitly impede the access to social practices of cooperation, the former "impact subjects' reflexive access to primary systems of actions and norms" (Honneth 2014, p.86). Social pathologies hence are those situations where agents can only perceive the impossibility of actualizing their wills, and that affect their capabilities of being part of a society. They can arise in the moment when one sphere ceases to communicate with another o when, an institution does not respond to the purpose for which it is envisaged. "Social pathologies arise whenever some or all members of society systematically misunderstand the rational meaning of a form of institutionalized praxis. Instead of following the rules in a more or less creative way, whose common exercise makes up the social value of such system of action, they are guided by interpretations that falsely reflect the social meaning of these rules" (Honneth, 2014, p.113).

The agent hence does not perceive anymore that the institutions perform a function of social actualization of their own values, interests, norms etc. It disappear the recognition of the agent that in this way loses a stable and serene relation with a certain aspect of society, generating a series of negative repercussions.

"The pathological logic consists in the fact that subjects do not grasp internal boundaries and thus make its practice the entirety of their life praxis. The habitual consequence of such an autonomization is that individual action becomes rigid and fixed, reflected in symptoms of social isolation and a loss of communication" (Honneth, 2014, p.114). This means that social pathologies depict prolonged situations of an incorrect interpretation of the rationality embedded onto an institutional practice.

In general, what is important is the possibility of understanding pathological phenomena or those of injustice drawing attention to practices that are incorrect with respect to the role that was envisaged for them. The risk of not being able to achieve a balance and therefore of an attitude that is not rational is not only a matter of injustice but also the fact that lack of trust in institutions often results in forms of apathy[17] that can lead to alternative and extra-institutional forms of expression. Into this scenario we can insert isolationist forms that generate a sort of vicious circle of reciprocal underestimation between institutions and individuals and also many forms of violence.

These situations can be, of course, corrected by means of a criticism and re-reading of the normative grammar appertaining to an institution, in relation to its function for a particular society. And it is this aspect that we need to emphasize. To repair the relationship between individuals and society is necessary in order to reveal the

17 DEW 54, p.122] [HON 14a, p. 278.

functions, duties and relations of institutional apparatuses as objective expressions of concrete subjectivities.

It is for this reason that, as we have already pointed out throughout the project, we need to base a process of responsible research and innovation on a second-order reflexivity. Because agents cannot understand directly the origin of their unease and their sufferance they cannot correctly and adequately address those conditions. Whether this is the result of an intentional or an unintentional attempt does not change the importance of setting in motion such process of reflexivity.

In order not to incur into phenomena of (the) exploitation of the term responsibility and the notion of RRI, we must demand institutional measures that allow a subject to be truly influential and thus truly responsible. Assign responsibility to individuals without putting them in the condition to actualize their tasks means to exploit the concept for other purposes. The task of modernity at every new paradigm is to protect the envisaged intentions from distorted applications. Criticism must do this, place under the scrutiny of reason the development of new conceptions so that sectarian or manipulative logics do not take over to make them an instrument of acceptance. It is to acceptability that we must look in order to obtain acceptance, but not of course in an empty, but rather in a full sense that assumes, however, the characters of logic and rationality in general.

This reference to the institutional role that sociology and empirical cases unveiled, tells us also another important thing with regard to RRI. The kind of reflexivity we need to put in place cannot be one that is mainly individual or as we would say, self-reflexivity but needs to be developed in an intersubjective manner. Meaning not that individuals should not be self-reflective but that this reflection should be inserted in an institutional frame on which to reflect as well.

In fact, the vicissitudes that have occurred as a result of technological innovations and the relationship between science and society in general, teach us that the space between validity and application of a norm can only be filled by their co-construction by means of institutional arrangements. The 'moral and epistemic' comprehension of the norms, which are at the bases of the concept of responsibility, pass through this institutional framework that determines, and is itself determined, by an ethical perspective.

How do we define an ethical issue and what does it represent an ethical perspective? These are questions that often do not find a shared solution. It often happens to detect identifications of ethics with one or another aspect, like the conflation to morality or to law. It is not difficult to highlight in these approaches an overlap of dimensions that is probably due to a predominance of the Kantian

tradition, which thought of ethics as a sectorial perspective, i.e., a subsystem of morality [Kervegan, 2015]. It is true as well that law has been described by Kant as the institutional incarnation of moral recognition. In this way, questions connected to the development of technologies can be assessed thanks to legal instruments that are often intended as expressions of moral principles. In certain cases, more complicated, it is usually suggested a reflection based on moral principles, aimed at modifying or developing new juridical norms and regulations of different sorts. An ethical perspective hence, is supposed to identify the matches between contingent situations and these regulative frameworks. An ethical issue is then a potential or real problem, which in a certain way puts in question the established order because this does not seem to respond in the moment that a problem rises.

In this sense, the ethical issue cannot call into question only the juridical structure or the reflection according to universal principles, but it has to emphasize the fact that institutions are not able to face new issues according to existing principles. This fact requires an evaluation and deliberation on how to tackle the problem. It calls for a process that can positively respond to the issues with legitimate and efficient solutions. The ethical space, in fact, performs an active function and is not only a guideline but also performs a double role as educator and facilitator, an objective reference of the originalities appertaining to individuals.

Ethics is thus the dialectic of subjective impulse and objective reality into an institutional dimension that promotes his peculiarity.

Applying this perspective, we can emphasize that an ethical perspective understands the relation between science and society as a common effort to increase the general level of wellbeing according to different complementary logics. Although we do find different languages in 'society' we do not find different rationalities at least, as long as rationality has this ontological value of transcendental reference point. Either we choose to understand reason as a transcendental reference, and thus it does not make sense to think of two clashing version of it like technical and normative. Or we think of reason in a weaker sense and then the differences are only in terms of expressions. Either one, or the other. According to the journey we have been going through, I believe we need to develop a model that could be able to give voice to different languages, rather than holding this clash between two "Reasons".

Therefore we need to think of a model that manages to make different languages in communication among them so to develop the contextual outcome we have outlined throughout the project.

This model passes through the development of a deliberative model of democracy as reported in D. 5.2. There, Reber summarized the contribution and the sense that

deliberative democracy can provide with regard to Responsible Research and Innovation.

