Governance of Responsible Innovation
GREAT – 321480

RI Corpus of Guidance and Governance and Taxonomy of Approaches			
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Executive Summary

This deliverable is meant to represent an epistemological analysis on the results of deliverable 3.2. The latter gathered data from 7 European and national research projects highlighting the different frames and tools adopted for ethical purposes. The aim was to provide some material, coming from desk studies, useful for further analysis.

In this sense the aim of the present deliveable is to analyze those data via the parameters developed earlier in the project in order to abstract characteristics that are common to research projects. The objective is to delineate paths that could help us in understanding the trends of research and innovation in order to assess the reasons for potentially bad and good practices in RRI.

The methodology adopted in this deliverable could be understood as a dialectic between a descriptive and a prescriptive approach. If on the hand we started from the data and we just highlighted the similarities and contrasts under the light of the parameters desumed in the Analytical Grid, on the other hand we unveiled the epistemological presupposition that specific paths embody, showing how the adoption of determined tools or strategies within research projects imply specific understandings of the relation between science and society.

The results we obtained depict a scenario where most of the research projects conceive the context[1] as an external factor that should be taken into account only from a top-down perspective. Precisely, 5 out of 7 projects are completely decontextualised adopting reductive tools to implement ethical issues showing an approach that presupposes the norms construction. One project has a consideration though limited of the context and one (funded at a national level) embeds a co-constructive governance model.

Accordingly we have discovered that almost all of the projects can be epistemologically idenitified as expression of non-democratic paradigms, falling under the categories of technocratic, ethocratic or epistocratic one. Only one could be defined as a democratic attempt to promote research and innovation with and for society.

From this scenario and the reasons that causes it, we were able to draw some hypothesis as a proposal for RRI. In fact our analysis was based on parameters derived from Del. 2.3 and the absence or exploitation of certain factors is the main reason for an environment where the context is highly ignored. Thus, the list of processes or action (and their quality) that could divert the route were deduced by a matching operation with the Analytical Grid.

[1] The glossary developed in Del. 2.1 describe the context as *"a key component of any interpretation: In order to understand a phenomenon or give sense to it, social scientists and anthropologists gather its surrounding features. In other words, contextualization "involves making connections and, by implication, disconnections" (Dilley 2002: 438-439). For instance, a context can be "political or "economic", but the concept can also indicate different levels of (micro or macro) analysis, such as the "situation", a particular "society", a specific state or even the "world-system" (Dilley 2002: 438)"*.

The main stream of science seems to ignore the context by reducing participation to a pre-determined consultation process imposing or shaping the outcomes. The only possible apport coming from the context is reduced to a consumers' needs feedback avoiding to consider other normative claims and the manners to include them in the development of research. Therefore we suggested to enhance participatory frames that must be based on the effective contribution of a wide range of stakeholders. The effectiveness of this contribution can only be guaranteed by the settlement of a two-fold reflexive process where participants are called to carefully consider not only specific issues but also the very conditions of the reflexive process itself. Only such a structure could provide research projects with the sufficient legitimacy necessary in every democratic process.

1. Introduction

The present deliverable follows the analysis on past projects accomplished in deliverable 3.2. In that deliverable it has been shown how a certain number of projects (7) complied with the contexts for which innovations represent a significant input. The aim of del. 3.2 was to produce an overview that could list and highlight ethical tools within single research projects. Through means of the analytical grid, a series of measures and structures have been underlined and described.

According to Del 3.2, there are a quite limited number of projects (1, 2 according to our limited investigation) that tend to explicitly ignore the problems and the societal claims that every innovation could potentially raise. A discrete number of projects seem to take into account to a certain extent different perspectives and the consequent clashes that they could pave the way to. In this sense, different means are adopted in order to avoid, at least in principle, obstacles and protests rising from non-instrumental contexts.

Of course this wide understanding includes sub-positions that are hardly reducible to one another and that tend to increase the complexity of the analysis. Del. 3.2 highlighted how often, in fact, a basic oversight or misinterpretation on what responsibility means in practical terms tend to generate a series of blurred, confused and sometimes detrimental effects in research and innovation. Responsibility is often conflated to a mere legal understanding that, ignoring all the other acceptions of the concept, tend to downplay not only the social issues at stake but the very nature of the relation between science and society.

In this deliverable we will set out a picture of how research projects handle their responsibility related to innovation. In principle Del. 3.3 represents a junction between a mostly theoretical and conceptual analysis (including a comprehensive review of existing RRI literature), as conducted in Del. 2.3, versus an analysis of concrete projects (one financed through a national funding agency, the others through the EU) in Del 3.2, in order to evaluate the theoretical against the empirical. In practice we will try to assess the correlation between the literature of RRI and the actual management in research projects. The outcome will be a set of paradigms useful to analyze RRI, both in theory and practice.

By mapping and matching the findings of our investigations in the projects (Del. 3.2) with the theoretical paradigms of governance we can better understand projects and their governance approaches, and gain insights related to governance applicability to the real world (Del. 3.4) of research and innovation.

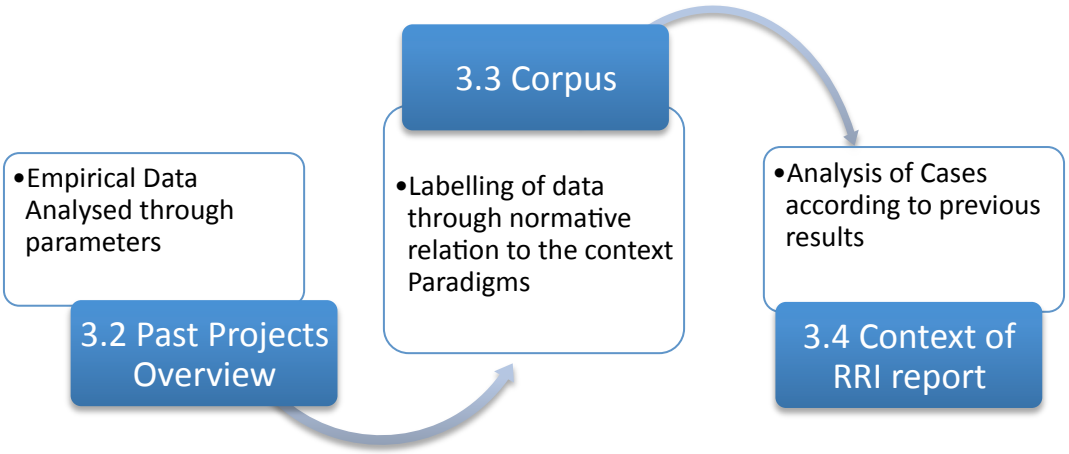
3.3 Corpus
•Empirical Data Analysed through parameters
3.2 Past Projects Overview
•Labelling of data through normative relation to the context Paradigms
•Analysis of Cases according to previous results
3.4 Context of RRI report

Figure 1:

1.1 Overview

The problem we wish to address in this project is the effectiveness (in the sense that RRI is not only present as a label but produces tangible effects) of RRI in the governance of EU-funded projects on ICTs. This means to address the ways in which ethical norms are constructed and implemented in these projects, and under what conditions they emerge and are handled. The literature analysis confirmed that there has been a growing gap between the ethical and the technological expertise; that the reductive ethic in the hands of experts is embedded in specific cognitive framings which ignore the context of application of norms. In this way the identification of an ethical issue and its means of resolution are abstracted from the context of its application. But as we have shown in Del. 2.3, if we want to implement a norm we need to consider as a basic presupposition the context of its application. Addressing the cognitive closure that the context also brings about can be done by means of a double reflexive process involving learning actors and by destabilizing the apriori thinking embedded in the interpretation of ethical norms.

In order to address and solve these problems we need to achieve a governance approach that integrates learning into the technology development process. Therefore we must look into the conditions that may be needed for the effective implementation of ethical norms into the context from the beginning of a project.

We will need to try and answer to some of these questions by criticizing the structures, processes and mechanisms that are actually and currently envisaged in R&I. This means to analyze the reality of existing governance structures and their epistemological map.

Therefore we will proceed analyzing the outcomes of the previous deliverable through our political and epistemological frame. Embedded in Work Package 3, this document will follow a descriptive approach focusing on the reality and efficacy of RRI.

2. Methodology

In order to provide a taxonomy of governance approaches and a corpus model of R&I we need to follow a precise methodology in accordance with previous results and the general rationale of the project.

A first step will be to recall the justification developed and expressed in Del. 2.3 (Analytical Grid). This will define and reassert the rationale behind our path so to introduce how the analysis will be carried along the deliverable.

A second step will be to define the frame in which the relation between norms and context are settled. Here we will recall the possible matches between norms and context and highlight the presuppositions underlying the construction of norms.

The third step will be to draw patterns that occur in RRI governance in order to be able to start modeling practical examples. Therefore the connection between the results of Del. 3.2 and our theoretical tools needs to be enforced by demonstration of validity.

In this part thus we will need to schematically recall the results obtained in the previous deliverable (Del. 3.2) to start ordering the amount of data and the complexity of the outcomes. This will lead us to the attempt of analyzing, where possible, the connections between norms and context in order to show empirical and actual management of …? within EU and non EU-funded projects.

At this point we will be able also to connect directly the results to their epistemological dimension, i.e., paradigms, with regard to the construction of norms, highlighting how certain political approaches are based on specific epistemological presuppositions.

The deliverable is in fact meant to proceed towards the construction of a corpus of RRI governance, that is, an identification of different possibilities into what we call paradigms.

By the help of the paradigms we will assess the current state of RRI in research projects trying to underline not only the modalities but also the reasons concurring to create such a scenario.

In short, this deliverable will represent a path going from empirical evidence into more general references in order to confirm or modify our previous theoretical assumptions (as summarized in the Analytical Grid, Del. 2.3) and to offer a tool for assessing the relation between norms and context in RRI.

3. Analytical Grid: Parameters and Spectrum of Application

This deliverable relies and follows Del 3.2 where 7 past projects have been analyzed. Via the analytical grid tools it was possible to analyze the projects and now we have to determine some abstractions from these analysis. We will connect all these projects through means of the relation established between norms and context as shown in Del. 2.3 where we highlighted how the norms' construction should be tightly connected to the context.

An important premise is to briefly recall the results of Del. 2.3 summarized in the Analytical Grid.

What we tried to explain in Del. 2.3 was that, in order to determine the frame for implementation of RRI we need to take into account the condition for its application. Of course this brief statement implies different levels of analysis. We started by analyzing separately innovation and responsibility in order to define their meaning in ideal and real terms. We showed how the concept could easily be misunderstood paving the way to distorted or reductive position. We then merged the two concept together in order to highlight the normative dimension of RRI. As well in this part we analyzed the most

advanced attempts of providing a frame of RRI trying to demonstrate that what is needed is a frame for and not of RRI. This means that RRI should be tied to an ethical background that only can guide (facilitate) its development. In practical terms we shed light on the deeper levels of RRI construction pointing at the 'negative' similarities that can be unveiled in it. We understood that all RRI attempts tend to develop some rationalistic structure based on risk assessment techniques or on superficial degrees of inclusiveness. Anticipation and reflexivity are surely the two key-terms that underlay most of the analyzed proposal. However, the problem posed by the current scenario and emerged from the same conception lead us to the need of developing a different hypothesis. If the problem is represented by the normative plurality, its clashes and the potential acceptability of innovation according to these normative backgrounds, then the only possible solution is to think about a frame that is constructed exactly from and on this background. In other words, if it is the context that calls for attention, this very context needs to be our starting point. In this sense then every RRI attempt needs to develop a normative horizon on the basis of the context. In practical terms it means that we need to go beyond the mild inclusiveness currently experienced towards practices of participation that are focused on reflexivity aiming at questioning the constraints of contexts. The analytical translation of our investigations gave birth to a series of parameters necessary for analyzing the attempts of given researchers and innovators (successful or not) who aim at realizing RRI. Our parameters try to address the condition for establishing a balanced influence of deliberation and participation taking into account the difficulties and contradictions that these two methodologies carry with them If on the one hand a full participation would require huge efforts without providing sufficient guarantees of success, on the other hand deliberation in itself is only a formal procedure that ignores substantial matters.

Product	Safety/Sustainability/Privacy/Justice
Process	Accountability, Transparency, Stakeholder-Involvement
Tools	Participation, Ethical Tools
Epistemic Tool	Risk Assessment/ Precautionary Principle
Participatory Approach	Participant: Spectator, Influent, Decisive
Assessment	Expert-based, Shared approach, etc.
Cultural Context differences	Ignored, Considered, Crucial
Norms/Law relation	Committed to law/beyond law

Figure 2: Analytical Grid

4. The Relation of Norms and Context: Paradigms

4.1 The SIM Presuppositions

According to Lenoble & Maesschalck every norm is built on three main presuppositions that automatically affect the consideration and valorization of the context. By adopting certain presuppositions, that the two authors name as Schematizing, Intentionalist and Mentalist (SIM), every approach to an ethical issue is confined to a rationale that doesn't take into account the effectiveness of norms as if the norms justification could correspond to the norm application tout court.

