**Abstract: A Hermeneutic Reflection on the Paradigm-level Assumptions underlying RRI**

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In the literature, RRI is being portrayed as involving a transition in R&I practices such that their products and processes are aligned with social and ethical needs (Timmermans, 2015). Thus far, the issues and challenges accompanying this transition are predominantly addressed on a conceptual and practical level, ranging from governance frameworks (Owen et al. 2013) to hands-on tools to implement RRI in practice (e.g. RRI tools project, n.d.). At the same time, an emerging strand in the literature highlights the tensions between the ideals of RRI and innovation practice (e.g. Blok & Lemmens, 2015). This raises the question whether the introduction of governance frameworks and tools if sufficient to achieve RRI's societal ambitions.

In the adjacent field of sustainability transition-literature, it is being argued that to adequately tackle the global challenges sustainability humanity is facing, the required changes need to be understood on a more fundamental level (Geels, 2002; Geels, 2005). Likewise, we content that issues and challenges of implementing RRI can be traced back to the (implicit) ways of thinking that ground the different pre-existing theories and approaches that are shared under the RRI-umbrella, which may be mal-adjusted or even in tension with each other. On the one hand, for example, by incorporating 'innovation', RRI is firmly rooted in the classic economic paradigm (see e.g. Blok & Lemmens, 2015; van den Hoven, 2013; Zwart, Landeweerd, & Van Rooij, 2014). On the other hand, by explicitly building on the ELSA/ELSI, STS and CTA traditions (see e.g. Fisher & Rip, 2013; Grunwald, 2011; Stilgoe, Owen, & Macnaghten, 2013), RRI is assumed to be understood and established within a social/ societal governance-paradigm. In this paper, we contend that the tensions between the ideals of RRI and innovation practices can be explained by the self-evident assumptions at the paradigm level on the one hand, and requires a paradigm transition in order to achieve RRI's societal goals. In order to develop a deeper understanding of the underlying fundamental assumptions of current RRI practices, and of the paradigm shift which is needed to achieve its societal aspirations, this paper analyses the paradigm-level assumptions that are (implicitly) being forwarded by the different conceptualisations of RRI.

*Section 1* outlines a basic analytical framework to investigate conceptualisations of RRI at a paradigm level. In this paper, a paradigm is understood as a set of basic beliefs (or metaphysics) that deals with first principles (Guba & Lincoln, 1994). It can be defined as a set of *assumptions, concepts, values, and practices* that constitutes a way of viewing reality for the community that shares them (Cf. Oxford English Dictionary, n.d.). Moreover, paradigms also are normative: they determine what is viewed as "important and unimportant, reasonable and unreasonable, legitimate and illegitimate, possible and impossible, and what to attend to and what to ignore." (Ratcliffe, 1983) Together the ontology, i.e. the form and nature of reality, and axiology, i.e. that which is of value or worthwhile (Given, 2008), of a paradigm thus span a bounded performative space. Within this space, certain activities or actions are regarded as possible, reasonable, legitimate, and importance while others are excluded as being impossible, illegitimate, unreasonable, and unimportant.

Building on the analytic framework, *Section 2* outlines a research approach that enables investigating the ontological and axiological elements of the different paradigms presupposed by the RRI discourse. The approach consists of a critical hermeneutical approach based on the work of Ricoeur (1981) and Ricoeur & Thompson (1981) and Habermas (1978; 1988; 1990). Marrying the

hermeneutic and critical theory traditions, it allows to transcend previously taken for granted paradigms and look critically from the outside at their assumptions and practices (Given, 2008, p. 153). This way our research approach supports the profiling of the different symbolic ontological and axiological assumptions and the assessing the different symbolic assumptions in the context of social practices and institutions.

Next, *Section 3* applies the research approach onto a cross-section of salient conceptualisations of RRI that are currently forwarded by the literature.

Finally, by discerning the different ontological and axiological elements invoked by the conceptualisations and practices of RRI, *Section 4* defines the current RRI paradigm, as well as the paradigm transition which is required to achieve RRI's societal aspirations. Based on these insights recommendations are made to deal with the challenges and issues RRI currently faced on a conceptual and practical level, which is needed for a successful transition to a responsible R&I.

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