



THE UNIVERSITY *of* EDINBURGH

Edinburgh Research Explorer

Responsible research and innovation meets multispecies studies

Why RRI needs to be a more-than-human exercise

Citation for published version:

Szymanski, EA, Smith, RDJ & Calvert, J 2021, 'Responsible research and innovation meets multispecies studies: Why RRI needs to be a more-than-human exercise', *Journal of Responsible Innovation*.
<https://doi.org/10.1080/23299460.2021.1906040>

Digital Object Identifier (DOI):

[10.1080/23299460.2021.1906040](https://doi.org/10.1080/23299460.2021.1906040)

Link:

[Link to publication record in Edinburgh Research Explorer](#)

Document Version:

Publisher's PDF, also known as Version of record

Published In:

Journal of Responsible Innovation

General rights

Copyright for the publications made accessible via the Edinburgh Research Explorer is retained by the author(s) and / or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy

The University of Edinburgh has made every reasonable effort to ensure that Edinburgh Research Explorer content complies with UK legislation. If you believe that the public display of this file breaches copyright please contact openaccess@ed.ac.uk providing details, and we will remove access to the work immediately and investigate your claim.





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

Erika Amethyst Szymanski, Robert D. J. Smith & Jane Calvert

To cite this article: Erika Amethyst Szymanski, Robert D. J. Smith & Jane Calvert (2021): Responsible research and innovation meets multispecies studies: why RRI needs to be a more-than-human exercise, Journal of Responsible Innovation, DOI: [10.1080/23299460.2021.1906040](https://doi.org/10.1080/23299460.2021.1906040)

To link to this article: <https://doi.org/10.1080/23299460.2021.1906040>



© 2021 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group



Published online: 01 Apr 2021.



Submit your article to this journal [↗](#)



Article views: 184



View related articles [↗](#)



View Crossmark data [↗](#)

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

Erika Amethyst Szymanski^a, Robert D. J. Smith^b and Jane Calvert^b

^aDepartment of English, Colorado State University, Fort Collins, CO, USA; ^bScience, Technology, and Innovation Studies, University of Edinburgh, Edinburgh, UK

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.

ARTICLE HISTORY


Received 15 September 2020
Accepted 16 March 2021

KEYWORDS

Multispecies studies; care; response-ability; relationality

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

CONTACT Erika Amethyst Szymanski  Erika.Szymanski@colostate.edu

© 2021 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group
This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

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. Abrahamson 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.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This work was supported by Biotechnology and Biological Sciences Research Council: [grant number BB/MO18040/1]; Economic and Social Research Council: [grant number ES/S013601/1].

Notes on contributors

Erika Amethyst Szymanski is an assistant professor of rhetoric of science and a microbiome cluster initiative hire in the Department of English at Colorado State University. She is interested in how words function as scientific tools, particularly to shape working relationships among microbes and humans.

Robert D. J. Smith is a research fellow at Science, Technology & Innovation Studies, School of Social & Political Science, The University of Edinburgh. His research examines the social, political and policy dimensions of biological engineering.

Jane Calvert is a professor of Science and Technology Studies at the University of Edinburgh. She is interested in attempts to engineer living things (particularly yeast) and collaboration and intervention in STS.