Intentionalist Presupposition:	**Schematising Presupposition:**	**Mentalist Presupposition:**
The norms' effects are supposed to be deducible from the simple intention to adopt the norm. Additionally, we find the implicit presupposition that an actor will have full capacity and intention to contribute in the discussion when involved in a participatory approach.	The norms' application is a simple formal deductive reasoning on the basis of rules themselves. The determination of the norm is linked to these rules, such as ethical guidelines, laws, or other schemes, that is consider able to predetermine the effect and therefore the application of a norm. External constraints are not taken into account.	The norms' application is deduced by an imaginary set of rules that the mind is supposed to have. Also here the context doesn't play any active role and a process 'interruption' is considered as expression of irrational attitudes or behaviors.

Figure 3: SIM Table

The reason of the lack of questioning about the effectiveness of the norms is that implicitly all theoretical approaches presuppose that the conditions that determine the effectiveness of norms are linked to rules presupposed within the mind (**mentalist** presupposition) and consequently are supposed to be a function of mental capacities. Since the mental capacities are independent of the external context of the subject, the governance theories ignore the question of the effectiveness of the norm. In other words, often governance theories presuppose that the effectiveness of the implementation of norms is not a question, because it is not dependent on external factors, but is the necessary result of the norm itself. The mentalist presupposition is then thinking that the existence of norms is enough to activate mechanism in the mind that will assure the effectiveness of implementation.

However, if the problem is addressed, the solution cannot be in the theory of norms itself, according to the mentalist presupposition, because it depends on the condition of the mind, that accept or not the norm.

The mentalist approach is often linked to an **intentionalist** presupposition, which assumes that the norms effects are deductible from the only intention to adopt it. That means that the intention of adopting the norm is the only factor that determines the effect of the norm. The will of the users and developers to implement the norm is simply presupposed, so the problem of implementation is solved without even being addressed.

Another very common presupposition is the **schematising** one, which assumes that the effectiveness of a norm is guaranteed by the norm itself, in terms of deduction. There is nothing needed than the norm itself in order to apply it successfully. The logical outcome of those presuppositions – which has been analysed and developed by the School of Louvain - is that the condition of the application of the norm is ignored because those conditions are considered to be in the mind of people, and if they are not considered to be automatic, at least, they imply that governance theory has no impact on it.

In this way, in presupposing the application of a norm by its formal justification, the SIM presuppositions loose two main characteristics that should ground every norm construction, even in principle, that of legitimacy and of effectiveness. Avoiding to take into account the possibility that a certain norm won't be accepted or applied, it means to empty that same norm from its content, the same content that solely give to every norm the reason to be and to be followed, i.e., the context.

4.2 The Relation between Norms and Context

What is it then in the end the context that we shouldn't presuppose? What are we intending when we take into account and highlight the importance of the conditions of possibility of reflexivity? Relying on a meta-definition provided by Maesschalck and Lenoble[2], the context, *"is not a local set of factual constraints. It is not that false 'representation' of Marxist ideology. It is not that particular culture which cultural anthropologists could identify and which would be 'deposited' in the minds of individual actors as continually adaptable conventions that would serve as 'capacitating' structures for them. These three ingredients certainly exist as so many functions of context. But by themselves they do not exhaust the function of the context. On the contrary, by reducing context to one or other of these functions one misses the question of 'potentiation or capacitation of context' to produce these meaning effects. These neologism indicate the necessary reflexivity of the judgment by which the context, on the basis of which a norm is given sense, is 'perceived'. The concept of*

[2] Lenoble, J., Maesschalck, M., (2003) *Toward a Theory of Governance. The Action of Norms*. Den Hague: Kluwerlaw.

'context' must, indeed, itself be reflexively constructed, as has just been recalled. Qualifying it in this way we seek to highlight this reflexivity of the concept of the context, which cannot be reduced to any 'convention' supposed as given (and spontaneously revisable by the cognitive and communicative capacities of the subjects)"[3].

In this sense, the possible relationships of norms to contexts are the following:

- *De-contextualised* – refers to the situation where the ethical norms are conceived externally from the context of application
- *Context restricted* - refers to the situation where the ethical norms are considered in a restricted manner with regard to the context of application
- *Fully contextualised* - refers to the situation where ethical norms are completely integrated in the context of application

Criticism of this reconstruction of the level of reflexivity used in the construction of social norms also affects the moral approaches to legitimacy. Economic theories often obliterate the fact that operating a choice between a range of possibilities can already condition the effects of rational decisions, as well as the deliberative or communicative approaches also miss the question of the substantive conditions for the expression of the ethical objectives they intend to promote. As correctly pointed out:

"Certainly economic theories obliterate the operation of the choice of possibilities (in terms of choice of a way of life and not of the operation of maximization or of 'satisficing') that always already conditions the effectuation of a decision or of a norm, the deliberative or communicative approaches miss the question of the conditions for an efficient realization of the ethical objectives they intend to promote. In this sense ***one can dismiss both the economic theories of efficiency and the deontological approaches of discourse ethics.*** *[…] Therefore, this critique, provoked by this reconstruction of the reflexivity at work in the operation of the production of a social norm, is not aimed only at economic theories of efficiency. It also concerns the moral approaches to legitimacy"*[4].

The insufficiency of proceduralism, for instance, becomes more evident for the fact that the arrangements that are necessary for organising the reflexive capacity for the actors to identify the various effective possibilities on which the norms selection will be carried out are problematic*. "What is often presented to us as the only 'effective' choice is thus always conditioned by an operation that such a presentation does not take into account".* Whether

[3] J. Lenoble & M. Maesschalck, *Toward a Theory of Governance: The Action of Norms*, Kluwer Law International, 2003, p.87.

[4] J. Lenoble & M. Maesschalck, *Toward a Theory of Governance: The Action of Norms*, Kluwer Law International, 2003, p.93.

a norm is effective in modifying a way of life in a rationally acceptable way presupposes an independence from the context that cannot be a given factor.

The following table explains this common dualistic understanding and the underlying mistake:

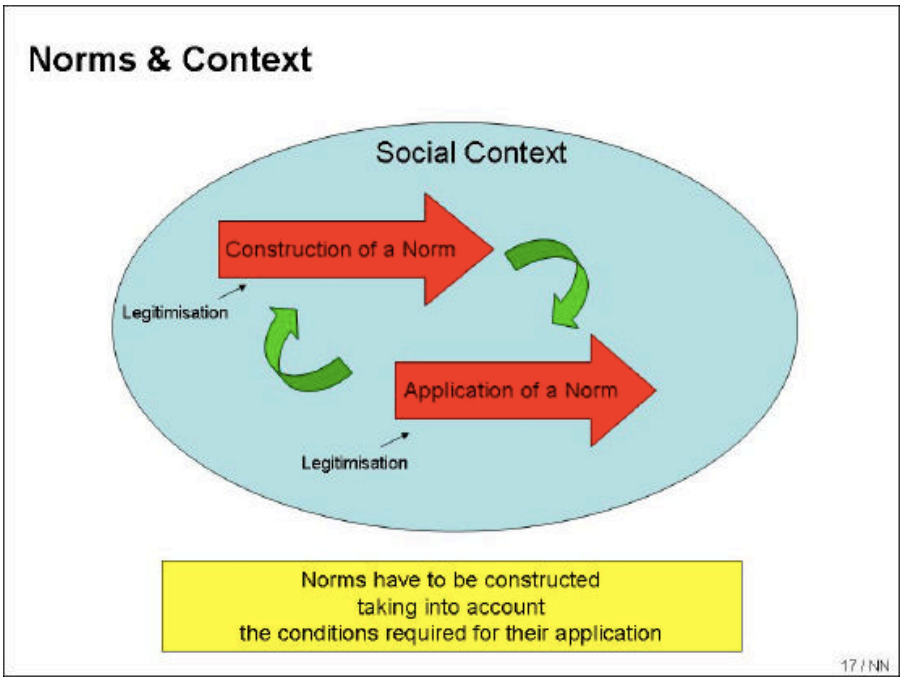

Figure 4: Norms & Context

Norms then must be conceived and constructed taking into account the conditions of their application, that is, the participative and reflexive approach of all the different actors possibly involved.

Is this usually accomplished in research projects? We need to highlight the findings of Del. 3.2 to understand the reality of the norms/context relation, but first we need to introduce the possible variation in our descriptive process of labeling.

5. Overview on Data Gathered from Past Projects

PROJECT	Relation with Context	Tool Usage/Justification	SIM	Governance Model
BEAMING	De-context	Ethical/Legal Dels.	All	Rev Standard
INDECT	De-context	Ethical Board	All	Rev Standard
HUMABIO	De-context	Ethical Dels. Ethical Board, End-User Consultation	All	Rev Standard
MIAUCE	Restricted Context	Embedded SHS Scientists, Ethical Manual, Surveys, Focus Groups	All	Consultation
GM VINES	Fully Context	National Regulation, Interactive Technology Assessment	All	Co-construction
Best Energy	De-context	Surveys, Workshops, Users' needs analysis	All	Consultation
Cowam	De-Context	To be filled	All	To be filled

Figure 5:

The results summarized in this table are in a way quite illustrative of a scenario that still doesn't take into account in depth ethical issues. In particular only one project seems to develop in a manner that concur to make the context effective in the decision-making process. However, being a table, incurs in the structural limits that every schematization implies. In this sense we need to explain briefly what are the implications of this depiction and we will try to accomplish such a task by mean of trends that characterize research projects. We need to list the potential patterns that we could find and match them with what we found so to be able to abstract the epistemological frame underlying them.

6. Patterns of RRI

What both, the data gathered in del. 3.2 and our critical diagnosis show, is the correspondence between some issues that we warn against in our theoretical analysis and the application in research and innovation.

Five projects out of seven adopted an approach that can hardly be seen to embody responsibility as described in deliverables 2.2 and 2.3. Although we might find partial fulfillment of prescribed duties we barely can distinguish additional efforts towards RRI. For the sake of our analysis we abstract some tendencies into what we call patterns, which means general trends in the management of responsibility in research and innovation. A

pattern is the summary of the processes of RRI in projects considering all the different issues that we highlighted and justified in Del. 2.3. So the relation to the context, the corresponding norms presupposition, the tools that shows us an applied example and the matching governance approaches are all in one chart flow that provide an overview of the correspondences.

There are four possible patterns in the RRI application that lead to as many epistemological paradigms.

- **Pattern 1**: The first one is the most direct one, showing the characteristics of the standard model of governance, with a tendency toward de-contextualisation of the relationship between the norms and context, with three presuppositions in the background, and experts being at the center. Although it used to be the main frame adopted in the past, all the attention and the efforts to overcome such an explicit top-down approach made it outdate. In our analysis we found it once.

  This pattern fits well with the ethocratic paradigm in which the convergence of morality, political virtue and political action is at the heart of dealing with ethical issues.

- **Pattern 2**: The second type can be categorized under the revised-standard model of ethical governance, majority of which have a relationship to the norm where the context is restricted. The stakeholders are involved, but since they do not participate in defining the context themselves, tools involve stakeholders are justified for the purpose of utilizing them as information source for decision- making. This pattern seems to be intensively adopted according to our investigations.

  This pattern is directly related to the technocratic-instrumental paradigm, with some elements from the ethocratic paradigm.

- **Pattern 3**: An increasing, though still few, number of projects can be grouped under the consultation model, because the level and nature of risk perception differs between the public and the experts. Tools are mainly used for consultation purposes although they appear as willing to take into account the context. This kind of pattern is more complex to identify in analytical terms giving the blurred lines between normative references and real usage of tools. Even this tendency has been increasing concentrating on the acceptance side provided by communicative strategies.

  This pattern is related to the epistocratic-cognitive paradigm, specifically to a moderate form of epistemic democracy tradition. the discussion between the experts and the people is accepted, but it is also introduced a form of elitism because the weight of experts must be more prominent. Therefore, in this pattern, and in relation to this paradigm, one consults the public, but also restricts the scope

of consultation in making a science-based cognitive interpretation of the public acceptance of risks involved.

- **Pattern 4:** There is only one project adopting governance tools that fall into the co-construction model. GM Vines appears to imply the right political tools and a well-intentioned usage of them.

  This pattern is linked to the democratic paradigm as the idea is a mixture of deliberative discussion and participation, and the ethical reflexivity where an exploratory approach takes place in the construction of the context by all the stakeholders.

Matching the different aspects of each of the seven projects according to our analytical grid we discovered that most of the projects tend to adopt a similar reductive frame although they are developing strategic ways to avoid substantial ethical concerns.

As shown in the table below, the most recurring pattern is a decontextualized approach generating a series of measures and approaches that avoid taking into serious consideration the role and the voices of different stakeholders in the context. Although it is difficult to operate a clear distinction between every parameter in each project the outcome seems to tell us that most if not all the projects consider ethical issues as mere add-on necessary to persuade the context or to impose one specific frame.