"Despite some differences, deliberative theorists stress the same ideal, that decision-making should be preceded by a process where citizens are involved in exchanging of arguments that potentially leads to the transformation of their preferences (Lindell, 2011; Cooke, 2000, pp. 947-948; Andersen and Hansen, 2007, p. 539; Dryzek, 2000, p. 1). According to this democratic ideal, decisions should be based on discussions among equal citizens, or their representatives, and the arguments that are put forward should be weighed according to their merits (Setälä *et al,* 2010; Grönlund *et al* 2010; Smith and Wales, 2000; Andersen and Hansen, 2007). It is expected that deliberation filters participants values too (Elster, 1998). In this way democratic deliberation is said to encourage respect, and, hopefully, mutual understanding (Smith and Wales, 2000; pp. 53-54). Arguments relating to pure and narrow self-interest become difficult to defend in a deliberative context (Mansbridge *et alii*, 2010). This theory is opposed to conceptions of democracy that want to insist on bargaining, aggregation of preferences or a more inclusive participation (participatory democracy). This last point is important regarding the Owen *et alii* conception and of most of the people working in the field of *Sciences and society*. They confused participative democracy with deliberative democracy.

Thus the TDD defends a more ambitious conception of citizens (or other actors, individuals or institutions), their interactions, and the political community. Different virtues could be recognized in this theory, including normative ones. Its defenders expect that political representatives – or the principal stakeholders in RRI - have the capacity to justify and perhaps argue for their decisions. They expect citizens to be able to justify their choices, and not to stay with their often vague preferences. We expect justifications on both sides, of decision-makers (or stakeholders) and of general public. TDD thinks that citizens have the capacity to search for and collectively formulate the common good within public deliberations that link common good, justification and legitimacy, and respect citizens' autonomy" (Reber, 2015).

To summarize, we need to promote a model, or better say a practice, based on the ethical understanding of thick and influential participation. Deliberative democracy, as emphasized by Reber, does not remain in the realm of pure participation but adds a crucial factor by appealing to the influence this participation is going to have in the process. In so doing, a series of conditions arise which make possible that both, participation remains the grounding base and the influence is justified according to the criteria of equality. Instead of limiting ourselves to mere participation we need

to think of making possible for the context to engage into the development of research and innovation. A deliberative model is exactly meant to perform this active role of engagement of the context.

There is only one aspect left that could perhaps conflict with this deliberative model and it the well-known criticism that has been moved several times to this model (Honneth, 1991). In fact, what is often contested and could clash with our ethical perspective is the fact that deliberation is often based too heavily on cognitive and linguistic justification causing different problems for the resolution of moral issues. The decision of the discourse register and the concrete distance between what is legitimate and what is fair are all sides that make this model quite thorny.

As emphasized by John Dewey, deliberative democracy is the reflexive process through which we rationally tackle collective problems, but it cannot be seen as independent from the acknowledgement of individuals that their contribution is part of a social cooperation (Dewey, 1954; Honneth, 2014). To express in other words, Dewey's model indicates a third way beyond republicanism and proceduralism where society and political management are strictly intertwined.

This relation between society, meaning its values and norms, and politics, intended as the fair and equal procedures to promote legitimate standards, has perfectly been understood and highlighted by Reber's pluralistic perspective. He states: "RRI needs to give the priority to ethical deliberation", meaning that RRI needs to involve the context to listen, understand and make the context influential in the research and innovation process. This objective cannot be limited to a cognitivist framework but needs to include extra rational factors like the ones embedded in values.

Therefore, more than an argument-based model we should think of a more creative and personal way to make two parties communicate and understand each other.

This model is provided by comprehensive proceduralism.

Comprehensive Proceduralism

This methodology relies on the epistemic paradigms outlined in D. 3.3, and tries to overcome them for what it concerns their limits. As we have said we have detected four governance approaches.

a) The technocratic-instrumental paradigm can be defined as the combination of a technical expertise provided by a restricted community and of an instrumental power of technical skills in the determination of social rules and choices.

b) The ethocratic-normative paradigm can be defined as the combination of an ethical expertise provided by a restricted community and of a normative power of moral will in the determination of social rules and choices.

c) The epistocratic-cognitive paradigm can be defined as the combination of an epistemic expertise provided by a restricted community and of a cognitive power of scientific knowledge in the determination of social rules and choices.

d) The democratic-inclusive paradigm can be defined as the combination of a democratic participation allowed to a community of citizens and of an inclusive power of political opening to society in the determination of social rules and choices.

	Technocratic-Instrumental Paradigm	**Ethocratic-Normative Paradigm**	**Epistocratic-Cognitive Paradigm**	**Democratic-Inclusive Paradigm**
Idea	Optimality of means	Justification of norms	Selection of the best	Participation of society
Stake	Efficiency of decisions	Legitimacy of rules	Wisdom of choices	Inclusion of citizens
Form	Technical positivism	Ethical universalism	Epistemic elitism	Political neutralism
Example	Saint-Simon, Comte, Popper	D'Holbach, Kant	Plato, Mill	Rawls, Habermas, Latour
Limit	Axiological appraisal of	Empirical context- testing	Hierarchic determination	Hermeneutical relationship to

Limit	Axiological appraisal of choices	Empirical context- testing	Hierarchic determination of wisdom	Hermeneutical relationship to traditions
Norm-related problem	Factual 'devaluation' of norms, unethical reduction	De-contextualised abstraction of norms, no effective impact	Cognitive embedding of norms, epistemic closure	Neutralization, formalization of norms contents

Figure 1 (D.3.3, p.33)

The conceptual elaboration of the paradigms of governance on the basis of some empirical case studies raises the problem of the procedural method as a cross cutting trend or option in all the paradigmatic domains (technical, ethical, epistemic, political). This is why the investigation of the four paradigms tackles this issue of proceduralism and presents the numerous critics that it has given rise to in all the domains. The procedural orientation of most of the practical settings in use in the field of techno-ethics overlaps with the procedural orientation of most of the major theoretical insights as developed over the past years" (D. 3.3, pp. 16-17).

Proceduralism in politics was originally involved in US legal-related governance systems in the 1960s and 70s, where it evolved from economic approaches that were critical of judicial activism and interest group politics and their effect on public policy (the Law and Economics movement, and the neo-Kantian approach to democracy)[18]. Although these evolutions were not participatory, they laid the groundwork for the introduction of the procedural movements. In the 1980s, a movement started toward a procedural approach to action in governance, based around two theories of rationality: economic theory of efficiency, and deliberative democracy. The economic theory of efficiency is not a democratic participatory approach, so we will concentrate on the deliberative democracy theory, which grew out of the civic republican movement[19].