References

- Abrahamsson, Sebastian, and Filippo Bertoni. 2014. "Compost Politics: Experimenting with Togetherness in Vermicomposting." *Environmental Humanities* 4 (1): 125–148. doi:10.1215/22011919-3614962.
- Calvert, Jane, and Erika Szymanski. 2020. "A Feeling for the (Micro)Organism? Yeastiness, Organism Agnosticism and Whole Genome Synthesis." *New Genetics and Society*, 1–19. doi:10.1080/14636778.2020.1736537.
- Candea, Matea. 2013. "Habituating Meerkats and Redescribing Animal Behaviour Science." *Theory, Culture & Society* 30 (7/8): 105–128.
- Davies, Sarah R., and Maja Horst. 2015. "Crafting the Group: Care in Research Management." *Social Studies of Science* 45 (3): 371–393.
- Despret, Vincianne. 2004. "The Body We Care for: Figures of Anthro-Zoo-Genesis." *Body & Society* 10: 111–134.
- Despret, Vincianne. 2013. "Responding Bodies and Partial Affinities in Human–Animal Worlds." *Theory, Culture & Society* 30 (7–8): 51–76.
- Despret, Vincianne. 2015. "Models and Methods." *Angelaki* 20 (2): 37–52.
- Despret, V., and M. Meuret. 2016. "Cosmoecological Sheep and the Arts of Living on a Damaged Planet." *Environmental Humanities* 8 (1): 24–36.
- Donati, Kelly. 2019. "'Herding is His Favourite Thing in the World': Convivial World-Making on a Multispecies Farm." *Journal of Rural Studies* 66 (February): 119–129. doi:10.1016/j.jrurstud.2018.12.008.
- Giraud, Eva, and Gregory Hollin. 2016. "Care, Laboratory Beagles and Affective Utopia." *Theory, Culture & Society* 33 (4): 27–49. doi:10.1177/0263276415619685.
- Greenhough, Beth. 2012. "Where Species Meet and Mingle: Endemic Human-Virus Relations, Embodied Communication and More-Than-Human Agency at the Common Cold Unit 1946–90." *Cultural Geographies* 19 (3): 281–301. doi:10.1177/1474474011422029.
- Haraway, Donna J. 2003. *The Companion Species Manifesto: Dogs, People, and Significant Otherness*. Vol. 1. Chicago: Prickly Paradigm Press.
- Haraway, Donna. 2007. *When Species Meet*. Minneapolis: University of Minnesota Press.
- Haraway, Donna. 2016. *Staying with the Trouble: Making kin in the Chthulucene*. Durham, NC: Duke University Press.
- Kerr, Anne, Rosemary L. Hill, and Christopher Till. 2018. "The Limits of Responsible Innovation: Exploring Care, Vulnerability and Precision Medicine." *Technology in Society, Technology and the Good Society* 52: 24–31. doi:10.1016/j.techsoc.2017.03.004.
- Kirk, Robert G. W. 2018. "Recovering The Principles of Humane Experimental Technique: The 3Rs and the Human Essence of Animal Research." *Science, Technology, & Human Values* 43 (4): 622–648. doi:10.1177/0162243917726579.
- Latimer, Joanna, and Mara Miele. 2013. "Naturecultures? Science, Affect and the non-Human." *Theory, Culture & Society* 30 (7–8): 5–31.
- Lindner, Ralf, Stefan Kuhlmann, Sally Randles, Bjørn Bedsted, Guido Gorgoni, Erich Griessler, Allison Loconto, and Neils Mejlgaard, eds. 2016. *Navigating Towards Shared Responsibility in Research and Innovation. Approach, Process and Results of the Res-AGorA Project*. Fraunhofer Institute for Systems and Innovation Research ISI: Karlsruhe.
- McLeod, Carmen, and Sarah Hartley. 2018. "Responsibility and Laboratory Animal Research Governance." *Science, Technology, & Human Values* 43 (4): 723–741.
- Pellizzoni, Luigi. 2004. "Responsibility and Environmental Governance." *Environmental Politics* 13: 541–565.
- Puig de la Bellacasa, Maria. 2011. "Matters of Care in Technoscience: Assembling Neglected Things." *Social Studies of Science* 41 (1): 85–106.
- Puig de la Bellacasa, Maria. 2015. "Making Time for Soil: Technoscientific Futurity and the Pace of Care." *Social Studies of Science* 45 (5): 691–716.
- Stahl, Bernd C. 2013. "Responsible Research and Innovation: The Role of Privacy in an Emerging Framework." *Science and Public Policy* 40 (6): 708–716.

- Stengers, Isabelle. 1997. *Power and Invention: Situating Science*. Minneapolis: University of Minnesota Press.
- Stengers, Isabelle. 2010. *Cosmopolitics*, Vol. 1. University of Minnesota Press.
- Stengers, Isabelle. 2011. *Cosmopolitics II*. Minneapolis: University of Minnesota.
- Stilgoe, Jack, Richard Owen, and Phil Macnaghten. 2013. "Developing a Framework for Responsible Innovation." *Research Policy* 42 (9): 1568–1580. doi:10.1016/j.respol.2013.05.008.
- Szymanski, Erika, and Jane Calvert. 2018. "Designing with Living Systems in the Synthetic Year Project." *Nature Communications*, doi:10.1038/s41467-018-05332-z.
- van Dooren, Thom. 2016. "Authentic Crows: Identity, Captivity, and Emergent Forms of Life." *Theory, Culture & Society* 33 (2): 29–52.
- Viseu, A. 2015. "Caring for Nanotechnology? Being an Integrated Social Scientist." *Social Studies of Science* 45 (5): 642–664.
- Wickson, Fern. 2016. "Do We Care about Synbiodiversity? Questions Arising from an Investigation into Whether There are GM Crops in the Svalbard Global Seed Vault." *Journal of Agricultural and Environmental Ethics* 29 (5): 787–811.