Voluntary measures, participation and fundamental rights in the governance of research and innovation

Reflections on a 'constitutional' model for Responsible Research and Innovation

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Abstract: Responsible Research and Innovation (RRI) aims at being a new governance paradigm aiming at steering the innovation process in a participative manner by constructing responsibility as a shared process between innovators and societal stakeholders, rather than a remedy to its failures. In order to achieve those goals, RRI implements a collaborative and inclusive process between innovators and societal stakeholders, widely based on the idea of granting a wider participation of societal actors to the innovation process. The purpose of steering the research and innovation processes through participation of societal actors is one of the distinguishing characteristics of RRI approach, which this way aims at taking into account the increasing political implications of scientific innovation. In order to do so, RRI model promotes governance strategies focusing on actors' *responsibilisation*, which make appeal to actors' capacity of reciprocal commitment towards some common goals not mandated by the law. Whilst voluntary non-binding regulatory approaches seem to be the 'natural' way to implement RRI in practice, nevertheless some concern remains about the scope and the limits of the contextual agreements reached each time, in particular their capacity to grant respect to some fundamental values, which are part of the European political and legal culture, and which are at risk to become freely re-negotiable within the RRI context if we base it only on the idea of autonomy, participation and consent. On the contrary, the

paper argues that, if it wants to be coherent with its premises, RRI governance model needs to be complemented with a reference to fundamental rights, in order to give normative anchor-points to the confrontations between divergent views and values accompanying the development of technological innovation.

Keywords: Responsible Research and Innovation, Public participation to scientific innovation, fundamental rights, governance, self-regulation, soft law.

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Responsible Research and Innovation as a new governance approach

The ambition of responsible development of science and innovation has a history of decades in Europe; many approaches have been proposed in order to deal with the management of the outcomes of innovation, in particular with methods and approaches such as technology assessment (in its multiple declinations), stakeholder engagement, the consideration of ethical, legal and social implications of research (ELSA), 'midstream' modulation of science, therefore RRI is not a new comer on the field. For a more detailed reconstruction of the evolution of the governance approaches in relation to the problems posed by the science-society relationship and for an overview of different definitions of RRI, see Burget, Bardone, & Pedaste (2017); for an analysis of their conceptual dimensions see Gianni (2016).

In turn, the word 'responsibility' has already a long run in the policy discourse on science and technology, but as responsibility has different meanings, it is necessary illustrating how and why RRI can bring a novel approach to the governance of Research and innovation.

Responsible Research and Innovation (RRI) aims at overcoming the traditional ways of assigning responsibilities by the mean of liability or compensation, as well to overcoming the application of the precautionary principle, by promoting a future-oriented responsibility model aiming at steering the innovation process in a participative manner. RRI widens the spectrum of responsibility by enlarging at the same time both its scopes (as responsibility is seen as a steering process rather than a remedy) and its subjects (as responsibility is constructed as a collaborative process between innovators and societal stakeholders).

Indeed, a largely common understanding emerges across the different theoretical discussions on RRI, (von Schomberg 2013, Owen 2014, van den Hoven and Jacob 2013, Forsberg *et al.* 2015), amongst which the more prominent are (Wickson & Forsberg, 2015):

a) Responsibility is seen as a collective and participative process shared across different actors with different roles and powers along the innovation process: inclusion is therefore one of the most prominent dimensions of RRI (Burget, Bardone, & Pedaste, 2017, p. 14).

b) Responsibility is characterised as being proactive more than reactive, as it is intended to be mainly a driving factor of innovation process rather than a remedy subsequent to its failures:

   Responsible research and innovation involve proactively seeking information about legal conduct as well as doing the right thing, whether there is a compliance mechanism or not (Iatridis & Schroeder, 2016, p. 15).

c) Responsibility is oriented towards future rather than towards the past (Arnaldi, Gorgoni, & Pariotti, 2016): the specific approach of RRI aims at steering the innovation processes from within, according to common-defined societal values and needs.

Despite being often referred to as a uniform idea, responsibility is 'a syndrome of concepts' (Vincent, 2011, p. 27) variously interconnected (Davis, 2010; van de Poel, 2011). RRI presents itself as a prospective form of responsibility (Bovens, 1998), i.e. future-oriented, linked to the idea of exercising responsibility, not only in the sense of complying with the (legal) duties, but also in the broader idea of (pro)actively assuming responsibilities when the contents of duties and tasks are not or cannot be established in advance. This implies departing from the idea of responsibility conceived in terms of *reaction* and moving towards the idea of *responsiveness*. When compared with other general paradigms of responsibility (Arnaldi, Gorgoni, & Pariotti, 2016), RRI could therefore be considered as a new model for the responsible governance of research and innovation, overcoming the logic of *fault*, (corresponding to the traditional moral and legal idea of responsibility), that of *risk*, which aims at disconnecting the compensation for the damages from liability, and also that of that of *precaution*, which is linked to the situation of uncertainty characterising epistemology of contemporary science (as the direct or indirect outcomes of innovation practices are not fully predictable in advance; e.g. the effects of GMO's on the biosphere).