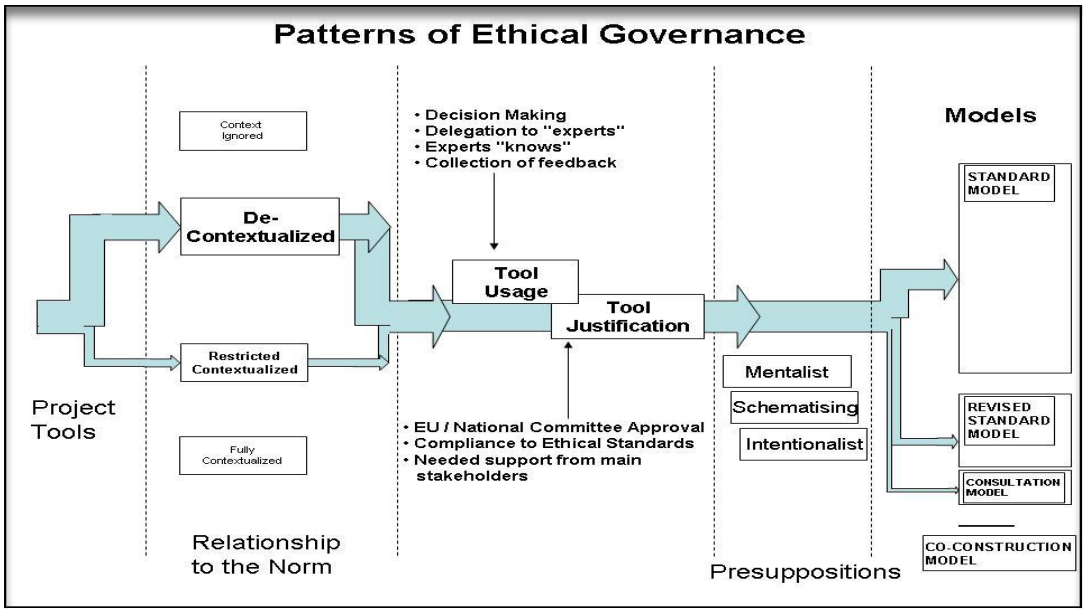

Figure 6: Path of Patterns

The general picture on the table demonstrates that technocratic, ethocratic and epistocratic paradigms more or less have equal rate of relationship with the tools, governance models and the contexts derived from the projects analysed. The democratic paradigm is revealed in few cases which should be related to the consultation model and its link to the restricted

contextualised model.

If we revisit the **patterns** emerged from data they show that:

From the ways of which the tools are used in selected projects and the reasons behind them, ethical and technical expertise are separated; the stakeholders, particularly the users or the public are involved with the project process only for consultation purposes about the technology's design or usage, which ultimately aims to lead to the social acceptance of technology. We have seen that although the users are included in the technology development process as a feedback mechanism, the context has been pre-defined and those who already have some sort of 'high level knowledge' give the final decision.

We now need to connect these patterns to political-epistemological paradigms in order to understand not only the modalities through which patterns occur but also the reasons that are hiding behind them.

7. Paradigms and Conceptual Origins

The key characteristics seen in the governance tools for RRI led us to defining four patterns. As a result, we would argue that the sets of governance theories that may be grouped according to the nature and the features of the extent to which the non/technical; non/ethical; non/participatory; non/scientific governance approaches have been influential in the determination of social and ethical norms. The relationship between patterns and paradigms varies also according to the 'percentage' of each presupposition (intentionalist, schematizing, mentalist) embedded in the ethical issue determination and implementation.

Our paradigm characterization proposes a set of four types: technocratic-instrumental, ethocratic-normative, epistocratic-cognitive, and democratic-inclusive. Our reasoning in coming up with paradigms is not fed by the path leading from particular facts or ideas to a general rule or law, but rather constructing a link between the patterns and the trends that characterize different governance approaches developed in literature (i.e. paradigms), which should be seen as a descriptive approach that our empirical findings derived from the selected projects inform this path.

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.

The conceptual elaboration of the paradigms of governance on the basis of some empirical case studies raise 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 (Rawls, Habermas, Latour).

The next section will explain each paradigm with reference to literature followed by a section illustrating the path leading us from governance tools to paradigms through the patterns coming from the projects analysed.

7.1 Concept of Technocracy

As we said the technocratic-instrumental paradigm is a mixture between the technical expertise provided by limited subjects and the instrumental determination of technical skills in the construction of social rules and choices.

The concept of technocracy can be found for the first time in the doctrines of the French philosophers Saint-Simon and Auguste Comte.

Saint-Simon was the founder of a doctrine that gave the industry and its representatives (engineers, bankers, etc..) a major role in the project of society transformation. The view of Saint-Simon is that of a society organized according to the model of a factory, in which the happiness of individuals coincides with the satisfaction of their physical and moral needs. In this model, the government is fully identified with the administration of material things in the hands of specialists in Arts and Crafts. The ethics of technocracy as elaborated by Saint-Simon is quite close to that of utilitarianism, with certainly a more positivist orientation:

This ‘technocratic’ doctrine, is also related to that of Positivism developed for instance by Auguste Comte, although for him, the reform of society requires first an intellectual mutation. For Comte, as an intellectual of the late 18th century, political progress strongly relies on scientific progress, given the need to overcome religious and metaphysics stages. The new era then was supposed to be based on the universal application of the experimental method, which was to be extended as well to social phenomena, through the creation a new scientific discipline that was named for the first time in 1795 as ‘sociology’.

Without the need to go into a genealogy of positivism, its spirit and all the connected issues have been deeply described and tackled in Germany during the 1970s of last century (*Positivismusstreit*). What counts is what lies at the core of such a conception when it comes to its political effects.

In fact technocracy (power of the *techné*) refers to a science and skill-based form of power. It is separated from other long identified forms of powers, such as democracy (power of the people). It is also a particular mode of conduct, reluctant to political compromises and targeting the sole efficiency. Of course, this idealized picture neglects the underlying implicit value choices in the decisions made by the technocrats[5]. Technocracy can be said a 'politics of expertise', as stated by Franck Fisher[6], that entails a form of participation only of interests groups.

7.1.1 Instrumental rationality and procedural technics

The instrumental rationality, as a field exercise of reason, is only concerned with the effectiveness of the action. It is characterized in Kantian philosophy by the concept of rational means and technical imperative (hypothetical): if I want to do X, then I must use the means Y or Z[7]. The notion of technical imperative suggests that, in the course of action, there is no moral valuing of the ends, but only a technical appraisal of the efficiency of the means.

It also benefits from a sociological treatment in Max Weber's work, who made an interpretation of modernity as a historical phenomenon of rationalization of the world and life. Weber made a distinction between the end-rationality (*Zweckrationalität*) and the value-rationality (*Wertrationalität*), the instrumental rationality being of the first kind[8].

The rationalization of the world and life is then a historical process in which the instrumental rationality, that of efficient means, is increasingly deployed throughout the modern societies. This process of rationalization is a key factor in sharpening the historical development of modern societies, characterized by the rise of experimental sciences, market economy, bureaucratic state and formal law.

This social engineering, as a technical reformism, is also called piecemeal social engineering, and is distinguished from socialism or communism, that are viewed as forms of total utopias. The social engineering aims at differentiating, with a supposedly absolute neutrality, what can be done from what cannot, what is possible, and what is impossible.

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5 Jean Meynaud (1964) *La technocratie. Mythe ou réalité ?,* Payot, Paris

6 Franck Fisher (1990) *Technocracy and the Politics of Expertise*, Newberry Park, CA Sage

7 Immanuel Kant (2009) *Groundwork of the Metaphysics of Morals*, Harper Perennial Modern Classics

8 Stephen Kalberg (1980) 'Max Weber Types of Rationality', in *The American Journal of Sociology*, Vol. 85, N° 5, pp. 1145-1179, as well as Habermas in the Theory of Communicative Action, Book I, for an interpretation of Weber's types of rationality.

7.1.2 Critique of the Technocratic-Instrumental Paradigm

The main critique of this technocratic-instrumental paradigm is that it is carried about by the defenders of a technical democracy, stating that ethical stakes, such as the good, or the justice, are not dependent upon a procedure, nor an expertise.

Horkheimer and the Frankfurt School have developed a critique of instrumental rationality that was focused on the dangers of its historical development[9]. Then, Habermas added to the concept of instrumental rationality (effective action on the natural world) that of strategic rationality (effective action on the human world). He thus endeavored to prove that these two rationalities suffer from a lack of normative legitimacy that only the communicational rationality (discursive action-oriented understanding) can implement or restore[10].

In his early critique of instrumental technocracy, Habermas endorsed the demarcation made by Max Weber between domination and administrative leadership. According to Weber's decisionist model, administrative action leads to rationalization in the choice of means. Political action itself remains mostly concerned with values, beliefs and goals, but decoupled from any rational basis. Habermas considers however that in an advanced phase of the system, this model is outdated and replaced by the technocratic model, as first described by Bacon and St. Simon. This leads to a reversed relationship between technicians and politicians, in which policy-making is reduced to a body of rational administration, while decision-making looses all autonomy, as a full rational choice under uncertainty.

Instrumental rationality is also related to technocracy in the concept of social engineering as developed by Popper[11]. A social engineer is precisely a technician or rather a technologist in charge of assessing the efficiency of means, regardless of the value of end it can establish, among the available means, whether they are compatible or feasible with an end, but not if the end itself is valuable. It that respect, Popper's social engineering, in the line of the technocratic tradition, can be said a form of procedural technics.

However, Habermas points out the shortcomings of this new model. On the one hand, it presupposes the ability to escape from the constraints of technical progress, which is autonomous only if one ignores the social interests at work. On the other hand, it assumes that the same rationale applies to technical and practical issues, while issues related to the practice are still there and pose a particular problem with the decision. Habermas identifies three models ultimately enrolling in the instrumental paradigm: decisionist (Weber),

[9] Max Horkheimer (1967) *Zur Kritik der Instrumentellen Vernunft*, Frankfurt am Main. Max Horkheimer, Theodor Adorno, (1947) *Dialectics of Enlightment*. See also Pierre-Laurent Assoun, *L'Ecole de Francfort*, Presses Universitaires de France.

[10] Jürgen Habermas (1984-1987) The Theory of Communicative Action, Cambridge

[11] Karl Popper (1988) The Poverty of Historicism, Routledge

technocratic (Bacon, Saint-Simon) and pragmatic models (Dewey). But only the pragmatic model of Dewey is likely to take into account the relationship to the political form of democracy[12].

The stream of technical democracy, as embodied by Callon and Latour in France, is also very critical to the shortcomings of social engineering[13]. Technical democracy states that it is possible, through a set of dialogical settings, such as „hybrid forums" to make technological processes more democratic. Technical democracy is directly connected to the Actor-Network Theory (ANT), and to the translation paradigm, and it seeks to enable a democratization of technology, if not of a „democratization of democracy". This political option on democracy is so to speak the opposite to that of technocracy and social engineering, in Popper's sense. Even if they don't criticize directly Popper's view on social engineering, Latour and Callon offer a radical alternative way to technocracy in supporting a technical democracy. The core of their critique is the so-called 'neutrality' of technical procedures that relies on the myth of the fact-value dichotomy.

7.2 The Ethocratic-Normative Paradigm

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.

7.2.1 Concepts of Ethocracy and example of application

The term ethocracy was created by the Baron d'Holbach, who conceived it as the government based on morals. It meant for him "a union between morality and politics, the idea of legislation consistent with the virtue that could also be advantageous to the rulers, subjects, nations, families, to every citizen"[14].

D'Holbach starts out on the basis of observation of moral ignorance of many men and of divorce between the interests of princes and those of their subjects. The ambition of d'Holbach through the concept of ethocracy was to promote a form of government and law built on the respect and the imposition of a number of moral

The injunctions and obligations of reason, however, as well as the experience leads him to make a plea for a reform of morals. Skeptical about the ability of reason alone to correct bad habits ingrained long, D'Holbach believed in the effectiveness of moral practice

[12] Jürgen Habermas (1968) Technik und Wissenschaft als 'Ideologie', Frankfurt am Main, Suhrkamp. Trans. (in part) by Jeremy J. Shapiro (1970) as Toward a Rational Society: Student Protest, Science and Politics, Boston: Beacon Press, et (1990) La science et la technique comme idéologie, Gallimard, Paris

[13] Bruno Latour (1988) Science in Action, Harvard University Press ; Michel Callon „Des différentes formes de démocratie technique and Callon, Lascoumes, Barthe (2009) Acting in an uncertain world, MIT Press.

[14] Paul Henri, Thiry D'Holbach (1776, 2008) *Ethocratie. Ou le gouvernement fondé sur la morale*, Coda

reinforced by the moral law, in the virtue of examples shown by sovereigns. D'Holbach set up a long list of legal incantations on all sectors of society: public and private, administrative and family, civil and military. Nevertheless, he was little concerned on the practical possibilities of establishing such guidelines. In this respect, D'Holbach was a good example of the typical optimism of the Enlightenment, but seemed to give the norms an inherently effective and binding force.

The concept of ethocracy can be taken also in the sense of 'ethical expertise', as somewhat the equivalent in the field of ethics to the technical expertise in the field of technics. Thus, the concept of ethocracy has known further development in the business of ethicists or moral philosopher dealing with applied ethical issues. These experts in ethics provide guidance through advices and recommendations to various public authorities, hence the link of ethics to power. But the very possibility of a 'moral expertise' divides philosophers, perhaps since the origins of philosophy, since the time of Plato's Meno ('can virtue be a matter of teaching?'). Ryle suggests that the common man is just as well, or even better equipped than the moral philosopher to rule on matters of ethics[15]. However, a philosopher like Peter Singer argues that a morally good man could go that way only in the context of a society with a perfect moral code, which would be fully reliable. For Singer, the moral expertise is possible and useful to identify the good action that requires thought and skills, information. In short, a form of work, the possession and exercise of which confer particular legitimacy to the expert in ethics[16].

