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PERSPECTIVES PIECE

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Responsible research and innovation meets multispecies studies: why RRI needs to be a more-than-human exercise

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ABSTRACT

We offer an argument for why responsible research and innovation should be in conversation with multispecies studies. We suggest that RRI can learn from multispecies studies to expand definitions of stakeholders and responsibilities, thereby including other creatures in conversations and frameworks where they are currently missing. In addition, the RRI community might benefit from exploring conceptual overlaps between RRI and multispecies studies literatures. For example, concepts germane to RRI – notably, care and relationality – have been particularly well-developed with respect to how they oblige mutually responsive relationships. Consequently, connecting these two areas of theory and practice should nuance discussions about responsibility as an individual versus a collective endeavor and about the relationship between RRI and knowledge production.

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Responsible research and innovation (RRI) and multispecies studies scholarship rarely intersect. We think that should change. RRI has gained ground in Europe and beyond through observing that scientific and technological research needs to account for societal goods and diverse values, defined in terms such as 'ensuring that research outcomes are both desirable and acceptable for society' (McLeod and Hartley 2018; see also Lindner et al. 2016). However, society is generally defined (explicitly or implicitly) as *human* society, indicating that research and innovation processes must be responsible to the interests of human stakeholders. RRI frameworks encourage researchers to consider the motivations driving their research, to reflect on who might be affected, and to engage stakeholders in dialogue (Stilgoe et al. 2013) – expectations predicated on human stakeholders and human concerns.

The concomitant lack of attention to other-than-human creatures is notable because human wellbeing is necessarily interdependent with other creatures' wellbeing, because other creatures are often involved in research, and because RRI draws from conceptualizations of responsibility that foreground more-than-human relations (Haraway 2007; Pellizzoni 2004). Restricting 'society' to humans alone is a relatively recent notion, and

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a limitation in considering how science and technology might be oriented toward better futures (Latimer and Miele 2013). We suggest that RRI can learn from multispecies studies to expand definitions of stakeholders and responsibilities, thereby including other creatures in conversations and frameworks where they are currently missing. In addition, the RRI community might benefit from exploring conceptual overlaps between RRI and multispecies studies literatures.

Cultural studies of non-humans – often 'animal studies,' but also studies of plants and microorganisms – have steadily become more interested in how other creatures and humans *relate* than what they *are*. This relational focus, examining meetings among species rather than species as abstractions, avoids essentializing non-humans' otherness and mitigates tendencies to make assumptions about non-humans' capabilities. This approach also demonstrates how humans and non-humans co-constitute their identities in relation (van Dooren 2016) and how caring for human wellbeing thus necessitates caring for the wellbeing of other species (Puig de la Bellacasa 2015). Multispecies studies, in other words, brings attention to how worlds inhabited by myriad creatures are actively constituted through mutual response. These lines of inquiry lead multispecies studies to intersect with what it means for research to be responsible, and to advance RRI agendas, in several ways.

First, we might ask what it means to be responsible to other creatures as stakeholders in human-driven research. Future worlds are not just inhabited by humans. How may innovations change the lives of living things, broadly understood? How can research processes ensure that diverse needs and interests are considered? These questions are similar to those invoked in conventional RRI – about how to direct research toward a better world, acknowledging that 'better' is never equally better for everyone – but with a substantially expanded definition of 'everyone.' The essential question in multispecies RRI therefore becomes: what methods do we need to engage (non-human) others in dialogue, or to otherwise take their perspectives into account?

The difficulty of bringing other creatures into RRI practices – without simply speaking for them – brings us to a second intersection. Following Stengers (1997) and Haraway (2007, 2016), we need to ask how humans are response-able to other creatures, that is, how we become able to respond to each other. Their arguments, echoed by many multispecies scholars, indicate that humans must deliberately cultivate capacities to attend to and communicate with other creatures. In the absence of such response-abilities *with* other creatures, humans have no hope of being responsible *to* other creatures because we do not know how to listen; the stakeholder voices we hear will only ever be our own, speaking *for* others, and limiting possibilities to learn from and account for perspectives we might not already imagine. Developing such response-abilities might enable RRI to encompass how to care *for* organisms produced through science and innovation (Wickson 2016), how to care *with* creatures through scientific work in which they participate (Szymanski and Calvert 2018), and how to care *about* technoscientific futures in more-than-human ways (McLeod and Hartley 2018).