Proceduralism appeared out of this movement as a solution to the problem of cultural and social pluralism. Pluralism is not so much a contingent fact as it is a permanent trait of modern democracies (Rawls, 1996). The emergence of cultural

18 Lenoble & Maesschalck (2003) pp. 16-18.

19 Ivi, p.29.

differences in societies (secular, multi-cultural, less authoritarian) has meant that a new method of discussion and cooperation has evolved to deal with these sometimes disparate communities. The inclusion of these different communities in the procedural method opens up the democratic and participative opportunities that characterize this paradigm. This method, based on the notion of procedure, requires that there be, at the very least, an agreement on the way to deal with problems, even if there not agreement on the content of the solutions. This appears to be something of an answer to the 'polytheism of values' identified by Weber (1919/1946), since a society, in order to function effectively, requires the establishment of a multiplicity of moral agreements on rules, norms, and, if possible, values. But if the society's members cannot agree on the content or substance of values, especially with the heterogeneity of worldviews, they can, at least, agree on a fair procedure that can make agreement possible. The main aspect of proceduralism is the insistence on the non-substantive approaches to conflict resolution between the members of a society.

In particular as we have seen, the main expression of proceduralism has been provided by Jürgen Habermas and John Rawls.

The ethical model proposed by Habermas with his 'discourse theory' has been extensively clarified and criticised. Just for the sake of the argument we believe to be appropriate to recall it briefly.

"The procedural ethics of Habermas is exposed to a series of critiques that questions its ability to guarantee an appropriate moral content of moral rules. First, some argue that certain moral norms (e.g., the condemnation of the senseless murder) seem too compelling or obvious to be made dependent on a process of discussion. One may also argue that the principle of discussion, in its very formulation, presupposes a prior establishment of certain standards, such as freedom and equality for example. It may also seem desirable to assess a reasoned discussion, leading to agreement that is clearly wrong (about the legitimacy of racial crime, for example), on the basis of some external standard. Thus, the specific commitment to rational and reasoned discussion seems to assume a set of quasi-substantial criteria that are not included in the construction claimed to be procedural and formal by Habermas. Secondly, the "agreement of all concerned" in the ethics of discussion may be possible within the reach of limited communities (family), but appear structurally impossible or utopian to larger communities (nation) or virtual ones (future generations). It may be affected by all the asymmetries of situation between partners involved in a discussion (between adults and children, experts and laymen, doctors and patients, etc.) In such cases, the practice of discussion requires

representation of the interests of others, through a monological deliberation, rather than a dialogic process. Thirdly, the legitimacy of human interests is in fact disqualified, in favor of fair arguments, while a more open view on virtue and interest would enable some more realistic forms of consensus, or compromises, 'agreement on disagreement'. More generally, the ethics of discussion seems to ignore cases where the incommensurability of different positions actually makes a consensus impossible.

According to Lenoble & Maesschalck (2001), Habermas gives the medium of discussion the function of producing a temporary equilibrium, a procedural balance, allowing common sense to rebuild. The mutual understanding that structures life-worlds is a fundamental premise of it, but is required for a background that is 'de-contextualized'. This 'de-contextualization' of the background is necessary so that potential partners of standards development procedures can accept (or not) claims that they could share, despite their different situations. It is then not only the knowledge of experts that is important, but the expertise of the situation that develops his own experiences and that, through a proper argument, can challenge the regulatory bodies of the system so they adapt their management[20].

The core of discourse ethics is the fact that universal presuppositions of communication guide the decision on the conditions of a basic consensus. However, the pattern of application is less clear about the conditions for achieving empirical and sociopolitical forms likely to experience this ideal scheme. One of Habermas' deepest gaps is to not have conceived an historical concrete example for such ideal situation. Apart from lacking the pragmatic reference in this way Habermas' ideal situation represented an obstacle to the implementation of practical condition of deliberation.

We do not know specifically how public space is likely to produce agreements, and especially to grow and attract more and more people in its ability to produce agreements. However, the empirical question is not how Habermas transforms individual skills, but how to mobilize these skills in the context of social change. This is called an adjustment problem behavior which may be particularly focusing on the policy of new objects, such as citizens' interest in issues of European governance[21].

Another main approach to proceduralism is the one developed by John Rawls. According to Rawls in his original position on proceduralism, the ideal situation for a

20 Marc Maesschalck (2001) Normes et contextes, Olms.

21 Jacques Lenoble, Marc Maesschalck (2003) Towards a theory of governance, Kluwer Law International, and (2009) L'action des normes, Presses de l"Université de Sherbrooke.

participatory, procedural approach is one where the members of a society operate under a 'veil of ignorance' concerning their future position within the society (rich/poor, ruler/ruled, etc.). From behind such a veil, it is only then that the participants can honestly and seriously consider the morality of an issue, because "*no one knows his place in society, his class position or social status; nor does he know his fortune in the distribution of natural assets and abilities, his intelligence and strength, and the like*"[22]. Rawls' approach to ethics concentrates on the idea of justice as fairness, end the veil of ignorance should allow for one to construct a set of principles for the fair treatment and to the advantage of all people involved. In this he displays some similarities with traditional Kantian deontology, but he also brings in elements of utilitarian theory. However, this notion is one of the weaker points of his procedural approach, since it ultimately functions as a very artificial basis for the whole system. Later, in *Political Liberalism* (1996), Rawls rethinks his position, and presents the idea of the 'overlapping consensus'[23]. This appears to be a more realistic account on the process by which, in adjusting rules to cases, a society's members can come to an agreement about the principles of justice. However, such a consensus would be reached by, in part, avoiding some of the more fundamental and important arguments in the philosophies of the different members. Thus, although seemingly more realistic, there are some major questions that need to be raised about the background conditions that might enable such a consensus agreement" (D.3.3).

As we have hinted one of the main criticism has been done by Maesschalck and Lenoble, relying on Jean Marc Ferry, who himself referred to Klaus Gunther. The main argument at the basis of all these similar but different approaches is that the U principle at the basis of proceduralism needs and always already implies a reference to the context of application (Lenoble & Maesschalck, 2001; 2003; 2010; J.-M. Ferry 1991; 2000; K. Gunther, 1993). One of the main differences stands in how strong the U principle and thus its relation to the context are conceived. We could say that from this basic trait we could induce all the others, regarding the consensus, the number and typology of participants, etc.