Importantly, a historical example of ethocracy can be found in the National Consultative Ethics Committee (CCNE) in France. It was created in 1983 under the presidency of François Mitterrand, and it was the first national ethics committee in the world. The 6th August 2004 Act gives the mission "to provide advice on ethical and societal issues raised by advances in knowledge in the fields of biology, medicine and health". Its statutes are clearly in the perspective of applied ethics, more than in that of a moral philosophy divorced from issues of the time. The Council has an advisory mission, which can be understood in a passive sense (the response to a demand from the power) or active one (the advice to power). Its composition of 40 members is strictly defined by law: 15 persons from the area of biomedical research, 19 selected 'for their competence and their interest in ethical issues, and 5 belonging to the main spiritual families'.

Sometimes accused of being a form of „ethocracy", the CCNE is aware of the risk to embody a forfeiture of democratic thinking in favor of legal ethics experts. It strives for that to involve citizens in their thoughts at various annual meetings (Yearly Conference of Ethics,

[15] Alfred Ayer (1959) 'On the Analysis of Moral Judgement', *Philosophical Essays*, Mac Millan, London

[16] Peter Singer (2006) 'Moral experts', in Evan Selinger, Robert P. Crease, *The Philosophy of Expertise*, Columbia University Press, pp. 188-189.

Citizen Meetings, etc.). It remains significant that the Committee can be seized only by some institutional actors who have been identified, and the question remains open whether this committee is in tune with the rest of society.

7.2.1.1 Normative Rationality and Procedural Morality

In Kant's doctrine, duty is an objective constraint of action for the individual that is shown to be a moral imperative (categorical): X ought to do Y. It manifests itself as a moral law, the criterion being the possibility of a universalization of the particular rule of action in order to make it a universal rule[17]. This possibility of universalization itself requires a judgment of the person, free from confrontation with judgments of others. The moral doctrine of Kant is also intentionalist, in the sense that the criterion of a good deed is the only good will, regardless for the consequences of the action. Nevertheless, for Kant as for the latest Ryle, morality is not an expertise or any special competence. It is rather for a person to have concern for people regardless of his own qualities of intelligence or judgment.

This deontological doctrine is illustrated in particular in the discourse ethics as developed by Habermas, who takes over the Kantian moral heritage. The ethics of discussion is procedural, formal, cognitive, both consequential and intentional, while claiming to escape the reproach of formalism addressed by Hegel to Kant. It is based on two principles[18]:

Principle U (Universalization): "All affected can accept the consequences and the side effects that (the norm's) general observance can be anticipated to have for the satisfaction of everyone's interests, and the consequences are preferred to those of known alternative possibilities for regulation".

Principle D (Discussion): "Only those norms can claim to be valid that meet (or could meet) with the approval of all affected in their capacity as participants in a practical discourse".

According to Habermas, adopting a moral perspective requires therefore, ideally, the participation to a reasoned discussion that is free of any form of coercion. This discussion should ground an emerging agreement on a standard, which all participants are willing to accept in considering all the consequences of the norm application. Habermas claims, however, that he refers to this procedure as a reconstruction of the moral perspective in general, that attempts to distinguish carefully any substantial bias on particular moral theories.

In appearance, the discourse ethics in Habermas' seems to function as the general framework for an ethical democracy, since it seeks to include all the interested people within the practical discussion. But, in fact, the formal procedure of the discussion does not inform in any way about the limits of the community of discussion: is it a small group, or can

[17] Immanuel Kant (2009) *Groundwork of the Metaphysics of Morals*, Harper Perennial Modern Classics.
[18] Jürgen Habermas (1987) *Discourse Ethics*.

it be a bigger group, such as a city, or even a nation? It seems that a formal procedure assumes this problem not to be essential to the agreements on moral rules that are supposedly enforced by the sole power of a satisfying discussion procedure. However, from the point of view of an ethical democracy, the question of who is a member of the community of discussion is essential, insofar as a restricted community of members will be in a position to decide for the non members. There is a real danger that, in any way, a smaller community of people would stand as 'experts' of the moral duties in the absence of other people who, for some obvious reasons of time, skill or will, could not actually be members of the community of discussion.

7.2.2 Critique of the ethocratic-normative paradigm rationality

The main critique of the ethocratic-normative paradigm is that carried about by the defenders of an ethical democracy, stating that ethical stakes, such as the good, or justice, are not dependent upon a procedure, nor an expertise. An ethical democracy is not so much the problem of the ethical basis of democracy, as suggested by Jose Ciprut[19], but rather that of a the procedures of participatory ethics[20].

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

[19] Jose V. Ciprut, „Prisoners of our Dilemmas", in Jose V. Ciprut (2008) Ethics, Politics and Democracy. From Primordial Principles to Prospective Practices, MIT Press, pp. 17-20

[20] See Caitlin Cahill, Farhana Sultana, Rachel Pain (2007) „Participatory Ethics: Politics, Practices, Institutions", ACME Editorial Collective.

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, 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[21].

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.

7.3 Epistocratic-Cognitive paradigm

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

7.3.1 Concept of epistocracy and application examples

The term epistocracy (or epistemocracy, from the Greek episteme, knowledge, and kratos, power) is newly established and remains of quite little use, although it refers to a conception of power that is ancient. We can define epistocracy as a form of government in which an elite of scholars or wise men is held to be the most likely to make the right decisions for the city. We find in Plato's Republic the origin of the concept of epistocracy, then criticized by Aristotle, but it is also found later in the principle of representative government and plural voting in Mill's.

The epistocracy then appoints a political system in which an elite destined to govern the city

[21] Marc Maesschalck (2001) *Normes et contextes*, Olms.

is distinguished by his knowledge of the idea of justice. The tendency of the elite to produce correct decisions do not follow clearly, however, the mere possession of a social science or a higher wisdom. We can thus assume that there is a small number of morally well-informed citizens who possess a high degree of practical wisdom, a "science of the good", which happens to be relevant for political affairs. This group of people is then supposed to know better than anyone among citizens outside the group what should be done in terms of policy. It therefore seems reasonable to conclude that the state should be headed by an elite of knowledgeable rulers, and that the people should conduct themselves in accordance with the guidelines proposed by this elite[22]. Aristotle also noted that rules imposed by the elite are likely to lead to correct political decisions more often than to follow directions from anyone else. However, decisions would be better if they were accompanied by a discussion with other groups, for example, the next most knowledgeable or the wisest of the society. The idea is that expanding the group to other members, although it will lower the average level, is generally always a better option. The reason is that cooperative work and 'collective intelligence' produces results that are better than the performance of a single individual or group in particular. It is on this basis that Aristotle rejected the argument that some individuals more knowledgeable or wiser should be leaders, because they know best what needs to be done. Yet, Aristotle believes that this argument is not sufficient to exclude the possibility that a person of science or wisdom clearly superior to others is of no benefit to the people who consult. He admits that if a person has a science or a greater wisdom than others, then it should lead them, and if others have the presumption to direct that person, their supposed authority is invalid or ridiculous. Consequently, the epistemic value of a wider group of officers is not a phenomenon general enough to destroy the legitimacy of the epistocracy, even in Aristotle's conception. Nevertheless, epistocracy is also challenged in the ancient world by the alternative way of epistemic democracy[23].

Mill first supported an illiberal elitism, i.e., the view that intellectual and cultural elite should constitute an estate of the society – a church or caste with formal power. He then rejected this view on the ground that it did not foster individual autonomy, which was incoherent with his attachment to liberty. But he maintained a liberal elitism, according to which an intellectual elite must exert influence through recognition of their authority in their sphere. The epistemic value of the discussion does not necessarily imply recognition of an equal position of participants in the final decision[24]. The idea of Mill, who advocated a system of plural voting, is that everyone should have at least one vote for several reasons. First, it is important to prevent a group or class from controlling the political process without having

[22] Thom Brooks (2008) 'Is Plato's Political Philosophy Anti-Democratic?', in Eric Kofmel (2008) *Anti-Democratic Thought*, Eric Kofmel.

[23] Josiah Ober (2009) 'Epistemic democracy in classical Athens', Collective wisdom, in Raison- Publique.fr.

[24] John Stuart Mill (1973*) On Liberty and Considerations on representative Government*, Everyman, London.

to give reasons for it. This is the problem of class legislation: as the largest class is the one with the lowest education level and social rank, this deficiency could be addressed by giving those with the best abilities a plural voting. Secondly, it is important to avoid giving equal influence to each person regardless of their merit, intelligence, etc. Mill considers that political institutions should embody the idea that there are opinions that are better than others, even if he does not claim that this is a way to produce better decisions.

Mill admits that deliberation is best if participants are numerous, which argues in favor of an extended vote to all citizens, or at least as many of them. However, this does not imply that the subset formed by the most learned individuals should not have more votes (two, or three, for example). It is in fact a synthesis of ideas from Plato and Aristotle, who emphasized the merit of the class represented by the more educated people, not the wisest. It is indeed the test of wisdom that is meant to give legitimacy to the exercise of political leadership, but which poses many serious problems of identification (who is 'the wisest' in a society?).

7.3.1.1 Cognitive rationality and procedural epistemology

David Estlund opposes epistocracy and defends an epistemic proceduralism, arguing that we cannot let decisions be made by the supposed 'knowers' of the good. First, he admits as generally acceptable the proposition that a population is most qualified to run if more people are better educated. Second, he admits as generally unacceptable that the subset of well-educated tend to contribute with more wisdom in the development of good rules. Indeed, even though there are truths, or people who are better at knowing them than others, there can be disagreement about who those are, even among the qualified. He then claims, on the basis of his earlier distinction between authority and legitimacy, that democracy exercises legitimate authority in virtue of possessing a modest epistemic power. Its decisions are the product of procedures that tend to produce just laws at a better chance than rate, and better than any other type of government that is justifiable within the terms of public reason.

Thus, epistemic proceduralism is justified by the tendency of democracy to lead to correct decisions more likely than random procedures or other competing procedures. This means that, instead of an ideal speech situation and a deliberative procedure, like in Habermas, Estlund's values the real speech situation and a real- world democratic procedure. According to him, it is likely to be close enough to the ideal one in its epistemic payoff, since it will tend to lead to decisions that minimize 'primary bads' (famine, genocide, etc). In epistemic proceduralism, specific political decisions in a democracy, whether correct or incorrect, are legitimate because they are the outcomes of a democratic procedure. That procedure itself is legitimate because it is likely to lead to correct decisions, that is to say, to qualifiedly acceptable decisions. The form of epistocracy is ruled out by the Qualified

Acceptability Requirement, stating that the necessary condition on the legitimate exercise of political power is that it be justified in terms acceptable to all qualified points of view.

The concept of epistocracy is still defended by some philosophers who doubt the democratic performance of the mass of citizens in making the correct decisions[25]. On the one hand, Forcehimes argues that deliberative democracy cannot be justified by pure proceduralism but requires an epistemic component. Deliberative democracy needs an epistemic element because without it, deliberation lacks friction - i.e., it is rendered pointless. The obligations of legitimate decision-making provide a justification for the epistemic component of deliberative democracy. To have political legitimacy as a decision-maker, one must engage in certain epistemic practices: the exchange of reasons, arguments, and evidence. However, this epistemic justification seems to entail something like a Platonic epistocracy in which political authority would be based on epistemic ability or virtue. Yet, this is epistemologically problematic, namely, because it diminishes the truth-tracking abilities of deliberation by limiting the range of perspectives within the deliberative process. Dougherty replies that an epistocracy is preferable to both Forcehimes' epistemically-justified democracy and pure deliberative democracy. Indeed, elitism and exclusion, which as necessary components of epistocracy, are not prima facie negative qualities and, in fact, are beneficial within an epistocracy. Against Aristotle's preliminary objection to epistocracy, it can be argued that the combined knowledge of the masses could not be greater than that of the epistocrats.

7.3.2 Critiques of the epistocratic-cognitive paradigm

The main critique of this paradigm is the epistemic democracy challenging the possibility for experts to know the best outcome of rules and choices. Indeed, some deny that formal education can foster good leadership skills, while others purport to establish the right to equal treatment, which involves logically an equal vote. Others believe that the privilege granted to a minority of elected officials is an unwarranted insult or moral damage to the esteem of those to whom this privilege is denied.

The idea of an epistemic democracy is not new, since it could be traced back to classical Athens, as seen before, and was also taken over some years ago by Joshua Cohen[26]. The epistemic democracy is often identified with the renewed interpretation of the Condorcet's Jury Theorem, coming from the French philosopher Condorcet. This theorem states that if voters (1) face two options (2) vote independently of one another (3) vote their judgment of what the right solution to the problem should be (4) have, on average, a greater than 50 %

[25] See the debate between Andrew Forcehimes (2010) 'Deliberative Democracy with a Spine. Epistemic Agency as Political Authority', *Dialogue*, Vol. 52, n°2-3, pp; 69-78 and Matthew Dougherty (2010) 'Platonic epistocracy. A response to Andrew Forcehimes 'Deliberative Democracy with a Spine', *Ivi*, pp; 79-83.