Nowadays uncertainty can no longer be viewed as a residual area of ignorance and risk to be gradually reduced by way of increasing expert knowledge and enhanced technological control. Science produces uncertainty rather than reducing it and this reshapes the boundary between science and policy, as well as that between knowledge and values so that *the ways in which we know and represent the world (both nature and society) are inseparable from the way we choose to live in it* (Jasanoff, 2004, p. 2).

In particular RRI emerges as a response to situations which are characterised both by a) epistemic uncertainty, at the side scientific level, and b) contestation and lack of consent at the social level, as knowledge and technology often implicitly do incorporate worldviews and societal patterns.

Within this epistemological framing, the Precautionary Principle introduced a new approach in legal regulation for dealing with uncertainty and risks, implementing a logic of anticipation and participation (Boisson de Chazournes, 2009), as *citizens have the right to be associated with decisions that carry risk for them (which the current state of political representation doesn't always fully permit)* (Wright, Gutwirth, Gellert, & Friedewald, 2011, p. 87). RRI shares with the Precautionary Principle this anticipatory and proactive stance towards the management and regulation of uncertain risks involving societal issues, which implies that

the management of the uncertainty linked to human activity must not become solely the prerogative of public decision-makers. The precautionary principle upsets traditional decision-making processes by requiring increased transparency […]. *To do so, the implementation of the precautionary principle must give rise to an effective and efficient application of the principle of public participation* (Boisson de Chazournes, 2009, p. 179).

RRI distinguishes itself from the Precautionary Principle as it tries to change the *context* of precaution by bringing the logic of decision about the path of innovation within a logic of *cooperation* and reciprocal co-responsibility between innovators and society, this way widening the idea of a collective appraisal of risks through participation (Stirling, 2008, p. 270). Indeed, unlike the logic of liability or accountability, within RRI paradigm responsibility has to be intended in terms of a voluntary commitment towards self-regulatory instruments (codes of conduct, guidelines, technical standards, reporting schemes, audits and so on) going beyond legal obligations, both because RRI is essentially voluntary in nature and because those instruments are fitted better than traditional forms of regulation for granting participation and power sharing between those whose activities are to be (self-)regulated and the stakeholders. So what specifically distinguishes RRI is the *integration of responsibility already within the innovation process*: whilst the Precautionary Principle is conceived mostly as a remedy to the deficiencies of the innovation process in terms of inclusion, information and participation of society to the innovation processes, RRI aims at being a responsibility model both presupposing and granting a closer integration between science and society, marking a move from the governance of risk to the governance of innovation (von Schomberg, 2012).

This implies a major change, which has been expressed in various terms such as 'democratization of scientific and technical choices' (Callon, Lascoumes, & Barthe, 2009), which implies bringing openness and inclusion within the innovation process by including civil society in science-making processes. This has to face (and to modify) the tradition of

separation of the scientific community from society and its self-reference with its inherent political power, in one side, and the barriers of industrial secret and patents on the other, which limit the access to the relevant scientific knowledge (the data but also the decisions on the strategies behind the development of a certain innovation), so that its merits and its success and its limits are strictly dependent from the realisation of this condition, which can only be guaranteed by modifying the standard practices of R&I activities.

Nevertheless, if we give credit to those features of RRI, then a major societal and political switch is required, as the conditions to meet in order the premises and promises of RRI to be realised are some demanding. RRI model promotes a participative approach to responsibility, namely by connecting innovators and stakeholders, in the context of a cooperative and non-adversarial logic. In this sense, RRI goals seem to be better achieved via governance strategies focusing on actors' *responsibilisation*, making appeal to actors' capacity of reciprocal commitment towards some common goals not mandated by the law.

Within this logic, participation is undoubtedly a relevant element of the governance model; nevertheless, some additional conditions are to be fulfilled in order to make RRI a good candidate as a new governance model for research and innovation, maintaining the promises it makes. Taking for granted the value of participation and of stakeholders' involvement within RRI practices, we will argue that RRI requires to be linked to some utter 'normative anchor points' which can structure the relation between innovators and stakeholders and mediate between the respective interests. In particular, it will be argued that fundamental rights can play this role (I use here the expressions 'human rights' and 'fundamental rights' interchangeably, although it is possible – and even necessary – distinguishing between the two from a legal point of view) as they express fundamental values structuring democratic societies not only in purely legal terms, but also in wider cultural ones.