"Lenoble & Maesschalck's approach for instance emphasizes two main limits connected to proceduralism. "First the obliterationof the context of the agents; second, the disjunction between the justification and the application of norms. Thus, (they) call for a contextual proceduralism that seeks to warrant a reflexive adjustement of rationality justified norms to thei contextual setting of insertion. This

22 J. Rawls (1971)*A Theory of Justice*, Harvard University Press, Cambridge (MA), 1979.

23 J. Rawls (1996) Political liberalism.

kind of proceduralism provides a framework for a reflexive governance that modifies the learning and the identity-building and shifting processes of the actors engaged into a collective action" (Lavelle & Rainey, 2013, p.318). The context, for the two belgian scientists, "includes more broadly the background – based relationshop of an individual or a community of individuals to that situation or environment. Contextual pragmatics then consists in taking into account within the process of norm validation all the mental–social-cultural background features that enable an individual or a community to give meaning and significance to norms within a situation and environment " (Lavelle & Rainey, 2013, p.318).

The importance of contextual proceduralism cannot be underestimated considering the massive influence they have had in European's research. Contextual proceduralism also suggests different concrete strategies like the one to involve exo groups in the deliberation process, so to open the 'discourse' to external perspectives in order to destabilize participants (Lenoble & Maesschalck, 2010, p. 185).

However, this approach seems to carry the same basic assumption and thus limit of other proceduralist approaches. "One of the main limits to contextual proceduralism is the implicit assumption that argumentative rationality, the rationality of deductive reasoning, is the highest, or best, or most important form of rationality. This assumption carries with it the unjustified conviction that, as in deductive reasoning, valid arguments are themselves reasons to act. In the case of persons, however, one can easily accept that an argument is valid, but refuse to adopt it as a reason to act" (Lavelle & Rainey, 2013, p. 323)[24].

Therefore, we need to follow the proposal suggested by Lavelle & Rainey and apply a 'comprehensive' kind of proceduralism. Comprehensive proceduralism is a conception that tries to overcome the limits embedded in other similar models by using a strongly context-based approach (Lavelle & Rainey, 2013). The term proceduralism can be understood according to Lavelle & Rainey in two senses. "The word comprehensive refers to the notion of combination of options in terms of procedures", or "refers to the notion of value significance of thought and conduct in the relationship to norms. The first meaning suggests that comprehensive proceduralism is a method that pays attention to the variety of procedures to be selected according to their relevance as to the actor's context. The second meaning suggests that this method pays attention to the value dimension of the actors' judgment in the determination of the significance and the scope of norms" (Lavelle

24 For an extended criticism of Louvain School, which we cannot report here for the sake of our objective, see the whole essay.

& Rainey 2013, p.325). Comprehensive proceduralism promotes an ethical approach to science and society where ethics is the problem to address and not a fixed reference to adopt. Ethics in this respect is considered as meta-ethics, shifting the problem from an issue-based analysis to a ground destabilization involving governance processes. "The relation of individuals to norms and of norms to values can be transformed by taking into account the context as well as the values underpinning the norms. An adjustment of norms to the contexts is needed, like in Lenoble and Maesschalck's 'contextual proceduralism' and 'reflexive governance', But an adjustment of norms to valuesis also needed that requires a method of ethics to take into consideration the value-systems of individuals and groups *in the procedure* itself" (Lavelle & Rainey 2013, pp.325-326).

The example provided by the authors concerning the Islamic veil might not fit our scope but it shows us the methodology at stake and its benefits. Even if comprehensive proceduralism cannot help in solving a clash between two divergent perspectives, it can help to bring the two positions to listen and to recognize each other. Instead of applying a simple procedural perspective than, they suggest a dialogic approach based on narration and interpretation. "Listening to each other's narration and interpretation, re-constructing the scheme of relevance of the arguments, his/her set of background assumptions, or even experiencing his/her life form can turn out to be much more effective" (Lavelle & Rainey 2013, p.326). The particular point they want to stress is exactly the ethical acception of this approach that does not involve at a first stance its political development. It is desirable that the decision-making process can take into substantial account this approach but it is not a necessary relation. The aim is only to provide an "opportunity for the various actors to frame the problem in a different way" (Lavelle & Rainey 2013, p.327). The methodology at the basis of comprehensive proceduralism is some kind of reflexive equilibrium in the wake of Rawls' example. Differently from Rawls though, the ground for it is not an overlapping consensus but rather a reciprocal adjustment of norms to context, not only on the basis of cognitive dispositions, like in contextual proceduralism, but also on the basis of some conative dispositions ('pro-attitudes')" (Lavelle & Rainey 2013, p.327). "Comprehensive proceduralism calls for a reflexive adjustment of rationally justified norms to the context of agents in testing, destabilizing and determining the *value significance* of these norms" (Lavelle & Rainey 2013, pp. 327-328). What is aimed at is the possibility and the necessity not of consenting with each other but of converging to each other's position. "A process of converging adjustment explore the on the basis of a reflection on the context of individuals, what can be the meaning that each of them attributes to a standard, rule or principle. It means then that it is possible to make a reciprocal adjustment of the

standard context, and context standard. The adjustment, suggest the two authors, can be of an epistemic or ethic nature. The epistemic adjustment "is characterized by a scope of normative possibilities that is shaped on a cognitive and factual basis" (Lavelle & Rainey 2013, p.329). The ethical adjustment does not consider existing customs but rather "the meaning of axiological commitment of the individual with regard to these customs" (Lavelle & Rainey 2013, p.329).

As we have introduced earlier, the main aspect for which we need to think of something like comprehensive proceduralism is the necessity to go beyond merely cognitivist approaches for determining the significance of a norm. The significance implies the binding power that a norm can assume with respect to individuals. The distance between a cognitivist approach and comprehensive proceduralism is the one between a transaction and a gift (Mauss, 2000). Comprehensive proceduralism uses tools as narration and reconstruction in order to bring in the 'discourse' all the unheard voices and perspectives. Lavelle and Rainey are pragmatic by proposing three specific operations that we could adopt as well for our RRI model.

- "Translation of the backgrounds to be regarded as semantic and pragmatic structures as well as systematic conceptual and experiential patterns.
- Transformation of existing paradigms that can function as a common ground to be possibly co-constructed by the actors.
- Experiment of different life forms or life worlds that are also an experiential pre-requisite in some case of conceptual understanding and the personal appropriation of another value system" (Lavelle & Rainey, 2013, p.330).