[26] Joshua Cohen (1986) 'An epistemic conception of democracy', *Ethics*, Vol. 97, N°1, pp. 26-38.

probability of being right, then, as the number of people approaches infinity, the probability that the majority vote will yield the right answer approaches 1. This is somehow a rational justification of what Surowiecki calls the "wisdom of crowds", or, as stated by him, "Why the Many are Smarter than the Few and How Collective Wisdom Shapes Business, Economies, Societies, and Nations"[27].

In fact, according to Elizabeth Anderson, the epistemic powers of democratic institutions can be assessed through three epistemic models of democracy: the Condorcet Jury Theorem, but also the Diversity Trumps Ability Theorem, and the Dewey's experimentalist model[28][34]. Dewey's model according to her is superior to the others in its ability to model the epistemic functions of three constitutive features of democracy. These features are the following: the epistemic diversity of participants, the interaction of voting with discussion, and feedback mechanisms such as periodic elections and protests. It views democracy as an institution for pooling widely distributed information about problems and policies of public interest by engaging the participation of epistemically diverse knowers. Democratic norms of free discourse, dissent, feedback, and accountability function to ensure collective, experimentally based learning from the diverse experiences of different knowers. In addition to that, Anderson criticizes the very idea of grounding a social rule or choice on the sole basis of knowledge. It appears, indeed, that the epistemic justifications of democracy neglects some other non-epistemic justifications, such as values of equality and collective autonomy[29].

7.4 Democratic-inclusive paradigm

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

7.4.1 Concepts of democracy

It is now well known that democracy is not a single political form, but gathers a variety of models, ranging from representation to participation. David Held identifies several of them, such as: classical democracy (participatory, direct), protective republicanism, protective democracy, direct democracy, competitive-elitist democracy, pluralist democracy, legal democracy, autonomous democracy, participatory democracy, deliberative democracy, cosmopolitan democracy[30]. One can focus on the two main democratic models, the participatory and the deliberative one, that have been pushed as an alternative to the crisis

[27] James Surowiecki (2004) *The Wisdom of Crowds*, Doubleday.
[28] Elizabeth Anderson (2006) 'The epistemology of democracy', Episteme, Vol.3, Issue 1-2, pp. 8-22.
[29] Elizabeth Anderson (2008) „An epistemic Defense of Democracy : David Estlund's Democratic Authority', *Episteme*, Vol.5, N°1, pp. 129-139.
[30] David Held (1996) *Models of democracy*, Stanford University Press.

of the more classical model of representative democracy.

The request for democracy has been particularly strong over the years as regards the development and application of technological research projects. It gave rise to a set of democratic tools for public deliberation and participation, such as focus groups, participatory assessment and technology assessment. In the assessment of technologies, one can distinguish several tools:

- Constructive Technology Assessment: This approach aims to identify the processes by which the developers of a given technology make assumptions about how it will be used. In particular, the approach aims at challenging the Collingridge Dilemma (it is too early to make predictions about the consequences of technological development in its early stages, yet once the technology has been developed it is too late to change it). It aims to introduce participation methods "upstream" of the development process[31]. According to Heiskanen, the requirements for CTA are the following[32]:
  - Inclusion of all interested parties - Beginning at the early stages of technology development, and continuing throughout - The ability for alternatives to be discussed and explored, in case of undesirable social impact - The ability to directly affect the technological development process
- Participatory Technology Assessment: This approach was developed in Denmark to enhance the democratic opportunities for the public to influence technology design and policy. It allows citizens to express opinions to boards which allows for their needs to be incorporated into development and policy. It uses consensus conferences, scenario workshops, focus groups, etc. to allow for inclusion of all opinions and ideas on particular technological developments or policies. Its aims generally are to:
  - Enhancing the knowledge and value-based of policies
  - Opening up opportunities for conflict resolution and achieving the public good - Fostering the motivation of those involved and initiate a process of social learning - Providing economic actors with a better understanding of consumer and stakeholder concerns, and in doing,
  - Improving the accountability and legitimacy of socio-technological decisions33.

Real-Time Technology Assessment: RTA assesses the project at all stages of the development process. It involves a series of analogical case studies which look at previous, similar technologies in order to establish the likely future societal issues with the technology being developed. It looks at key research and development trends, stakeholders, and

[31] Fisher, Mahajan, & Mitcham (2006).
[32] Heiskanen (2005).
[33] Abels (2006).

institutional arrangements that might affect the technology's resources and capabilities. It also monitors the stakeholders for changes in their perceptions, knowledge, and attitudes that could affect the social impact of the technology. It then theoretically involves an ongoing assessment of the impact through analysis and participatory approaches that allow for it to develop an evolving image of the impacts throughout a project's life.

7.4.1.1 Inclusive rationality and procedural politics

It is noticeable that, considering the well-known limits of representative democracy, sometimes identified with the "crisis of democracy", or even the "crisis of politics", the development of alternative models refers to those of inclusive democracy, especially in their deliberative and participatory forms. For Young, for instance, "democratic political movements and designers of democratic processes [should] promote greater inclusion in decision-making processes as a means of promoting more just outcomes"[34].

Democracy is a general ancient concept that requires a set of criteria to be satisfied in order for a political institution to be said inclusive. A set of criteria was given by Dahl[35]:

- Effective participation: before a policy is adopted by the association, all the members must have equal and effective opportunities for making their views known to the other members as to what the policy should be.
- Voting equality: when the moment arrives at which the decision about policy will finally be made, every member must have an equal and effective opportunity to vote, and all votes must be counted as equal.
- Enlightened understanding: within reasonable limits as to time, each member must have equal and effective opportunities for learning about the relevant alternative policies and their likely consequences.
- Control of the agenda: the members must have the exclusive opportunity to decide how and, if they choose, what matters are to be placed on the agenda. Thus the democratic process required by the three preceding criteria is never closed. The policies of the association are always open to change by the members, if they so choose.
- Inclusion of adults: All, or at any rate most, adult permanent residents should have the full rights of citizens that are implied by the first four criteria.

Dahl states that *"except on very strong ones showing on the contrary in rare circumstances, protected by law, every adult subject to the laws of the state should be considered to be sufficiently well qualified to participate in the democratic process of governing that state. The fundamental interests of adults who are denied opportunities to participate in governing*

[34] Iris M. Young (2001) *Democracy and inclusion*, Oxford University Press.
[35] Robert Dahl (1998) *On democracy*, Yale University Press, Yale.

will not be adequately protected and advanced by those who govern". The historical evidence on this point is overwhelming. The individuals and groups may sometimes be mistaken about their own good. Certainly they may misperceive what is their own best interest. But the preponderant weight of human experience informs us that no group of adults can safely grant to others the power to govern on them? Which leads us to conclusion of crucial importance, "*Full inclusion. The citizen body in a democratically governed state must include all persons subject to the laws of that state except transients and persons proved to be incapable of caring for themselves*"[36].

The democratic inclusion of citizens is certainly at the same time a democratic request and a democratic trend in political theory and practice. But it overlaps in many occasions with the procedural tendency of political thought, usually grounded upon a set of basic discussion rules, regardless of the discussion contents expressing the partners‟ specific cultural preferences.

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)[37]. 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[38].

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 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

[36] Ivi, pp. 76-78.
[37] Lenoble & Maesschalck (2003) pp. 16-18.
[38] Ivi, p.29.

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.

There are several approaches to proceduralism that have come out of this idea, each of which will be explained: the proceduralism of Rawls, Latour, and Habermas[39]. These descriptions and analyses will not be exhaustive, but will instead give the reader a general overview and the salient points relevant to our discussion in this context.

7.4.1.2 Rawls' Procedural Approach

According to Rawls in his original position on proceduralism, the ideal situation for a 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*"[40]. 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'[41]. 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.

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[39] For the comparison between Rawls and Habermas, see Debate on political Justice, and James Gordon Finlayson, Fabian Freyenhagen (2010) Habermas and Rawls. Disputing the Political, Introduction, Routledge. Also Muriel Ruol (2000) "De la neutralisation au recoupement. J. Rawls face au défi de la démocratie plurielle", Revue philosophique de Louvain. Also, André Berten (1993) „Habermas critique de Rawls. La position originelle du point de vue de la pragmatique universelle"

[40] John Rawls (1971) *Theory of justice*

[41] John Rawls (1996) *Political liberalism*.

7.4.1.3 Latour's 'Weak' Proceduralism

Latour's aim was to create a new humanism, so that scientific development became a way of life for society, bringing with it a democratic shift from laboratory work to becoming an embedded as a political norm[42]. Latour's "Actor-Network Theory" comprises a chain of both humans and non-humans involved in achieving the same objective, in a society constructed on the basis of production due to scientific organization. This approach uses methods set out by finalised normative representations, borrowed from intuitive pre-understandings of the workings of argumentation. It requires a multiplicity of actors involved in the decision-making process, and requires control of the variables introduced using different adaptation mechanisms. These adaptation mechanisms range from studying the connections in the network, to adaptive learning, the application of an inferential calculation that reinforces behaviour through retrospective adjustment.

Latour's approach, however, is purely conventional. It does not distinguish the rules of discourse, or the conventions for the institutionalization of discourses. Therefore it does not provide for a transformation of actors or of the bureaucratic arrangements supposed to aggregate the competencies embedded in the institutional bodies of expertise. These are seen, instead, as necessary effects of the general process of re-composition required by the multiplication of actors. As well as the problems of transformation, Latour's proceduralism suffers from three presuppositions: (1) A pragmatic presupposition: the principle of universalisation of discourse ethics is interpreted as being a requirement to extend the circle of actors involved, rather than the theoretical constraints of rational argument, before the learning and re-composition processes can take place. (2) A semantic presupposition: speech and collective action are linked which leads to the general environment being conceived as prior to the rationalisation of the social debate. (3) An adaptation presupposition: Latour presupposes that the learning and re-composition processes will be enough for the adaptation of the network to occur.

7.4.1.4 Habermas' 'Strong' Proceduralism

Habermas" (1981/1984) proposed solution to the problem of discourse is the creation of an ideal speech situation, in which the members of the society can discuss and agree on a normative statement solely on the basis of arguments, without any constraint, in an inclusive manner. It is not the normative statement's content that is important, but the method that the participants use to approve the statement that validates the statement. This requires a consideration and approval process, which is a consensus-oriented procedure of argumentation and justification that can avoid the manipulations inherent to the strategic actions.

[42] Latour, B. (1987). *Science in Action: How to Follow Scientists and Engineers Through Society*. Milton Keynes, UK: Open University Press.

In this philosophical construction, resulting from the idea of communicative activity, the ontological 'Is' and the deontological 'Ought' significance of communication are supposed to merge. In this way, the theory of communicative action (pragmatics) is articulated with ethics in the form of a discourse ethics. The coupling of the process of social evolution to a process of legitimization allows for individual capabilities to be able to determine common interests and for the implementation of a learning process that he deems necessary for social change. The learning process he implements requires 'authentic dialogue', involving each speaker legitimately representing their claimed interest group, speaking sincerely, and making comprehensible and accurate statements to the rest of the participants. Yet, Habermas has always stated that the ideal speech situation is a counterfactual that can be taken as a normative reference for the evaluation of actual situations; that is, a description of what goes on in actual discussion. However, his theory does not make any strong statements about whether this procedure of discussion can help to solve the problem of the background conditions on the basis of which a consensus can be reached.

Habermas‟ approach is epistemologically ambitious. On the one hand, it attempts to move beyond a functionalist framework and toward social transformations so that the reflexive involvement of the actors in their own development is ensured. However, it also refuses to sacrifice the intentionalist nature of such a framework, because it wishes to retain the references to rules of action and principles for the selection of behaviour. Habermasian strong proceduralism, much like in Rawls‟ approach, requires the actors to be reflexively involved in constructing their own cognitive capacities within the framework of institutional arrangements that demand these objectives be fulfilled. Latour's approach, on the other hand, has a necessity for the satisfaction of the deontological requirement for actors‟ roles to be interchangeable, but relies on the actors‟ capability to adjust through social adaptation. Weak proceduralism also favours reflexivity of routine adjustment using mechanisms that rely on the recurrence of sub-system equilibrium. On the contrary, strong proceduralism requires an adaptive learning within regulation mechanisms in order to determine the interest of different involved parties and to allow for the emergence of the largest possible group of participants that could have the capacity for reflexive cooperation. In the former, the adjustments made are functional; in the latter, the framework itself is involved so that retrospective consideration of adjustments to behaviour can be made.

7.4.2 Critique of the Democratic-Inclusive paradigm

Behind the Democratic Paradigm is the idea of a participatory approach with stakeholder inclusion key to the accomplishment of both the participation and the democracy. By involving the public in decisions on policy and technological development approaches, those using models and tools under the Democratic Paradigm allow for a much more inclusive, bottom-up construction process than those of the other Paradigms. This can lead to more

acceptance of a technology in society and more legitimacy for technology-related policy, given the structured approach to discussion and consensus that is open to all interested stakeholders. But, as suggested by Arrhenius, it raises the classical „Boundary Problem" concerning the criteria of citizen's inclusion in the decision-making[43].