This does not imply taking societal goals and values as fixed once and for all, both in advance and outside society, as fundamental rights are subject to different interpretations, which are not the monopoly of High Courts nor of the Judiciary but can instead also be defined in a bottom-up process. Indeed, if we give credit to the ambitions emerging from its definitions, RRI is far from being yet another de-regulatory strategy, since it is defined by a distinctive collective and cooperative approach, which implies that conflicting interests have to be composed in the light of wider societal considerations aimed at pursuing the societal good, going beyond the balance of the contingent particular interests of the parties more directly involved in the innovation process.

As a new governance model, RRI presents some features which distinguish it from other approaches to the distribution of responsibility within society, which are summarized in Table 1.

Whereas it shares with other governance paradigms of scientific innovation the use of voluntary and non-binding instruments, in order to be an alternative paradigm and not a restatement of the old ones, RRI should incorporate some hard normative anchor-points if it wants to be aligned with its theoretical premises, be it at the epistemological level (the co-production of scientific knowledge by society) and at the political level (the steering of the innovation process towards broad societal goals).

In the following pages we will move from an analysis of the regulatory instruments and approaches to RRI, them considering the added value of participation and of stronger normative references, which might shape RRI in a more constitutionally-flavoured manner.

Paradigm	**Guiding Principle**	**Criterion of ascription**	**Mean of realisation**	**Target**	**Regulating mechanism**
responsibility	fault	liability	sanction	negative outcomes	hard law
solidarity	risk	damage	compensation	negative outcomes	hard law
safety	precaution	uncertainty	expertise	negative outcomes	hard law / soft law
RRI	proaction	responsiveness	participation	negative and positive outcomes	self-regulation / soft law / hard law (fundamental rights)

Table 1: RRI and other governance models.

Regulatory approaches to Responsible Research and Innovation: a typology

As we highlighted before, RRI is essentially realised through voluntary, non-binding measures, which we could label under the expression 'alternatives to (formal) regulation'; therefore, the focus of the analysis should be on soft law, and mainly on self-regulatory instruments, which seem to be the approach better fitted for regulating new and rapidly evolving technologies (Palmerini & Stradella, 2014, p. 18).

The main advantage of voluntary initiatives is often found in that they avoid the imposition of rules by the outside and they favour elaborating and adopting the rule by the regulated parties themselves, compensating the gap in terms of legitimacy with a greater potential in terms of effectiveness. Nevertheless, this should not prevent us from considering their *efficacy* (see *infra*).

The specific regulatory tools, and in particular voluntary standards, that could be used in order to implement RRI in practice, have been already scrutinised in more detail; here we will, then we will try to characterise the governance model surrounding the adoption of those instruments in order to discuss their fitness within the RRI approach. Therefore, more than dealing with specific case studies we will discuss some of the features that should inform RRI practices and by which it would be possible evaluating concrete cases labelled under RRI idea, in particular under the aspect of the articulation between voluntary forms of regulation and responsibility, in one side, and the respect of fundamental values, and in particular human rights, on the other.

The regulatory instruments for putting RRI into practice are essentially those belonging to the galaxy of Corporate Social Responsibility (CSR), such as s*tandards* (e.g. the ISO9001), g*lobal initiatives* (e.g. the Global Compact), and *principles*, which can be broadly defined as instruments developed mostly by businesses in collaboration with stakeholders such as NGOs or trade unions (Iatridis & Schroeder, 2016, p. 52).

If we consider the content of those instruments, it could be pretty much the same across the different types of instruments; but if we consider the way they are adopted and implemented, which is a crucial point for any governance mechanism, and in particular for RRI given its intended democratic and participatory nature, then we should look more closely at the type of initiatives through which RRI is going to be realised, as the process of definition, adoption and implementation of the instruments count as much as their content. Therefore, in order to understand the place and the role those instruments can play from the point of view of the regulated parties, we should compare them with formal command-an-control regulation.

Considering the differences between those regulatory regimes, we are confronted with a problem, as usually innovators are willing to engage in voluntary self-regulatory initiatives more than having top-down regulation; on the other side, the achievement of broader benefits for society cannot be self-assessed by industries or companies, and there is need of granting some safeguards, which would speak in favour of formal regulation. Not any voluntary measure is fitted for translating RRI into practice, and therefore it is necessary to set the references for assessing the legitimacy of the instruments that can be used in practice for fostering RRI. The problem of promoting alternatives to formal, top-down regulation, while maintaining the basic democratic safeguards granted by formal legislation, is then posed.