In the end the main assumption at the basis of comprehensive proceduralism is to apply the main lessons learned with Sellars and Brandom[25]. The fact that a statement or, in our case, a norm is logically or formally valid does not guarantee that it will be meaningful. The sentence: if privacy is protected then research is ethical, and, privacy is protected, therefore research is ethical, is formally valid but it is meaningless without content being ascribed to the terms of the sentence.

[25] R. Brandom, *Making it Explicit, : Reasoning, Representing and Discursive Commitment*, Harvard University Press, Cambridge (MA), 1998.

Overall Framing

In general then we can say that there is no one and only procedure in order to achieve RRI processes or products. Our result is that a combination of different instruments that lead to the complexification of the context is the right path to be taken for obtaining responsibilisation. Many different measures can be proposed and we will emphasize some of them that we consider to be useful examples, but new and contingent forms can be developed as well. We do not intend setting the borders for new procedures. We want to underline that no apriori procedure that does not favour the inclusion and the engagement of a 'thick agent' can be conceived as correct. Our normative framework is one that resembles a meta-normative approach by defining how a decision-making process should conceive norms application[26]. It is not to establish the validity of a norm, but to understand the appropriateness of a norm for the context (Gunther 1993; Brandom 1998). Furthermore the very idea of responsibility, as a polysemic and semantically rich concept, goes along with a governance model that is able to develop in historically situated manners.

A RRI model then needs to be based on this ethical approach that manages to include and develop alternative material forms of engagement. In practical terms this involves to cope with existing rules and laws in order to modify them.

The main concrete measures that can be adopted and should be included in our model are: Reaction to the situation, reflection upon the reaction and examination of the reflection in discourse with other views.

"Reaction to the situation: Initial reaction provides the value laden interpretation of the situation as it is perceived by a particular social actor owing to their normative background. Norms are provided by culture, history and many other factors.

Reflection upon the reaction: Reflection upon this allows for the framing that surrounds this reaction to be opened up. This involved reflection upon the nature of the values underwriting the judgements that lead to the interpretation. This permits the normative backdrop to be seen as a justificatory backdrop.

Examination of the reflection in discourse with other views: The question must be asked, 'Why do I value this? Why is this important to me? Why should it be important to anyone? This can be done in discourse with other views, either in real

26 http://res-agora.eu/assets/Res-AGorA_Del_4-8-Final.pdf

dialogue with other individuals or via a hypothetical engagement with high-quality information gained from other's testimony" (Lavelle & Rainey, 2013, p. 333).

Concrete Indications

Participation

Reporting one of the most convincing and concrete attempts to promote participatory approaches in R&I, SATORI Project[27], we can propose with them a number of participatory processes that translate our RRI model into practical terms.

"Charrette Method[28]: The Charrette method involves organising people into several small groups. It is a useful method that can be used when the nature of the issue necessitates face _ to _ face interaction for stimulation and exchange of ideas. Moreover, the method can be used to collect practical ideas and to stimulate participants to cooperate in a collective environment in order to reach consensus and generate new thinking on a topic. In comparison to other methods, the Charrette method is time - intensive and enrolling people to participate can be a challenge.

Citizens' juries[29]:

The citizens' jury method is an alternative and controversial method that requires randomly selected citizens to develop their knowledge of a specific policy area, pose questions and engage in debate with policy - makers and researchers in order to reach a final decision. It is often used alongside other research tools such as surveys, citizen panels, focus groups, interview based studies and participant observation. This method is useful in a variety of ways because it is impartial and objective. However, one of the major disadvantages of the method is that it fails to provide opportunities for communities to evaluate the process.

Citizens' panels[30]:

A citizens' panel is a demographically representative group of citizens. This method offers an inexpensive and effective means of monitoring citizens' needs, assessing public preferences and collecting data that can be analysed for multiple purposes.

27 http://satoriproject.eu/media/D2.1_Report-handbook-of-participatory-processes_FINAL1.pdf , pp.21-23.

28 http://participedia.net/en/methods/charrette

29 http://www.methods.manchester.ac.uk/events/whatis/citizensjuries.pdf http://sru.soc.surrey.ac.uk/SRU37.html

30 http://www.citizenshandbook.org/compareparticipation.pdf

Consensus conference[31]:

The consensus conference is a participatory method incorporating a citizen panel and aims to raise public awareness, involve the public in the policy making process and inform policy-makers and experts about the issues that citizens find important. This method can be used for issues with potential social impact and around which opinions diverge. Consensus conferences serve a variety of purposes including strengthening public debate, influencing policy - making and altering the balance of power. The method can fulfill different goals and objectives depending on the setting in which the tool is applied. Both the institutional setting of the consensus conference and the socio-historical context of the country in which the conference is organised play a crucial role.

Deliberative Polling[32]:

Deliberative polling is a form of public education and is mainly used for issues about which the public have little knowledge or as a means of providing information about crucial public issues. It begins with a random representative sample of the population and allows an opportunity to engage different stakeholders such as citizens, experts and policy makers in discussion of a specific topic. According to its practitioners, this method of public consultation measures what citizens would think if they had an adequate chance to reflect on the issue at hand.

Delphi Process[33]:

The Delphi method is a method that is widely used in numerous scientific fields. It aims to achieve maximum consensus when a research problem requires teamwork and communication. It is mainly used when long term issues need to be evaluated as it allows experts to deal systematically with a complex problem or task. It provides a venue in which experts can share information that may not be directly available. A good selection procedure is key to the implementation of a successful Delphi as it is based on the opinions of experts and requires the involvement of people who will contribute valuable ideas.

Round Table method[34]:

The round table method enables participants to make a full contribution to discussions on certain issues on an equal footing and to generate ideas through considering alternative aspects, seeking solutions and putting ideas into action. The

31 http://www.ivm.vu.nl/en/Images/PT3_tcm53-161508.pdf http://estframe.net/ethical_bio_ta_tools_project/content_2/text_2c81d261-b7a8-43e8-8f1e-d724b43e2ba3/1346076808107/et4_manual_cc_binnenwerk_40p.pdf

32 http://www.pgexchange.org/index.php?option=com_content&view=article&id=132&Itemid=121

33 http://www.unido.org/fileadmin/import/16959_DelphiMethod.pdf http://web.iyte.edu.tr/~muratgunaydin/delphi.htm

34 http://www.scottishhealthcouncil.org/patient__public_participation/participation_toolkit/round- table_workshops.aspx#.U8Wfp_l_vP0

method is useful as regards gaining insight into a topic and allows participants to express their views and opinions. A variety of opinions can flourish as a result of the heterogeneous mix of participants. One major disadvantage of this method is that it generates a wide range of opinions, while individual viewpoints are difficult to generalise and categorise.