However, it does not come without its problems and limitations. Although there is the greater level of social acceptance in the outcomes of the approaches under this paradigm, the fact that something is socially accepted does not mean that it is necessarily ethically acceptable. Societies are fully capable of creating extremely ethically unacceptable policies and actions. The neutralisation and formalisation of the approaches used under this paradigm (the consensus and compromise processes) are also highly problematic, since they lead to the neutralisation and formalisation of the relationship to the norm. Each participant might have a personal idea about what „privacy" entails, yet this is highly likely to be quite different from other participants" ideas of the abstract norm of privacy. In order to make some sort of decision, a consensus needs to be reached, and this can only occur through negotiation and homogenizing the differing views, which may not only remove some of the fundamentally important values within the norm, but may remove the ethical nature of the norm (if there was one to begin with).

Proceduralism itself is problematic, insofar as it suffers from the intentionalist, mentalist, and schematising presuppositions. The participants in the procedural approach are presupposed to be capable of taking part in a meaningful manner, and when a result is decided on, there is a presupposition that this decision is enough to change the trajectory of the project; the participants come with a particular framing which influences their participation in the procedural approach; and they also come with a particular set of internal (or external) rules that they feel must be followed (this could be a set of societal or other organizational 'rules', or their own personal deontology). Not only that, but the procedural approaches presuppose that the participants will agree on the ways that the discussion will unfold, and a whole series of cultural discursive norms that govern the way people interact with each other. This undermines the freedom extolled by the proponents of proceduralism; it is praised as a neutral solution to the problem of pluralism, but it presupposes a set of anthropological background conditions that ruins the pretention of it ever being a neutral option.

The participatory, democratic approaches presented here, although improving societal impact on technological policy and development, could, in fact, get caught up in this enthusiasm for participation and forget the implication of a wider understanding of ethics.

[43] Gustaf Arrhenius (2005) 'Vem bör ha rösträtt? Det demokratiska avgränsningsproblemet' ("Who Should Have the Right to Vote? The Boundary Problem in Democratic Theory"), in *Tidskriften för politisk filosofi*, vol. 2.

Ethics, in order to retain its authority, needs to determine a certain set of constraints on decisions[44]. However, under these approaches, it is often the case that the issues are reduced to the problem of social acceptance. This can be seen in the development of legislation based on social pressure to enact rules based on a particular norm. But 'ethics and law cannot easily be reduced to each other'[45], and ethics needs to impose its imperative lest it be lost in a reduction to contextual constraints.

The approaches that fall under the democratic paradigm are certainly a step forward in terms of inclusive governance, but are ultimately held back by a restriction of framing and presuppositions about how the approaches will work and how the outcomes of such approaches will impact the technological development or policy. They also by no means imply that any ethics will be involved, since these approaches could also be used for (for example) economic, scientific, or cultural norms and values, without any inclusion of an account of ethical norms.

7.5 Brief overview

Our detailed review of the typologies existing in governance models and the tools that led to defining the patterns of governance in a selected number of projects, have resulted in defining four characteristics for governance of technology in addressing ethical and social issues. Table below illustrates and summarizes these 4 paradigms discussed in the previous sections.

	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 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 7: Overview of Governance Paradigms in RRI

[44] It would deviate here from the purpose of this text to provide the necessary explanations for such a statement. For one out of the several explanation, see P. Ricoeur, The Just vol.1, 2

[45] Felt & Wynne (2007)

These paradigms do have – although in differing rates – the influence of the three presuppositions embedded in them in dealing with ethical issue determination and implementation processes. In this respect, the following section attempts to present the link between the governance models, patterns and the paradigms revealed.

8. Paradigms, patterns and governance models

8.1 Theoretical relationship between governance models and paradigms

Our intensive search within the depths of the selected projects' deliverables, questionnaires and other available material has provided us with the path leading to the paradigms we covered above. These paradigms are based on the data emerged from a desk research, and drawing particularly from the models used in the projects and the contexts apparent in relation to the norm driven by the usage of the tools, which are all covered in Del. 3.2.

In the next table, we show the relationships between models, presuppositions, context, and the paradigms.

Models	Presupposition	Context	Paradigm
Standard-Revised Standard	SIM	Ignored De-Contextualized	Technocratic
Standard-Consultation	SIM	De-Contextualized-Contextualized	Ethocratic
Standard-Revised Standard	SIM	De-Contextualized-Contextualized	Epistocratic
Consultation-Co-construction	SIM	Restricted-Contextualized	Democratic

Figure 8: Recap of trajectory

The models are based on the tools used, the way they were used, and the presuppositions these suffer from. In this stage, we are looking at the aggregate data for each tool and presuppositions with the model they fit into, and then inferred, from this information, how the context was treated. We then used the models, presuppositions, and context to build a picture of an underlying paradigm that encompasses these approaches.

Below are the accounts of how each model is linked to the paradigms.

8.1.1 Standard Model and Technocracy

The standard model has some relationship with the technocratic, ethocratic and epistocratic paradigms.

The standard model is related to the technocratic paradigm, because it is indeed based on the fundamental distinction between facts and values: the public is viewed as irrational, disturbed by subjective judgments about values, while experts have access to an objective world in which only facts count. Experts in particular have a factual approach of risk provided by the knowledge that makes them more legitimate to ensure ethical governance.

It should be noted that in the technocratic paradigm, there is an unethical reduction of the norms. The relation to the norms is not at the core of the technocratic-instrumental stance, at least in a 'positive' explicit way. However, in a 'negative' way, as an implicit assumption, there is a relation to norms, in the kind of an ethically paradoxical relation. This paradigm can then encompass a set of presuppositions (mentalist, schematizing and intentionalist).

As described in Del. 2.3, the standard model shows indeed a fundamental asymmetry between the public and a class of experts selected for their competence. The public is perceived as irrational and easily subject to outer influence. The public supposedly suffers from several troubles, such as: cognitive bias, lack of understanding of technical subjects, and dislike to novelties and risk. According to the proponents of the standard model, it is therefore important that the public delegates its authority to experts, assumed to be independent of political influence, economic and social. Confidence plays a key role in this delegation, and it provides credibility to the institutions. Various mechanisms can contribute to its construction. More generally, another assumption is that differences in perception between experts and the public can be reduced through education, provided that the objectivity of the expert views can be acquired through study and knowledge. Supposedly, experts have therefore a special responsibility and should be viewed as models by the whole society. The "downward" communication plays an important role in this model, the experts to reassure the public and correct any misleading and simplistic visions.

The standard model also fits into the epistocratic paradigm as with similar implications of the technocratic paradigm, the expertise is now reliant on the epistemic expertise of a small group of people and/or experts where the public is given a pre-determined context in which they may be consulted, and the ethical issues may be in place, but not imposed explicitly within technology development processes. As in the technological elitism, the epistemic elitism is embedded in this relation.

8.1.2 Revised-Standard Model across Technocracy and Epistocracy

Revised-standard model has some relationship with the technocratic and epistocratic paradigms.

1) The revised-standard model fits very clearly into the technocratic paradigm. In the revised standard model, the atomistic perception of society is given up. One faces now the question of the social construction of the problems. This model is a variation of the

standard model, where the emphasis is placed on the interaction between the regulation process, social groups and media. Breyer's model of vicious circle of risk regulation is a good illustration of this model. For him, the legislative process is caught in a vicious circle with the source of the problem being the public attitude towards risk and uncertainty created by the media. Breyer claims that public perception of risk is usually inadequate. Risks are often overestimated; however the efforts to educate the public about scientific risks have failed and will fail in future. As a result, the public will feel unprotected by law and decision-makers, which will lead to more political pressure to take action.

In this model, public influence and participation in risk management are considered in an ideological way. In other words, the context is considered, but reduced to risk assessment according to the main given framing.

Consequently, this model corresponds with the technocratic vision. The bias against industrial lobbying, polarisation of public opinion and groups of interests, and reinforcement of independent scientific expertise, represent the elements of the traditional top-down approach.

2) This model also fits in the epistocratic paradigm insofar as the ethical analysis is supplied by a group of experts who have knowledge or a 'science' of what is good or just. In this respect, there is no inclusion or participation of society, and if that happens, the final determination of the norms is the outcome of a cognitive interpretation by the experts. Indeed, an ethical analysis of any decision-making or policy-making is sustained by the specific knowledge-based or wisdom-based competence of the experts.
3) To a certain degree, there is some participation in the revised standard model, for the democratic paradigm, but the results of the participatory methods used here are largely ignored, or used as a simple test for social acceptance of a technology46. Some of the governance tools involved in participatory democratic approaches include some forms of technology assessment, such as participatory technology assessment, focus groups, questionnaires, stakeholder consultation, etc. which use participatory methods to varying degrees of success.

   The aim of these participatory approaches is generally to involve stakeholders in the development of ideas and decision-making about the values and norms to be incorporated into the development of the technology. The extent of the involvement of these stakeholders is contingent on the particular strategy and tools used; for instance, a questionnaire only has limited participatory value without further involvement of the stakeholders.

[46] A. Fung, (2006).

8.1.3 Consultation Model torn between different paradigms

Consultation model has some connection with ethocratic, epistocratic (to a limited degree) and democratic paradigms.

1) The consultation model is, in some ways akin to the ethocratic paradigm. The model is described in detail in Deliverable 2.3. Assuming a distinction in the perception of risks between the public and experts, the consultation model also leads to the main hypothesis of ethical expertise. A clear differentiation is made between public opinion and the opinion of ethical experts: the task of defining risk there is for experts only, while the public is invited to risk management. Communication between the two communities is wider than the standard model, but both communities are nevertheless separated, and the power is hold ultimately by the community that can produce the perception of risk the most elaborate and most dispassionate.
2) Although the consultation model cannot fully related to the epistocratic paradigm, in the exception of the forms of deliberative epistocracy, like in Mill, there is a possible form of dialogue between the elite and the people; but the elite still have some more powerful voting at the end.
3) The consultation model involves both experts and laypeople that are not different in terms of their knowledge levels but in terms of their perception of risk. The public participants are able to ask deeper and more varied questions about the risk involved with a particular technology because they are the ones being affected by a real risk, not just a theoretical, abstract risk established by scientists and economists. This model takes particular note about voluntary vs. involuntary exposure to risk. A society is more likely to accept a risk taken voluntarily than one that is imposed upon it. Similarly, unknown or uncertain risks are less acceptable than those which are more familiar to a society.

   However, this model suffers from a clear distinction between the views of the public and those of the experts. Although, in this model, the public needs to be consulted for regulatory institutions to gain legitimacy, the public is considered to a certain extent irrational. They are only consulted about the management of the risk, not in the determination and definition of what risks might need to be addressed. More generally, through consultation people are asked about acceptance of technology or about the management tools that would allow acceptance; which does not necessarily include the people's involvement in determination of the agenda for discussion. The experts are the only ones who decide what risks need to be managed. This leads to a distinctive issue in the separation of the experts from the laypeople: since the public are seen as irrational, experts can choose to disregard their concerns, yet still claim legitimacy due

to the fact that the consultation process has taken place. This is further complicated by potential biases and framings that the experts bring to the debate.

8.1.4 Co-construction Model and the Democratic Paradigm

Co-construction model has a close relationship to the democratic paradigm.

In the co-construction model, unlike the consultation model, the way expertise is used is questioned. Instead of relying on expert approaches, numerous case studies are made to develop a representation of technology, and a democratic, participative approach is used to take both facts and values into account. This is a case of analytical rigor for the model, because only through the discussion of facts and values can the framing of the approach be validated. Instead of hiding from debate about these issues, debate and discussion are welcomed and encouraged.

This model builds on Latour's methodological approach, which questions traditional models of science stating that society and science are strictly interconnected with each other. In this model we see a more significant effort to establish a proper procedural method, not only in terms of the discussions carried out within the model but in the construction of the model itself.

The co-construction model involves both policy-makers and stakeholders in the construction of the policies to be implemented (whether at government-level or on a much smaller scale). This methodology is commonly seen in policy-making at a government level where the decisions made will affect the private sector or special interest groups.

This overall picture of the paths going from daily application of RRI to the epistemic presuppositions, showed how the relation between political legitimacy, practical efficacy and ethical justice could be conceived in research projects.

We now need to compare this to our normative background in order to show, perhaps, how some more promising application of RRI could be.

9. Critical Analysis

All the data we have gathered from the previous deliverable (Del. 3.2) and our modeling, require a general recap in order to highlight what are the issues at stake behind a seldom application of reflexive conditions in RRI.

At this point of our investigation we analysed some projects with the help of the theoretical background developed in the previous work-package (Del. 2.2). The outcomes tell us that there is still a situation where ethics is considered to be an accessory issue. Lets see in more details what the results we obtained mean under the light of the passage from ethics to RRI and in the wave of the implementation of RRI. By highlighting the outcomes we will be able

to show what are the missing points or the exploitations of a responsible frame for research and innovation.