Voluntary regulatory instruments are part of the European Union regulatory system, in which it is established that European Institutions should promote alternatives to regulation for achieving public policy objectives (in accordance with the principles of subsidiarity and proportionality, according the Article 5(3) of the Treaty on European Union (TEU)

and the Protocol (No 2) on the application of the principles of subsidiarity and proportionality).

The common features that they present are (a) their non-mandatory nature (they do not generate legal obligations), but nevertheless (b) their commitment to goals going beyond existing legal requirements or regulatory standards. We will briefly examine the potential benefits of voluntary approaches as well as their limits (Pellizzoni, 2004).

The potential benefits of voluntary approaches are often put forward as arguments for their adoption in spite of formal regulation; some of the arguments we could mention in favour of them in particular are:

- an alleged cost-efficiency compared to traditional regulation, as they grant greater context adaptability, this way facilitating compliance;
- a greater flexibility than formal regulation, as their amendment is not subject to formal procedures and is originated by those who are to be regulated, so granting a closer adherence of the regulatory scheme to the situation that has to be regulated;
- the fact they promote dynamics of regulation less adversarial than traditional regulatory approaches. In this sense, a more collaborative approach than traditional command-and-control regulations could potentially facilitate stakeholders' participation on the elaboration of the standards.

On the other side, voluntary approaches have some limits, some of which are contingent whilst some other seem indeed to be intrinsic (McCarthy & Morling, 2015). Contingent limits of voluntary regulatory instruments can typically be seen in:

- a risk of lack of transparency and accountability linked to the procedures of adoption, follow-up and control over their application, which are not subject to a public scrutiny as the legislative procedures are.
- it could be difficult demonstrating their actual performances instead of their intended one: here the more ideologically-oriented stance highlighting the benefits and advantages of self-regulation over the formal one has to be replaced by an evidence-based assessment of the actual and concrete performance of the instruments adopted (in particular by evaluating elements such as the level of achievement of the target, the ambition of the targets themselves, and the level of uptake reached).
- voluntary approaches rarely incorporate ambitious targets and frequently, if not by definition, they lack explicit sanctions for non-compliance, so that they are unlikely to provide strong incentives for their adoption (or disincentives for their non-adoption);
- the targets of voluntary agreements frequently fail to fully reflect wider social benefits and costs, as often they do not fully take into account societal interests, as often the coincidence between the public and private interests is only partial.

- There could be a purely strategic engagement in voluntary measures (Hoop, Pols, & Romijn, 2016): firms can use proactive adoption of voluntary measures in order to reduce the risk of 'regulatory threat' (i.e. avoiding the imposition of more stringent regulatory standards) or in order to create barriers to entry for other firms.

With those caveats, we should now briefly consider the alternatives to formal legislation and considering them in the light of their greater or lower participatory nature and their capacity to address those concerns, in order to understand their capacity to serve the RRI cause.

The use of alternatives to formal legislation is contemplated in two Inter-institutional agreements on better law-making between the European Parliament, the Council of the European Union and the European Commission (European Parliament, Council of the European Union, & European Commission, 2016; European Parliament, European Council, & European Commission, 2003).

Following the typology employed by the European institutions themselves already in the first Agreement (European Parliament et al., 2003), we can distinguish between two different regulatory approaches, respectively called *Co-regulation*, and *Self-regulation*. On the following we will briefly characterise those two approaches, then we will further distinguish another approach, *voluntarism*, in order to dress a basic regulatory typology which could be used for implementing RRI in practice.

Co-regulation designates administrative processes involving private parties as decision makers, while still entailing some degree of explicit government involvement in the regulatory framework. In the former Agreement it was defined as

the mechanism whereby a Community legislative act entrusts the attainment of the objectives defined by the legislative authority to [private] parties which are recognised in the field (such as economic operators, the social partners, non-governmental organisations, or associations) (European Parliament et al., 2003, para. 18).

It appears than co-regulation is a mix between formal instruments of regulation (law) and informal instruments of regulation (soft law) and instruments of self-regulation. This regulatory mechanism enables regulation to be closer to the problems and sectors concerned, reducing the legislative burden and relying on the experience of the parties concerned; it presupposes the definition of criteria by formal regulation. Co-regulation implies a form of monitoring and sanction, even if not in a formal way, especially by the mean of reporting and follow-up.