Scenario Workshop[35]: The scenario workshop is a participatory method that combines the scenario and workshop methods in order to raise awareness and promote public interaction. The main advantage of this method is the opportunity to create new sources of knowledge around a local issue by combining research with social needs. This method aims to facilitate effective dialogue, facilitate discussions between different social groups in society and policy-makers, provide critique and generate ideas in order to address social and environment concerns. This method increases the chance of timely intervention and the control of present or foreseen problems. However, one of the limitations of this method is that participants focus on specific aspects of a certain sector without taking into account the social, economic and political consequences of the changes.

Search conference[36]:

A participative process that enables a large and diverse group of people (usually from 20 to 70) to discover values and projects they have in common and to collectively create a plan for the future. Rather than relying on information provided by experts, the search conference incorporates working sessions with a wide range of stakeholders who have knowledge, authority to act and a stake in the outcome, regardless of the status or attitudes of the stakeholders. The search conference works as a participative democracy in which all perceptions make up valid pieces of the puzzle and mutual understanding is achieved through sharing information. The focus is on future possibilities and how those involved can create a possible space for their implementation, so participants became a community of planners. This method can contribute to bridging the lines of culture, class, gender, power or status as each person participates as an individual planner rather than as a representative of their group).

Study circles[37]:

35 http://participedia.net/en/methods/scenario-workshop

36 http://www.vaughanconsulting.com/searchconference.html ; http://www.hc-sc.gc.ca/ahc-asc/alt_formats/pacrb-dgapcr/pdf/public-consult/2000decision-eng.pdf

37 http://www.hc-sc.gc.ca/ahc-asc/alt_formats/pacrb-dgapcr/pdf/public-consult/2000decision-eng.pdf ; https://www.oecd-nea.org/rwm/docs/2004/rwm-fsc2004-7.pdf

Five to 20 people meet together 3-5 times to discuss a specific topic (for more complex issues, meetings can be scheduled on a weekly or monthly basis)). Background material is provided before a new topic is introduced. A facilitator is involved to make sure discussion flows and ground rules are met, allowing for cooperative and mutual learning. At the end of the session, the group lists the most important outcomes of the discussion and describes any changes in their own views. This method is used to monitor and document the evolution of a group's thinking in regard to a particular issue and to generate recommendations based on a shared body of knowledge.

Sustainable community development[38]:

Sustainable Community Development (SCD) aims to integrate economic, social and environmental objectives in the development of a community. SCD views a relationship between economic factors and other community elements such as housing, education, the natural environment, health, accessibility and the arts. SCD stresses the importance of striking a balance between environmental concerns and development objectives, while simultaneously enhancing local social relationships and promoting local control over development decisions as the primary means to achieve sustainability.

Think tanks[39]:

Think tanks bring together creative thinkers to develop innovative solutions to current issues and problems. Most are organizations that perform research and advocacy in public policy (social policy, political strategy, economics, military, technology, and culture). Many are non- profit, funded by governments, advocacy groups, or businesses, or derive revenue from consulting or research work related to their projects: there is no single model and regional and national variations apply" (Satori Project, D.2.1, pp. 21-23).

Reflexivity:

The establishment and enhancement of reflexivity is surely part of most of the possible participatory processes that we have mentioned. However, possible variations will occur when settled in different contexts. Furthermore, the agents are

38 http://www.sfu.ca/cscd.html ;

http://aese.psu.edu/nercrd/community/tools/community-a-different-biography/legacy/sustainable-community-development-an-interactional-perspective

39 http://www.hc-sc.gc.ca/ahc-asc/alt_formats/pacrb-dgapcr/pdf/public-consult/2000decision-eng.pdf ;

http://en.wikipedia.org/wiki/Think_tank

often identified with their specific roles in the development of R&I and thus, will be confined to a limited identity and predefined behaviour attitude, usually according to an interest. We could detect then three main figures, such as Researchers, Innovators and CSOs, but this would risk undermining the general conception that we have proposed. The general aim is in fact to recognize these differences but not to crystallize them in a radical dichotomic perspective. On the contrary, reciprocal contamination and influence goes along with successful attempts of RRI because brings in the discourse new perspectives and original ways of addressing an issue. "This "creative" power of imagination expresses itself in every hypothesis, in every interpretation, in every story with which we affirm our identity. In every action there is also an element of creation"[40]. The destabilization at the basis of this approach can lead itself to innovations that will find a high degree of acceptance because shaped on contextual significances and needs. Accordingly, it is important to include what have been called **exo-groups** (Lenoble & Maesschalck, 2010), agents that can provide a different perspective in order to pinpoint weaknesses and propose alternative solutions.
For researchers is then necessary to integrate CSOs coming from different fields in the construction of projects. What is usually named as multi-stakeholder approach is a basic requirement in order to broad perspectives. This must be done not only at one moment of the project, but at several stages in a constant dialectic with external agents. This interdisciplinary approach will benefit the research with unexpected perspectives that could foster its impact.

For innovators, is fruitful to include end-users in the shape of products and development of processes. As shown by Pavie and Van Den Hoven (Pavie, 2013; Van den Hoven, 2013), production carried on a value-based modality will raise the acceptance of products and increase companies' credibility.

CSOs need instead have to try to adapt the framing to their needs. This operation also requires the will to learn and to understand technical languages, so to develop perspective that, although value-based, can be materially beneficial for society at large.

It is true, however, that we cannot pretend to construct a new political framework for the management of research and innovation. European legislation for instance, already makes available for researchers, innovators or CSOs several indications and rules, useful to guide R&I towards ethical standards.