Several concepts germane to both RRI and multispecies research are well-developed in the rich multispecies literature, including care, concern, and relationality. Care is multifaceted and contested, but we flag it here because it is central to RRI, as in Stilgoe et al.'s (2013) definition of RRI as 'taking care of the future through collective stewardship of science and innovation in the present.' Davies and Horst (2015) also found that when

discussing RRI, research group leaders understood care for their group (sometimes also including research animals) as primary among their responsibilities. RRI implementation, however, has been criticized for not accounting for the complexities of care in practice (Kerr et al. 2018; Viseu 2015) – an absence complemented by multispecies studies, wherein care has been operationalized as a tool for situated work (e.g. Abrahamsson and Bertoni 2014; Donati 2019). Care, as a concept, has been debated in many different fields and cannot be reduced to a single analytic or a recipe. Connecting RRI and multispecies studies around care should open up space for scholars in both fields to take seriously what care can mean and might do.

Care recalls a central principle of RRI, that reflexivity and dialogue must be responsive, open to interruption and change through relationships developed over time. What multispecies studies brings along with this shared focus on responsiveness is that these relationships are about generating knowledge – about 'the research itself' – in addition to how that knowledge works in broader social spaces. Multispecies theorists such as Despret (2004, 2013, 2015) and Candea (2013) have demonstrated that researchers who oblige themselves to listen and respond to non-humans, as partners in inquiry, inquire more openly; by working to generate shared concerns with these partners, they remain open to being surprised by them. While such case studies have typically focused on charismatic animals, we have observed similarly productive research participation by baker's yeast (Calvert and Szymanski 2020; Szymanski and Calvert 2018), and Beth Greenhough (2012) has suggested that common cold viruses and humans have participated in similar relationships. Multispecies case studies thus vividly demonstrate that RRI cannot be separated from 'the research itself' because responsiveness changes the shape of knowledge construction and constructs ethical obligations simultaneously. Rather than polluting or impeding research, on the contrary, responsive relationships should enable more attentive, nuanced findings.

Considering RRI in multispecies terms should consequently also advance conversations about tensions between individual and collective responsibilities through juxtaposing responsibility and response-ability. Response-ability – Haraway's (2016) neologism for the capacity of creatures to notice, attend to, and respond to each other – is a necessary predicate of responsibility. Haraway (2007, 2016), Stengers (2010, 2011), Despret (2004, 2015), Puig de la Bellacasa (2011), and other feminist multispecies researchers have observed that response-ability, as the capacity for 'attunement and productive mutual modification,' is always reciprocal (Despret 2004); researchers become response-able *with* the systems they study – *with*, not *to*. Bringing response-able research into contact with responsible research makes it possible to refocus conversations about individual versus collective responsibility; instead of talking about *people* who need to be responsible, we need to talk about mutually obliging *relationships* that make responsibility possible.

Multispecies studies perspectives highlight that responsibility is essentially relational and affective, and always in excess of what is captured in metrics that distance responsible actions from personal entanglements. These perspectives should therefore also illuminate instances in which response-ability does not seem possible, and help identify conditions that hinder it. Institutions may structurally elide or even systematically eliminate responsive capacities in ways that are more or less calcified and resistant to change. And while it is not possible to be response-able to all stakeholder-creatures at all times, addressing

multispecies responsibilities is a matter of seeing and consciously addressing such tensions, not feigning that they do not exist.

This is a very different path to multispecies responsibility than one guided by frameworks governing the use of animals in research (McLeod and Hartley 2018). The '3Rs' central in those frameworks – replacement, reduction, refinement – apply only to animals (usually creatures understood to feel pain) directly involved in research (Kirk 2018). Moreover, laboratory animal welfare and multispecies research are concerned with different central tensions. In the former, researchers negotiate conflicts between commitments to animal wellbeing and to the value of research, often by caring as well as possible for their animals given the needs of their research (e.g. Giraud and Hollin 2016). In the latter, researchers negotiate conflicts between the need for all beings to dwell on this planet and the priority that human beings give to each other, dealing with how we choose to live well together (Haraway 2016) – whom we prioritize when, practically speaking, we cannot care for everyone equally all the time. Where laboratory animal governance emphasizes animal suffering and minimizing negative multispecies relations, multispecies studies perspectives instead tend to orient around cultivating positive relations.

Public engagement and science policy scholars have taken decades to establish strategies for being response-able with human publics. Leveraging the multispecies studies literature may suggest methods for helping multispecies RRI catch up. An integrated multispecies RRI, in which care for future worlds through stewardship of research in the present accounts for how human wellbeing is always about the wellbeing of humans and non-humans together, is no doubt very far off. However, RRI stands to benefit from engaging with multispecies studies now, as we continue to work to expand the scope of consideration of those whose futures matter.

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