Self-regulation, is a slightly different approach, as it does not presuppose the adoption of a particular act or stance by the institution, but it is undertaken by those whose behaviour is to be regulated (e.g. an industry or profession might choose to develop and adopt its own code of practice promoting ethical conduct).

Within the first of the two mentioned agreements it is defined as

the possibility for economic operators, the social partners, non-governmental organisations or associations to adopt amongst themselves and for themselves common guidelines at European level (particularly codes of practice or sectoral agreements). As a general rule, this type of voluntary initiative does not imply that the Institutions have adopted any particular stance, in particular where such initiatives are undertaken in areas which are not covered by the Treaties or in which the Union has not hitherto legislated (European Parliament et al., 2003, para. 22).

The first agreement specified that the choice for those two mechanisms of regulation is not completely free as not only they have to meet the criteria of transparency and representativeness of the parties involved and must also represent added value for the general interest. More importantly, it was said that

these mechanisms will not be applicable where fundamental rights or important political options are at stake or in situations where the rules must be applied in a uniform fashion in all Member States (European Parliament et al., 2003, para. 17).

Even if the agreement is no longer in force, the issue it raised about the limits of the instruments when the general interest ('important political options') or the protection of fundamental rights are concerned, still remains valid and open. The new Agreement in force specifies that those approaches, which do play a greater role than before (European Commission, 2014, para. IV), have to be respect the principles of subsidiarity and proportionality, and to ensure compatibility with fundamental rights.

Those alternatives to formal regulation do have some advantages and disadvantages: involving of private parties within governance mechanisms has the advantage of delivering policies which are based on the expertise of the regulatees themselves, but this raises significant concerns in terms of their legitimacy and the legal guarantees, namely judicial protection (Eliantonio, 2017). The alleged respect of the Rule of Law and of the fundamental rights, the respect of the principles of legality and proportionality, as well as the involvement of the public authorities (be it as co-regulators or as monitoring bodies) seem to give, at least formally, a minimum legal framework to those regulatory approaches, despite their limits.

Another form of self-regulation has to be distinguished from those two, which can be termed as *voluntarism*: it designates those voluntary unilateral regulatory initiatives taken by actors belonging to the private sector which, in contrast to self-regulation (which entails at least some form of control), is based on the individual firm undertaking to 'do the right thing' unilaterally, without any basis in coercion and in absence of formal regulation (Gunningham, Grabosky, & Sinclair, 1998).

Assessing those self-regulatory approaches in the light of the requirements of the RRI idea highlighted above, it seems that we could state, at least at a first glance, that *co-regulation* and *self-regulation* seem to be approaches better fitting within the anticipatory and participatory logic of RRI. On the contrary by its very unilateral and non-inclusive nature *voluntarism* does not seem to make it a suitable regulatory approach within the RRI paradigm, as *it is also important to identify the extent of interaction between regulator and regulatees that took place in the rule making process* (Koops, 2013, p. 48).

This does not mean that co-regulation and self-regulation are *per se* satisfactory ways of realising RRI, but only that they are to be preferred over purely voluntary initiatives, but nothing can grant that they will not fail to maintain their promises. Indeed, the effectiveness and efficiency of alternative instruments to regulation cannot be evaluated purely in abstract but is context-specific, which means that there is no clear *a priori* reason for considering any one instrument superior to another (Taylor, Pollard, Rocks, & Angus, 2012). For instance, if we look at the European code of conduct for nano-science and nano-technologies, we could see that, despite it was aimed at promoting an active and inclusive governance of nano-science and nanotechnology (Von Schomberg, 2010, p. 66), its practical reception largely failed (Ruggiu, 2014).

In this sense, it has to be recognised that voluntary regulatory instruments are weakly fitted to pursue by themselves wide societal goals, independently from their more or less effectiveness in achieving their regulatory objectives. The evaluation of the role of those instruments depends on the perspective adopted towards RRI, concerning the role and the extents of participatory processes in the steering of scientific innovation.

Participation alone cannot grant a truly more democratic and inclusive process, and indeed it can lead to the opposite results if it is used as a strategic mean to prevent technology aversion, or to give the innovation process only a more appealing stance.

This implies not only that the democratic and inclusive value of participation has to be granted *by* public participatory processes, but that it has also to be protected against possible distortions, whether unintended or not, by the public bodies themselves (Bucchi & Neresini, 2008, p. 457). In short, this implies giving RRI a ‘constitutional’ interpretation.