40 Habermas 2015, available at http://www.eurozine.com/articles/2015-10-16-habermas-en.html

However, as we have tried to demonstrate, all these measures that deal mostly with legal compliance, need to be integrated by tailored approaches considering contextual issues. The six keys analysed in D. 5.1 provide us with a fruitful example of the attempt by the EU Commission to go beyond mere legal compliance given that even legal rules themselves could be understood controversially.
And it is in this governance framework that we need to emphasize the last but fundamental indication. As we have underlined, responsibility cannot be conceived as a mere subjective and free effort to care for the future. In this sense, several institutional conditions need to be shaped according to the ethical imperative at the basis of RRI. For instance, the text according to which the calls for projects are proposed cannot be blocking or not asking explicit reference to responsible behaviours. Also the codes of conduct present in research organizations need to steer research in an ethical way, allowing researchers to develop ethical reflexivity in a structured way.

Conclusions:

We have understood “reflexive governance" as able to review its own mechanisms to insure institutional learning[41]. Hence, it results in the co-design of institutions and the elaboration of common social representations of norms. Consequently, such governance has to assume a complementary perspective on social dynamics, developing through learning ability and adaptability across different social dimensions.

To summarize our analysis, a framework for assessing RRI theories needs to keep hold of the premises that for theoretical and practical reasons we have tried to explain. RRI needs to be a meta-frame based on engagement equal for everyone and effective in its process. This engagement has to favor a dialectic between different normative perspectives, i.e. different actors, in order to develop shared decisions. The outcome of this ambitious process is a framework that we could call ethical governance of RRI.

41 Lenoble, J., Maesschalck, M. (2003), Toward a Theory of Governance: The Action of Norms, trans. by J. Paterson, The Hague.

In order to summarize this development we can then detect some main features of this model of RRI.

Firstly, that each social dimension *fulfils the reasons and the purposes for which it has been created*. Saying this implies that each dimension, in the figure of its institutions, relies on specific value, norms, interests and beliefs that need to be made explicit. Often the problem for developing research and innovation lies in the implicitness of certain assumptions that are then publicly distorted, disregarded or dismissed. This also implies that each dimension does not colonize or let itself be colonized by other social spheres' logics.

A second and crucial condition is that such framework reaches and maintains a *reflective equilibrium* among different dimensions. Inclusiveness is one of the key words adopted by the EU that we need to follow, and inclusiveness cannot be reduced to static, settled rules among individuals, but should be rather seen as multilevel, dynamic engagement. We are not suggesting an arithmetical balance but a pondered one, based on immanent issues. One of the common fears across societies is exactly that one logic or 'rationality' takes over the other ones[42]. This is always possible and in some ways needed as it stems from immanent needs of individuals thus initially conflictual. An innovation, either on the product or the process side is always conflictual because it breaks the established order forcing parts of society to reflect and adjust accordingly[43]. But the energy, the expressive power embedded in each dimension needs to be inserted in a relational structure that could mitigate it and increase its extension. And we do not have to forget the relational nature of innovation itself. In the end innovation is also this, to use a specific technique of a domain within a different domain according to different finalities (Schumpeter 1934, Ch.2). Accordingly, the equilibrium is not simply a compromise but a new perspective that embodies and sublime two or more perspectives for the sake of freedom. These are the three criteria that I believe can identify if RRI framework.

The result will hopefully be a structure leading to the integration of all these sides in their application, "one in which the total becomes far greater than the sum of its parts"[44].

42 For a deep and clear analysis see, Virgil Lenoir could be mentionned to go further on this issue: Lenoir V.C., *Le potentiel éthique de l'efficacité. Responsabilité et contingence,* Londres, ISTE-international-Wiley, (translated), *Ethical Efficiency. Responsibility and Contingency,* 2015.

43 Schumpeter talks of innovation as disrupting.

44 Owen et al., 2013, p.14.

RRI should not be considered as an instrument of articulation and extension of the (neo)liberal dominion, as Ewald would say. RRI must instead be understood as the stimulus through which the EU wants to reconnect the various social spheres in a stable dialectic. It could be contested that other interpretations are equally valid from a conceptual point of view and they would be correct. In fact, what we have tried to point at in this analysis is a model of RRI to look up to. The sociological presence of certain structural realities does not exhaust what we believe should be understood as a task and not as a status. It would be wrong to understand RRI as a matter of fact. We should rather intend it as performative framework that can never be accomplished. What RRI is going to actually be is an operation to be realised, and the political-conceptual references are the tools trough which to understand how to manage it.

The objective of RRI is to innovate and implement research not only to make Europe survive but to make her grow. In order to succeed, the double aspect of legitimacy and efficacy must be held. This becomes possible first of all by the criterion of responsibility that embodies a polysemic perspective of response to social claims and expectations. Furthermore, through a balanced comprehension of the different acceptions on an institutional plane, this perspective assumes its ethical value, exactly because it embraces in an objective way the entire individual needs, interests and desires. In other words, the institutional devices take care of guaranteeing and implementing freedom. In this way RRI becomes an ethical framework because it faces future, in an institutional way, by means of values, norms, etc., present in a determined context aimed at guaranteeing and increasing the level of wellbeing.

Thanks to ethical structure present through the concept of responsibility, RRI entails not only the overseeing of innovations, but also and above all the increase of their efficacy, because framed into a productive and intersubjective dimension. RRI cannot be exhausted by a cumbersome juridical structure, but should be conceived as the concrete answer to the need to act and to produce progress, a progress that is the actualization of contextual issues. If we want to implement RRI and its role in society then we should consider RRI for its envisaged spirit: *a framework that facilitates the articulation of different normative sets within a society with the aim of fostering the social level of wellbeing.*

Only if we will consider RRI as an ethical frame, one that is able to include all the different sub-systems in a balanced and dialogic way, we will be able to develop a legitimate and efficient process of Responsible Research and Innovation.