The first point that seems to be evident is the depiction that came out with regard to one of the core issues of current governance approaches, the one of participation. What we have encountered is the fact that participation is often conceived as an important instrument for legitimation. At the same time we can highlight two connected phenomena on this side. The first one is a more general that points out the stress placed on the role of participation (a) as a panacea of every decision-making process. The second one shows us how this 'magic' interpretation can pave the way to several 'thin' forms of exploitations (b) and the counter effects it can generate from an ethical but also political perspective.

a. Participation is considered nowadays to represent the main tool in order to legitimate political decisions. There is a wide agreement on the fact that any decision having social repercussion must be taken in a justified mode, that is, taking into account the society that will have to cope with the outcomes (Walzer, 2003; Fung, 2006; Honneth, 2014). Recent events showed how the general attention, the communication processes, and the range of normative stands have radically changed and placed participation at the center of every democratic attempt to develop political decisions.

   In other words, in the last twenty years the political scene has changed significantly promoting an overall change in the relation between decision-making organs and the people. Thus the political structures, processes and mechanisms are constantly solicited to make the changes able to guarantee the legitimacy that a democratic regime always requires. In this context participation assumes a crucial role. In order to gain legitimacy supported by a rational justification, every political decision needs to foresee some kind of participatory process.

   It is not by chance then that most of the science and society assessment frames in the last twenty years have been focused on how to implement participation. The 'history' of the research framework programme in Europe clearly defines this path. Throughout the different frameworks, FP5, FP6, FP7 and now Horizon 2020, we can find an attention and a development of participatory efforts aimed at increasing legitimacy of science in the social sphere (von Schomberg 2013).

   This development surely finds its grounding in the constant necessity of merging ethics and technical processes. Considered the fact that ethics could be generally defined as the set of values, laws and norms that substantiate the notion of good in a specific community[47], and given the political frame of Western democratic states, participation represents the main core for gaining an ethical and therefore political legitimacy.

[47] P. Ricoeur, (2000) *The Just*, London, The University of Chicago Press.

In this context RRI represents the latest attempt of promoting such a collaborative understanding of science and society (Rip & Fisher, 2013). In most of the theories that are trying to develop and implement a frame for RRI we find as a basic condition the presence of participatory structures (Owen et al. 2013). Participation is raised as the principal tool to reach the hoped harmony between science and society.

b. However, as it emerges from our investigations (Del. 2.3) and as demonstrated in literature (Fung 2006; Honneth 2014) the right to political participation doesn't guarantee in real terms an increase of the ethical stances. The emptiness that every procedure carries in terms of substantive contents paves the way also for several dangers.

   In fact legitimacy can be achieved in different manners, some of which could instrumentalize participatory processes or reduce them to some communication mechanisms. This of course shouldn't be the case not only for moral (Kant, Rawls) and ethical reasons (Honneth 2014) but also for pragmatic ones (Dewey; Lenoble & Maesschalck 2003). Apart from the historical developments driving political legitimacy in the direction of a stronger role of citizens, we should admit that from an epistemological point of view a shared approach surely provides policy makers with more knowledge than they would have on their own[48]. In fact decision-making bodies may lack some kind of awareness or competences that a wide participatory approach can fulfill.

But the genuineness and efficacy of this idea depends without any doubt on **who** participates, and **how**, and what the link is **between participation and the decision-making** process.

As has been shown elsewhere[49], participation can have different meanings according to which level the decision-making process will be influenced by the participants' opinions.

According to Archon Fung, there are six main modes of communication in participatory settings that can be distinguished according to the influence they are going to have in the decision making process.

On the one hand we find three main nuances where participation "*often do[es] not attempt to translate the views or preferences of participants into a collective view or decision. At most public hearings, for example, officials commit to no more than receiving the testimony of participants and considering their views in their own subsequent deliberations*"[50].

[48] A. Fung, Varieties of Participation in Complex Governances, p. 66

[49] For two main references, see A. Fung (2006), S. Arnstein (1959).

[50] A. Fung, 'Varieties of Participation in Complex Governances', *Public Administration Review*, December 2006, Special Issue, p.68.

These are what we could call a *consultation* typology of governance where stakeholders are admitted to participate but they are not solicited to overshoot the boundaries given by a specific frame. This frame can vary and be a legal an economic or even just a moral one. The frame shapes not only **who** is going to participate but also **the way in which** they are going to eventually contribute. With regard to the agents participating, Michael Walzer has highlighted how associations, or individuals usually identified as participants, have to withstand preconditions that limit the access of a vast majority or, even worse, to not 'well intentioned' actors[51].

But what counts for us more than the possibility, given that RRI overcomes this to a certain extent[52], is the quality of participation, that is, the way in which agents are called for participation. Fung goes on describing these three varieties of communication in participatory settings as follows:

"The vast majority of those who attend events such as public hearings and community meetings do not put forward their own views at all. Instead, they participate as spectators who receive information about some policy or project, and they bear witness to struggles among politicians, activists, and interest groups. There are few public meetings in which everyone is a spectator. Almost all of them offer opportunities for some to express their preferences to the audience and officials there. Think of the citizens and activists who line up at the ubiquitous microphone to pose a pointed question or say their piece."[53].

Unfortunately, this depiction corresponds exactly to what we have found in our investigations in Dels. 2.3 and 3.2, describing a situation that in the best case uses participation as a magic word but doesn't know or want to commit to it. Participation in this sense is reduced to communication or consultation or, we could say with Lazzarato, advertisement[54]. Either way there is an information exchange; sometimes it is even a superficial one, where the lack of depth in all senses makes it impossible for it to assume significance in the decision-making process. If the information is 'thrown' to the public or gathered from it, this kind of 'participation' cannot overcome all the structural limits that are connected with a presupposed framing. Barriers vary according to the structural field or the specific domain, depending on features such as, funding, targets and subsystems logics. These different obstacles together reflect a kind of resistance of the current decision-making network on research and innovation towards the structural involvement of citizens

[51] M. Walzer, *Passion and Politics: Toward a More Egalitarian Liberalism*, Yale University Press 2006, pp. 81-85.

[52] Of course it is a complicated issue that we can't tackle here. RRI involves not only society in a wide sense but researchers as well, and the problem there is more related to how they are allowed and supposed to participate rather than if.

[53] Fung (2006), p.68.

[54] M. Lazzarato, *Lavoro Immateriale*. *Forme di vita e produzione di soggettività,* Ombrecorte, Verona 1997.

and other stakeholders. This network consists of a more or less fixed number of actors that interact in a stabilized manner, sharing scientific paradigms and following standardized procedures. The dominant stabilized rules and practices within a network are often called a 'regime' (Rip and Kemp 1998; Geels and Kemp 2000). The resistance of regimes to change has been described before within the framework of socio-technical network theories (Callon 1995; Elzen et al. 1996; Rip and Kemp 1998; Geels and Kemp 2000). Changes of stabilized interactions within a regime, for example, by involving new actors, are often experienced as 'threats' and therefore resisted by actors involved (Callon 1995; Elzen et al. 1996).

Translating this into our own discourse register, we may argue that such a participatory process establishes, only a first-order reflexivity, if at all. This is due to the fact that if we provide only the possibility of reconsider our thoughts, etc., the process will always be framed by specific and perhaps instrumental presupposition .

A good participation instead is guaranteed by a proportional level of reflexivity concerning the necessary questioning of the frame. As hinted at by Fung, these participatory examples, even if vey few do exist: "*Other discussions are organized in ways that allow participants to explore, develop, and perhaps transform their preferences and perspectives. They encourage participants to learn about issues and, if appropriate, transform their views and opinions by providing them with educational materials or briefings and then asking them to consider the merits and trade-offs of several alternatives. Participants usually discuss these issues with one another (often organized in small groups) rather than simply listening to experts, politicians, or advocate*s[55].

As we have shown in Del. 2.3, reflexivity can be intended in two distinctive though related manners. If on the one hand we have a so-called first-order reflexivity that represents the possibility of reflection on specific issues rising in research and innovation, on the other hand we highlighted how this basic form of reflexivity cannot be considered sufficient. In fact, reflexivity on specific external issues is accomplished in a, we would say, direct and perhaps simple way. Perhaps, as in practice this 'simple' way of reflecting hides and relies on a complex background that is something more abstract but at the same time really concrete in its intrusiveness.

This background is represented by all those constraints that play a role in the development of research and innovation. Of course they could be of different kind, like we have highlighted above and in in previous deliverables (2.2, 2.3, 2.4), and they could involve different underlying paradigms. From a more epistemological perspective they can be labeled under some sort of rationalistic understanding of the relation between science and society, privileging risk assessment structure and therefore taking into account only

[55] Fung (2006), p.68.

predetermined normative settings like, for instance, the economic or the juridical one. Or, in the worst case, they can dismiss ethics considering it as an option amongst the others.

What it is common to all the nuances present in such a 'background' is the fact that they ignore contextual reasons for developing decisions that will concern the context itself. As stated by Lenoble & Maesschalck a reflexive approach needs to be settled in order to open up the possibilities: "*Our reflexive approach to contextual limitation and our hypothesis of contextual proceduralization, by contrast, obliges one to emphasize that the 'taking account' of the diverse possibilities opened by the context is itself increased if specific 'incentives' organize the reflexivity of the actors, of their cognitive systems and of the institutional arrangements framing their cooperation*"[56] Thus, in this way, not only we fail from a logical and practical perspective but we also dismiss the very sense of what RRI should be. If we want to avoid inefficacy or political illegitimacy, it is not by reducing the norms construction to a predetermined asset of rationalistic mechanism that we are going to achieve this result. If the shift from ethics to responsibility doesn't want to disregard all the expectations that it carries, we need to focus on this 'thick' aspect of a reflexive participation. If it is true what John Dewey asserts, "that the man who wears the shoe, not the shoemaker, knows best where it pinches"[57], then participants need to be put in the position to reach that freedom that only a second-order reflexivity brings about.

What is a second-order reflexivity has been already explained in Del. 2.3. Generally, we can state that participatory processes, as well as almost every political interaction, require a form of reflexivity on the issues at stake. According to Lenoble & Maesschalck (2003, 2006, 2009) and Perez (2008) we need to define reflexivity in terms of the object on which this process focuses. Hence, we can divide reflexivity in two orders of which a first one takes into account the object of a dispute whether a second-order one considers the condition of possibility of the process itself. We could also call this latter as a meta-reflexivity. So for instance if we encounter a particular debate on a controversial factor (GMOs), a first-order reflexivity will examine all the aspects directly connected with it like the effects, the studies, etc. A second-order reflexivity will instead analyze all the conditions that settle the reflexivity on GMOs, like institutional framing, discourse register, etc.

Some reasons as well were brought about in Del. 2.3 that have shown the importance of it for RRI. If at a first stage we only defined the parameters (and their justification) useful to assess RRI examples we have now unveiled the epistemic paradigms that are connected to governance typologies. In this sense we have made a deeper and wider connection between

[56] J. Lenoble, M. Maesschalck, (2003) *Toward a theory of Governance. The Action of Norms*. Den Hague: Kluwerlaw, p.220.

[57] J. Dewey *The Public and Its Problems*. Vol. 2 of *The Later Works of John Dewey*, *1925–1953*, edited by Jo Ann Boydston. Carbondale: Southern Illinois University Press, 1981–90, p.264.

different means and frames underlying the regulatory system of RRI. Developing an analysis that tackle different levels and depths lead us to the necessity of highlighting the implications and difficulties embedded in current attempt of regulation. Thus, what it is needed at this stage is a multi-level justification of second-order reflexivity, that will also serve as a background in order to address the actual or potential gaps of RRI. It will represent an explanation that can address and overcome some of the most basic limits of political regulation of RRI.

RRI is considered to be a regulation of a new sort. Not exactly reducible to a legal regulation still needs to have that power required to "induce individuals and firms to take action and achieve outcomes that they would not voluntarily undertake or achieve" (Ogus 2009). Representing a step beyond mere legal regulation needs to find its legitimacy elsewhere but most of all has to face different challenges. The first one is to design a regulatory programme in an environment where multiple normative settings claim their space. "*A regulatory programme that fails to appreciate the multiplicity of values exposes itself to radical critique, which can ultimately undermine the program's capacity to attain its goals*"(Perez 2009). But this pragmatic point concerning the application of norms point has been already addressed in previous deliverables (Del. 2.3).

The other important challenge is the epistemic challenge that lies at the heart of Responsible Research and Innovation given that different subsystems carry multiple epistemological perspectives and competing representations of reality. In this sense RRI needs to address not only issues that directly and manifestly rise in every subsystem but must tackle the intersections between them and the complexity that these relations imply.

Every subsystem tends to build specific logics with biased point of view that are often completely independent from other subsystems even if they concentrate on the same issue. For instance the language by which pollution or environment could be perceived by innovation (if we accept to reduce innovation to its post-Schumpeterian meaning) is one focusing on possibility of developing value or procuring losses, i.e., cost-profit. Environmental issues in legal terms will only be taken into account when necessary for describing law-breaking acts, that is, within a specific past-focused frame. Not limited to how different subsystems perceive one external issue, the complexity involves also the way in which each subsystem considers and handle other subsystems' logics.