A ‘Constitutional Framework’ for RRI Governance

In this section I am going to discuss the reasons in favour of shaping RRI in a ‘constitutional’ manner, going beyond the dimension of stakeholders’ participation. I will deal with the reasons behind this approach and not with a technical analysis of the legal aspects of the question.

Indeed, if we look closer at its definitions, we can distinguish between two ‘flavours’ of RRI: a ‘socio-empirical’ version, stressing the role of democratic processes aimed at

identifying values on which governance needs to be anchored; and a 'normative' version (Ruggiu, 2013). A socio-empirical definition of RRI does not provide a stable normative anchorage for RRI governance, as values and goals are the result of a contextual consensus and within this framing there is no remedy internal to RRI in order to correct possible contrasts with fundamental rights, which do appear to have a weak status. The normative version of RRI appears to be more fitted to avoid a 'contractualisation' of RRI, by posing the necessity of guaranteeing fundamental values which are not only embedded in formal constitutions, but which do belong to the legacy of European philosophical, political and legal culture (Yeung, 2004).

In the following I will argue that RRI democratic promises cannot rely only on a better implementation of participatory processes, and that it is necessary complementing it with legal safeguards and democratic legitimacy.

Under this perspective, the favour of von Schomberg's definition of RRI is linked to its distinctive 'constitutional flavour', insofar as it allows stressing the idea of normative connotations of RRI in terms of common non-negotiable values underpinning governance arrangements. I think it is necessary granting to those common values a stronger position within RRI governance model than the one granted by a socio-empirical perspective. Without denying the complexity of a pluralistic regulatory approach (Brownsword, 2008), I maintain that the normative anchor-points at the European level can be well represented by fundamental rights.

As we have seen, granting societal participation to the innovation process responds to the idea of strengthening the appraisal of the societal issues posed by technological development; in this sense, participatory rights are a precondition for a successful implementation of RRI. Indeed, fundamental rights might play a role in arbitrating between the choices of different regulatory regimes and options. The regulatory role played by fundamental rights towards new technologies has been scrutinised more in detail with regards to the European Charter of Fundamental Rights (Leenes et al., 2017) and European Convention on Human Rights (Ruggiu, 2018).

As we briefly pointed before, the inclusion of societal actors in the governance of scientific innovation is one of the constitutive dimensions of RRI (Stilgoe, Owen, & Macnaghten, 2013); (Von Schomberg, 2011, p. 9). The rationale behind the inclusion of societal actors into science-making, also called 'the participatory turn' (Jasanoff, 2003), is that of filling a double gap between scientific innovation and its introduction into society: the cognitive aspect (the forms of knowledge production) and the legitimacy of the choices that are made. I shall not discuss here extensively the value and the merits of public participation in science-making as we could take it for granted. Nevertheless, the democratic nature of the governance of the innovation process cannot rely only on the representativeness of the participatory processes but has to do also with improving the inner quality of both the

process and its outcomes in terms of both enabling societal capacities of qualification and of protecting participation from being confined within a reductive framing of societal issues (Wynne, 2007, p. 106).

RRI inherits from CSR many of its implementing tools (such as codes of conduct, stakeholders consultation, certification, etc.), as they both clearly delineate a governance approach to responsibility which extends above strict legal requirements and which has to be fulfilled with voluntary, extra-legal engagements. Nevertheless, despite those similarities, RRI seems to be a wider approach than CSR, since it embraces the whole research and innovation processes since the beginning, putting under discussion its very legitimacy and enlarging the stakeholders circle to society as a whole (so including also those who technically would be 'non-stakeholders'): *RRI is, in part, a process intended to blur the line between researchers, innovators, and all the rest. RRI does not seem to recognize any limits on who may participate in research* (Davis & Laas, 2014, p. 971).

Unlike CSR the focus of RRI is on the *agorà* of society as a whole more than on the economic operators, which makes it a genuinely political approach (in the sense of the reference to the 'common good'): *The agorà is a domain of primary knowledge production – through which people enter the research process*" (Nowotny, Scott, & Gibbons, 2003, p. 192). This has to be taken seriously if we want to give credit to the RRI as a new governance approach, in particular if we want distinguish RRI from mere innovation, in that it is characterised by *the endeavour of attempting to add morally relevant functionality which allows us to do more good than before* (Van den Hoven, 2013, p. 82). I think that in order to be in line with this strong political ambition, RRI have to acquire a stronger constitutional flavour as *innovation policy is now, inescapably, a part of politics* (Gibbons et al., 1994, p. 162).