1. References

i. Brandom R. B., *Making it Explicit: Reasoning, Representing and Discursive Commitment*, Harvard University Press, Cambridge (MA), 1998.

ii. Dewey J., *The Public and its Problems,* Swallow Press / Ohio University Press, Athens, OH, 1954.

iii. Ferry J. M., *Valeurs et Normes*, Université Libre Bruxelles, Bruxelles, 2002.

iv. Gianni R., *Freedom and Responsibility. The Ethical Realm of RRI*, ISTE/Wiley, New York-London, 2016.

v. Grinbaum A., Groves C., « What is 'Responsible' about Responsible Innovation? Understanding the Ethical Issues », in Owen R., Bessant J., Heintz M., (eds.), *Responsible Innovation*, John Wiley & Sons, Hoboken (NJ), X 2013.

vi. Grunwald A., « Responsible innovation: bringing together technology assessment, applied ethics, and STS research », in *Enterprise and Work Innovation Studies,* 7: 2011, 9–31,.

vii. Grunwald A., « Technology Assessment for Responsible Innovation », in Van den Hoven J., Doorn N., Swierstra T., Koops B. J., Romijn H., *Responsible Innovation 1. Innovative Solutions for Global Issues*, Springer Science+Business Media Dordrecht 2014, 15-31.

viii. Gunther K., 'Communicative Freedom, Communicative Power, and Jurisgenesis', in Rosenfeld M., and Arato A., (eds.) *Habermas on Law and Democracy: Critical Exchanges*.University of California Press, Berkeley (CA), 1998, 234–254.

ix. Gunther K., The Sense of Appropriateness. Application Discourses in Morality and Law, Suny, Albany, 1993.

x. Habermas J., « Critique et Communication : Les tâches de la philosophie » (interview)*, Esprit* 417, August-September,, 2015, 40-54.

xi. Habermas J., *Between Facts and Norms,* Polity Press, Cambridge, 1998.

xii. Habermas J., *Theory of Communicative Action (2 vol.)*, Beacon Press, Boston, 1984.

xiii. Habermas J., *Truth and Justification*, MIT Press, Cambridge (MA), 2003.

xiv. Honneth A., *Freedom's Right. The Social Foundations of Democratic Life,* POLITY, Paris, 2014.

xv. Honneth A., *The Critique of Power: Reflective Stages in a Critical Social Theory*, MIT Press, Cambridge (MA), 1991.

xvi. Jonas H., 1979, *The Imperative of Responsibility: In Search of Ethics for the Technological Age*, University of Chicago Press, Chicago, 1979.

xvii. Kalberg S., « Max Weber Types of Rationality », in *The American Journal of Sociology*, Vol. 85, N° 5, 1980, 1145-1179.
xviii. Kervégan J. F., *La raison des normes : essai sur Kant*, Vrin, Paris, 2015.
xix. Lavelle S., Rainey S., "Transformation of Proceduralism from Contextual to Compehensive", in Doridot F., et al., (eds.), *Ethical Governance of Emerging Technologies Development*, IGI Global, 2013, pp. 312-344.
xx. Lenoble J., & Maesschalck M., *Toward a Theory of Governance: The Action of Norms*, Kluwer Law International, The Hague/London/New York, 2003.
xxi. Lenoble J., Maesschalck M., *Democracy, Law and Governance*, ASHGATE Farnham, 2010.
xxii. Lenoir V. C., *Le potentiel éthique de l'efficacité. Responsabilité et contingence,* Londres, ISTE-international-Wiley, (translated), *Ethical Efficiency. Responsibility and Contingency,* 2015
xxiii. Mauss M., *The Gift: The Form and Reason for Exchange in Archaic Societies,* Norton & Company, New York, 2000.
xxiv. Moyar J., « Consequentialism and Deontology in the Philosophy of Right » in Brooks T., (ed), *Hegel's Philosophy of Right*, Blackwell, Oxford, 2012.
xxv. Owen R., Bessant J., Heintz M., (eds.), *Responsible Innovation*, John Wiley & Sons, Hoboken (NJ), X 2013.
xxvi. Pavie X., Scholten V., Carthy D., *Responsible Innovation. From Concept to Practice*, World Scientific, Singapore 2014.
xxvii. Pellé S., and Reber B., From Research Ethics towards Responsible Innovation, ISTE-international-Wiley, 2016; Pellé Sophie and Reber B., « Responsible Innovation in the Light of Moral Responsibility », Journal on Chain and Network Science, Special Issue: Responsible innovation in the Private sector, 15 (2), 2015, pp.107-117.
xxviii. Rawls, J., *A Theory of Justice*, Harvard University Press, Cambridge (MA), 1979.
xxix. Reber B., « Les risques de l'exposition à la délibération des autres », *Dialogue et pouvoir*, *Archives de philosophie du droit*, Tome 54, 2011, pp. 261-281.
xxx. Reber B. (dir.), *Vertus et limites de la démocratie délibérative, Archives de Philosophie*, Tome 74, avril-juin 2012.
xxxi. Reber B., Pellé S., « Theoretical Landscape », GREAT Project, 2013-2016, available at http://www.great-project.eu/deliverables_files/deliverables03, 2013.
xxxii. Ricoeur P., *Reflections on The Just*, Chicago University Press, Chicago, 2007.
xxxiii. Ricoeur P., *The Just*, Chicago University Press, Chicago, 2000.
xxxiv. Schumpeter J. A., *The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest and the Business Cycle*, translated from the

German by Redvers Opie, Transaction Publishers, New Brunswick (U.S.A) and London (U.K.), 1934.

xxxv. Spaapen J., et al., *Indicators for promoting and monitoring Responsible Research and Innovation*, EU Commission, June 2015. Avalaible at http://ec.europa.eu/research/swafs/pdf/pub_rri/rri_indicators_final_version.pdf.

xxxvi. Van de Poel I., « The relation between Forward-looking and Backward looking Responsibility », in Vincent N., van de Poel I., and Van den Hoven J., (eds.), *Moral responsibility, beyond free will & determinism*, Springer NL, Dordrecht, 2012.

xxxvii. Van den Hoven J., « Value Sensitive Design and Responsible Innovation », in Owen R., Bessant J., Heintz M., (eds.), *Responsible Innovation*, John Wiley & Sons, Hoboken (NJ), X 2013.

xxxviii. Van den Hoven J., Doorn N., Swierstra T., Koops B. J., Romijn H., *Responsible Innovation 1. Innovative Solutions for Global Issues*, Springer Science+Business Media, Dordrecht 2014.

xxxix. Van den Hoven J., Lokhorst, G.J.C. and van de Poel, I., « Engineering and the problem of moral overload. *Science and Engineering Ethics* 18(1), 2012, 1–13,.

xl. Von Schomberg R., Science, Politics, and Morality: Scientific Uncertainty and Decision Making. Kluiwer, Dordrecht, 1993.

xli. Von Schomberg, R., « Vision of Responsible Research and Innovation », in Owen R., Bessant J., Heintz M., (eds.), *Responsible Innovation*, John Wiley & Sons, Hoboken (NJ), X 2013.

xlii. Williams B., *Moral Luck*, SUNY Press, Albany, NY, 1984.