In summary, RRI faces at least three central epistemological challenges:

"(a) designing regulatory policy in a social environment characterized by multiple causes, (b) confronting epistemic challenges associated with regulatory intervention, and (c) intervening in the inner dynamic of autonomous (sub)*systems without endangering them*" (Perez 2008).

In order to face these challenges many ways have been adopted throughout the years like

self-regulation (Gunningham & Res 1997) reflexive law (Teubner 1984) or responsive regulation (Ayres & Braithwaite 1992). However these attempts encountered several problems. Self-regulation raises doubts regarding the internal elements capable to enact such a regulation and the external institutional figures that could ensure it (Gunningham 2009). Reflexive law and responsive regulation on the other side tend to assume epistemological presuppositions not different from the one of normal regulatory structures (Aires & Braithwaite 1992; Teubner 1984; Baldwin & Black 2008).

In general all these approaches are aware of the necessity to move from a first-order reflexivity to a second-order one but none of them "*provide a convincing response to the epistemic and social challenges of the neo-liberal project of social engineering*"[58].

"Second-order reflexivity involves an attempt to take a step back from the substantive debates among theoreticians and practitioners of responsive or reflexive regulation in order to examine the presuppositions and commitments that are shared by those who engage in the debate. As a meta-theoretical enterprise, a model of second-order reflexivity involves theorizing about theories in an attempt to unveil the underlying structures of the first-order theories of reflexivity"[59]*.* Thus second-order reflexivity can work as a sophisticated tool in order to assess the epistemological and normative presuppositions implied in Responsible Research and Innovation. Only by taking a step back we can be able to compare all the different epistemologies playing a role in the framing process of agents.

It is true however that this meta-level needs to be grounded in some common root. What we need then is something that works as a reference criterion for guiding and assessing RRI attempts.

In a certain sense what we need to achieve is what we can call, beyond Rawls and Habermas, a "**pondered dynamic equilibrium**". There are two main perspectives that come into play here. On the one hand we have the dynamic equilibrium. Rawls in his *Theory of Justice*, stated that the main achievement for a just society should have been an ongoing movement between principles and judgments or theory and practices. Through a continuous movement between the two, a correspondence or eventual modification aiming at an equilibrium could be guaranteed by the support of a reflexive moment. This state of things could be called "*reflective equilibrium*". The problem of course is that the principles in Rawls, although not explicitly admitted, are already presupposed and therefore fixed (Ricoeur 1996). The operation enacted and pursued via reflexivity has the aim of correcting situations and judgments to a predetermined set of principles. But if it would adopt such a model, our frame for RRI wouldn't be able to go out from predetermined ways of considering the context, failing to address the conditions for reflexivity. If those were

[58] Perez, O., 2009
[59] Ibidem.

reduced to an adjustment of reality to principles, our proposal would remain in a paradigm like the three described above not managing to achieve a second-order reflexivity.

At the same time Rawls' intuition represents a valid example of the process that should be put in motion between theory and practice (principles and judgments). Rawls rightly points out the necessity to reach an instable equilibrium between practice and theory to not be constrained by a presupposed frame constant throughout time. Where Rawls doesn't dare to go is to the core of the phenomenological question, not providing a proposal able to question the nature (and the political exploitation) of theory itself. Of course Rawls' construction requires an anthropology based on trust in order to function and this trust doesn't reflect the actual scenario of RRI.

In not questioning the conditions for reflexivity, by presupposing the context through which the deliberation process assumes a significance and a driving power, Rawls fails to justify (Cohen 2008; Ricoeur 2000) the deepest level of the ethical structure together with the efficacy of the process.

Because Rawls' 'reflective equilibrium' misses the constant need to address the conditions of and for reflexivity, the constraints, ending in a static adjustment of judgments to principle, we would rather prefer to overcome this prudency in favor of an open and dynamic process based on a second-order reflexivity. This doesn't mean to 'adjust' the context to principles that are presupposed, but rather to learn to construct the context.

For this reason we would prefer to adopt 'considered' or 'pondered', terms that of course recall Apel and Habermas' theories but more likely time expresses our aim. In fact even Habermas like Rawls fails to address the contextual conditions necessary for filling a deliberative process with substantial values and norms. If Rawls presupposes those thick ethical guidelines, Habermas pretends that they will be the result of a just process of deliberation.

Without the need here to re-propose an analysis or a critique of discourse ethics and communicative action[60], to ponder on something implies, amongst other issues, an openness to criticism from others that in a way helps us to better understand the political implications and the underlying spirit of our proposal.

A pondered approach can contribute to reach an equilibrium to the tension between principles and situations, frames and contexts. This equilibrium will always need to be the result of a dynamic construction between different normative sets, trying to unveil the

[60] See pp. 33-35 for a general explanation of Rawls and Habermas' references here. For a more specific criticism see, J. M. Ferry, *Les puissances de l'expérience*, Tome I, Le sujet et le verbe, Cerf, Paris, 1991, McCarthy, T., (1978) *The Critical Theory of Jürgen Habermas*, MIT Press. P. Ricoeur, (200) *The Just*, Chicago University Press.

underlying presuppositions in order to highlight their distortions and violence. Only in this way we can try to avoid the limits embedded in an epistocratic or technocratic paradigm of RRI.

However, this pondered reflexive equilibrium needs to be guided by a substantial frame in order to not fall again into partial understandings unable to tackle the challenges connected with RRI. According to our perspective (Del. 2.3; Etica Project, Dels. 4.1, 4.2) and following past experiences of European frameworks programme we can state that this kind of umbrella reference should be represented by ethics.

Only ethics in fact could represent the right distanced and equal reference in order for RRI to not be 'colonized' by one single logic, be that a legal or an economic one. It is only taking a meta perspective that we can assure the capability of taking into account all the different normative stances and claims without privileging one of them. Of course this meta-level will need to encounter and adapt to contingent issues in order to represent a powerful and useful reference for cross cutting issues. In this sense applied ethics represent specific configurations of a more general frame.

Lets reconsider briefly Responsible Research and Innovation under this complementary light given by ethics and second-order reflexivity to understand if the current developments are proceeding in the right direction. This could represent a sensible conclusion to our analysis of the reception of RRI.

10. Conclusions

Responsible Research and Innovation represents an original development in the science-society relation. It is meant to cover those grey areas that cannot be neither handled nor reduced to already-known regulations "*for impacts that are poorly characterized or highly uncertain (including those that emerge as a result of the complex, dynamic, and globalized nature of contemporary innovation and its naturalization process in modern society), this knowledge – and often risk-based – model of regulation fares less well. In these circumstances the current approach consigns scientists, innovators, and users to moral luck"* (Owen et al. 2013; Williams, 1981)[61]. In this sense, legal compliance represents an important side of innovation but cannot manage to solve problems when it comes to novelty, at least without blocking a process that would need instead to be fostered. At the same time, a free-regulated market promoted by liberal or new-liberal theories, exploiting political institutions for their purposes[62], cannot be taken as a reference for several reasons. They have highlighted inefficiencies and failures in the principle of regulation by market choice, which

[61] R. Owen et al., (eds), *Responsible Innovation*. *Managing the Emergence of Science.* First Edition, 2013 John Wiley & Sons, Ltd., p. 28.s

[62] Dardot & *Laval, The New Way of the World: On Neoliberal Society*, Verso, London 2013.

struggles, sometimes spectacularly, with 'externalities'.

However these sides of the normative horizon are as well crucial for the reproduction and well-being of our societies. We cannot imagine a free and therefore just society without these important functional aspects. At the same time one of the main aspect of justice is equality between the parts, or in our specific case, complementarity across the different logics of society[63]. This appears particularly true if we consider the polysemy embedded in the concept of responsibility.

As we have highlighted (Dels. 2.2, 2.3), responsibility has different sub-acceptions embedded in the same term[64]. To be responsible could be conjugated according to different normative settings. If this polysemy could represent a danger because it could be exploited or reduced to one of its meaning, it can also represent a chance, a driving force, and it is exactly the role and the importance that RRI wants to assume. The chance is represented by the fact that to be responsible cannot only be intended in one way but needs to take into account all the different sub-acceptions that it contains. In this sense if an innovation needs to be thought or discussed it is fundamental that all the normative weights are raised in the discussion. From a procedural point of view the possibility and necessity to obtain an enlargement of the horizon becomes fundamental if we don't want to reduce the problems related to innovation to mere acceptance ones. The mistake that is often made is to assume that the problem with innovation is a communicative one. In brief, according to this line of reasoning people react 'badly' to an innovation because they don't know enough about it or because they don't see how important it is (often in market terms). Therefore these protests or claims are thought to be solvable by communicating in the 'right' way. But this understanding of normativity presumes what is right and what is wrong without considering norms that are 'others'. Such a frame then tends to reduce the complexity of the context to a mere advertisement issue.

On the contrary society is built on different norms that are all necessary to keep society together and to progress. Every action or decision in whatever field has got repercussion also on other dimensions because society is not the sum of individual, detached actors[65]. If

[63] For a functional explanation of this complementarity, particularly focused on the role of economy, T. Parsons, (1991) The Integration of Economic and Sociological Theory. 'The Marshall Lectures', *Sociological Inquiry*, Vol. 61, No. 1, February, p.13.

[64] Nicole Vincent, 'A Structured Taxonomy of Responsibility Concepts', in *Moral responsibility: Beyond Free Will and Determinism*, pp. 15-36, Springer 2011. P. Ricoeur, (2000) *The Just*. London: The University of Chicago Press, pp. 12-35.

[65] On the nature and role of society we find a cross-cutting agreement even if the justification or the aims differ. For social perspectives, see, Durkheim, The Social Division of Labour, Tocqueville, Democracy in America, London: Everyman, 1994. Dewey, Liberalism and Social Action, in Later Works, vol. 11, Carbondale, IL: Southern Illinois University Press, 1987. For liberal understandings see, J. S. Mill, On Socialism, Alain Laurent, *Le liberalisme américain. Histoire d'un detournement*, Paris: Les Belles Lettres, 2006.

we take on the perspective that usually tend to influence most of the debate on RRI, that is how to foster economic benefits given the societal boundaries, we can see that in a way, it is a false dilemma.

As shown brilliantly by Xavier Pavie (Pavie 2014), innovation needs to be rooted in normative settings that are not only reducible to instrumental paradigms[66]. And research cannot be narrowed into a mere technical, abstract pattern. As well responsibility requires a wider understanding of all its implications. This overall depiction of the normative frame of RRI indicates how an ethical umbrella reference could work functionally with RRI if RRI is taken in this complementary way and not in a stand-alone differentiation.

According to the new guidelines developed in Horizon 2020, however, it appears that the actual path is leading somewhere else. The six main pillars that should guide every RRI attempt (Engagement, Gender Equity, Science Education, Open Access, Ethics, Governance; include reference to EU source) strangely place ethics to a subordinated role along with other pillars. Thus ethics should be conceived as one of the references and not as the main overall one. In this way however, at least three difficulties emerge. The first one regards the fact that these pillars, being different, could also stand in a conflicting or uncertain position implying that ethics could face a challenge against gender for instance. A second issue is that if different ethics are placed in a peer container it becomes unclear which principle should assume the reference term in order to regulate conflicting perspectives.

And this leads us to the last question that is, where do other reference-logics like the economic one stand if they are not comprise in the pillars? These kinds of questions of course could suggest that perhaps hidden motives have now assumed the prominence once assigned to ethics. But this hypothetical situation would be neither fruitful nor legitimate according to the science and society development briefly described above. Profit, for instance, cannot represent the leading principle for societal development because it relies on target and aims that are partial, coming from presupposed social contracts, and not able to subsume a sufficient level of legitimacy that every political system should be able to guarantee if it wants to be defined as democratic. If only one normative set is raised as the guiding principle then all the other developments will be already driven in a predetermined direction. Besides, this partial logic won't be able to tackle the challenges that rise in every single sphere (Walzer 1983) or city (Boltanski & Thévenot 1991). Hence, this scenario wouldn't differ from the one we have highlighted in this deliverable incurring in the same epistemic, pragmatic and political problems that we have highlighted.

In this sense we believe this deliverable and our analysis to represent an important assessment tool in order to unveil the patterns proceeding through all the different stages.

[66] X. Pavie, D. Carthy, *Responsible Innovation. From Theory to Practice*. World Scientific, London 2014.

It is not by chance then that our 'patternization' connects directly the way in which norms are handled and constructed with governance approaches and characterize these connections in forms of paradigms. This means that, in order to implement the relation between science and society and to make something substantial out of RRI, we need to reconsider the patterns highlighted in research and innovation and try to work in direction of the democratic one.

In this deliverable we have shown how every ethical tool corresponds to some governance model, coming from a precise epistemological background embodying a vision of the world (*Weltanschauung*). Thus if we want to shed some light on the darkness of RRI we cannot limit our efforts to providing some new codes of conduct or magical words but we need to act on the roots of the actual scenario at different levels. We must open the possibility for the context to gain the right amount of awareness in order to be able to substantially contribute to the societal development. For this reason we cannot conceive a pure and genuine RRI implementation without a reflexivity that concentrates on the background against which RRI is placed. It is this great challenge that our analysis tried to highlight, the fact that we don't need to modify only a specific contingent issue but we must start a process of collaborative construction of the entire frame across the different normative worlds towards a shared normative horizon.

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