Under this perspective, participation is undoubtedly a crucial feature for giving RRI a democratic stance and therefore the credits to present itself as a governance approach pursuing the 'tradition' of participatory approaches to the democratic governance of innovation (Pelle & Reber, 2015). Nevertheless, the participatory dimension does not suffice by itself to shape it according to its declared ambitions, which are those of putting in dialogue conflicting interests, views and values, by granting socially-robust and acceptable decisions.

The realisation of the ambitious political aims of RRI cannot be left to the virtue-responsibility dimension of RRI (Arnaldi, Gorgoni & Pariotti, 2018), as *even practising all these virtues is no ultimate guarantee that good intentions, schooled by a sensitivity to vulnerability, shaped by quasi-parental care and tempered through responsive dialogue and political deliberation, will not produce bad effects* (Grinbaum & Groves, 2013, p. 134).

Indeed participatory approaches taken alone cannot grant a qualitatively better decision-making, as the way of composing value conflicts will be as much unsolvable as much

radical and opposite are the conflicting views and values at stake, so that a way of arbitrating between the confronting parties without sacrificing any of them has to be granted. Indeed, although participation is a fundamental political value, *participation as such does not insure an automatic positive outcome of the process. The genuineness and efficacy of this idea depends basically on who participates (and how) and on the link between participation and the decision-making process* (Gianni, 2016, p. 170).

So the intrinsic quality of the participative process becomes a crucial question, as it gives substance to the inclusive and democratic flavour of RRI:

What has to change is the culture of governance, within nations as well as internationally; and for this we need to address not only the mechanics, but also the substance of participatory politics. The issue, in other words, is no longer whether the public should have a say in technical decisions, but how to promote more meaningful interaction among policymakers, scientific experts, corporate producers, and the public (Jasanoff, 2003, p. 238).

As the issues raised by scientific and technological development are highly political, the quality of participatory process is shaped, albeit not exclusively, by the way the debate between the different values, purposes and visions is framed: *an immediate normative deficiency of stakeholder deliberation is that the involved actors do not necessarily include the interest of actors who are not included*" (Von Schomberg, 2010, p. 68).

The scientific controversy nowadays includes the role of science in society, the ways the future of societies is shaped by scientific and technological innovation (for an overview of the issues posed by the social implications of technology, see (Arnaldi & Bianchi, 2016, pp. 65-67)). The predictive approaches have limitations in fully addressing those kind of issues, as for they tend to pre-empt political discussion (Jasanoff, 2003), which is precisely what RRI approach aims at bringing into the development of science.

For all these reasons it would not be consequent, without betraying the spirit of RRI idea, neither betting in the sole good will of the participants and in the success of the dialogue, nor delegating the solution to the contextual agreements between innovators and stakeholders, giving credit to a so-called 'socio-empirical' version of RRI:

by exclusively underlying the normative nature of stakeholders spontaneous responsible behaviours (i.e., they produce binding values), the socio-empirical approach […] runs the risk of losing all the novelty of the RRI model (Ruggiu, 2015, p. 223).

For these reasons it is crucial linking RRI to some fundamental legal principles which do contribute to the 'societal contextualization of the sciences' (Schulze-Fielitz, 2005).

Anchoring Responsible Research and Innovation to fundamental rights

The importance of linking RRI to Fundamental Rights is that of framing the context of the debate around values, not in order to compel their interpretations but rather in that of protecting them from possible re-negotiations or compromises that could devoid them of any significance.

Despite some criticism on the role of principles for shaping public decisions (Holbrook & Briggle, 2014), and on the role of fundamental rights as normative anchor points for RRI (Groves, 2015), we subscribe to the necessity to give RRI more sound *constitutional* normative anchor-points, in order to grant both the 'public nature' of science (Nowotny, 2005, p. 132) and the fundamental rights of the individuals, especially with the aim of creating the conditions for forms of what after John Rawls we call 'overlapping consensus', which indicates the equal coexistence of differing basic convictions ('comprehensive moral views' in Rawls' terms: religious, ethical, etc).

This stance is not in contradiction with the idea that the legal system is not well suited for dealing with new technologies, which led to developing alternative regulatory approaches. One of the pitfalls of the usual approaches in considering the place of legal regulation in a governance model is that of reducing the law to the direct production of rules through the old command-and-control method (Lee & Petts, 2013). So, if undoubtedly RRI is essentially realised more through voluntary measures than through formal regulation, nevertheless this does not mean that RRI is totally realised outside and besides the law; indeed, not only it is not possible excluding possible legal effects of the voluntary instruments through which RRI is realised, but it is not correct excluding the relevance of other legal norms within the RRI governance framework, as indeed many authors seem to do, whether explicitly or implicitly.

The law does not coincide with rules and regulations but is also – and fundamentally – a matter of principles, which do have also a moral and political connotation. The constitutional principles belonging to the European legal and moral legacy are the candidates for this constitutional role.

The question of the respect of fundamental rights has therefore not to be left at the margins of RRI, in pathological cases in which a judicial decision could contradict the course of development previously chosen, but indeed has to be part of its physiology. Fundamental rights therefore have not to be seen as contradicting participation but rather complementing and structuring it, as they can play the role of enabling actors through capacity-building, rather than having only a compelling function.

In particular, it seems that within RRI reference has to be made to the fundamental legal values that are common to the constitutional traditions of the European countries, such as

the Rule of Law and the protection of fundamental rights, which are embedded, *inter alia*, in the Charter of Fundamental Rights of the European Union and on the European Convention of Human Rights: *we should allow fundamental rights to work in a truly proactive fashion, and this is possible only in a rights-based model, a system where (legal issues on) human rights are not an accident on the route of governance, but are integrated into all its phases from the outset* (Ruggiu, 2015, p. 233).

The reference to fundamental rights protection should not be seen as a 'threat of adjudication' once removed the 'threat of regulation', but rather as a reference to a common system of guarantee of rights within the context of a prospective governance model, in line with the democratic premises of RRI. Participation alone cannot guarantee the fairness of the confrontation between different values and views, often competing if not clashing, and it is necessary setting the limits of what is negotiable and what cannot be under discussion in the context of RRI governance (but should be negotiated in other contexts and forms: those values are not unmodifiable; they are, but under special defined contexts and procedures, which are on purpose subtracted from the availability of a contingent majority).

This does not imply that societal goals and values are already established outside society and that they are immutable; indeed, the content of fundamental rights is subject to evolution, both according the specific contexts and during time. Even if litigation is undoubtedly the main context in which the content of those rights is elaborated, nevertheless interpretations of fundamental rights is not the monopoly of the Judiciary. The content of those rights can also be specified through a confrontation between innovators and stakeholders, i.e. in a collaborative and dialogic way within the research and innovation process, in a proactive and prospective manner, rather than in an adversarial logic.

This reference to fundamental rights and to their implementation in the case-law (in particular of the European Court of Justice and of the European Court of Human Rights) does not imply necessarily a refusal of virtue ethics, which is another element of a responsibility oriented towards the future (Owen et al., 2013; Groves 2015).

If RRI aims at being a comprehensive governance model for scientific innovation aimed at improving the integration between science and society, the respect of the rule of law and fundamental rights cannot be an option at the free disposal of those, may they be private or public parties, who wish to, or pretend to, engage in RRI, and the standards of rights protection and the limits and conditions of their compression should therefore inspire the voluntary initiatives undertaken under the RRI label.

Conclusions

Taking RRI seriously is a demanding task. RRI potential as a governance approach implies a mix between hard and soft regulatory instruments, as it seems better suited for addressing the issues raised by innovation and technology, by granting flexibility in one side, but

within a frame of rights and duties. In particular, soft law and in general voluntary, non-binding self-regulatory measures seem to be better fitted for implementing the so called positive obligations concerning human rights (Arnaldi, Gorgoni & Pariotti, 2018), i.e. those requiring positive actions and proactive commitment in order to be achieved. The integration of fundamental rights within governance mechanisms and instruments could be what specifically characterise RRI as a distinctive governance approach compared to other form of governance if we want to give credit to its ambitions. Once we move from the field of legislation to that of voluntary measures, fundamental rights can represent a common normative reference for all actors, be them private or public. Private actors, who tend to decline the responsibility of human rights protection, by charging this duty solely on public bodies. No need to say that this is often a deliberate strategy for systematically dismissing the standards of human rights protection, especially by transnational corporations, and to hide behind the shadow of public sphere responsibilities.

Participation remains an essential feature of RRI, but it has to be reconsidered within a broader consideration of the legal and political legitimacy of the governance process through the reference to fundamental rights. RRI is not called to be realised in a sort of legal vacuum, as the reference to the non-binding, voluntary regulatory schemes seems to indicate. It would not be worthy (nor very coherent) considering RRI a serious candidate as a new governance approach to scientific innovation without taking it seriously. Therefore, a stronger constitutional connotation of RRI is essential in framing and assessing the intrinsic qualities of the voluntary and participatory approaches through which RRI is called to be realised.

Without anchoring RRI to fundamental rights the unlimited contextual negotiability of values puts RRI at risk to contradict in practice its theoretical and political premises.

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