

Routledge
Taylor & Francis Group

Journal of Responsible Innovation

ISSN: 2329-9460 (Print) 2329-9037 (Online) Journal homepage: www.tandfonline.com/journals/tjri20

The societal readiness lab: embedding reflexive learning in research and innovation consortia

Robert Braun

To cite this article: Robert Braun (2026) The societal readiness lab: embedding reflexive learning in research and innovation consortia, Journal of Responsible Innovation, 13:1, 2757370, DOI: 10.1080/23299460.2026.2757370

To link to this article: https://doi.org/10.1080/23299460.2026.2757370

© 2026 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group

Published online: 18 Nov 2026.

Submit your article to this journal

View related articles

View Crossmark data

Full Terms & Conditions of access and use can be found at
https://www.tandfonline.com/action/journalInformation?journalCode=tjri20

JOURNAL OF RESPONSIBLE INNOVATION
2026, VOL. 13, NO. 1, 2757370
https://doi.org/10.1080/23299460.2026.2757370

Routledge
Taylor & Francis Group

RESEARCH ARTICLE

OPEN ACCESS Check for updates

The societal readiness lab: embedding reflexive learning in research and innovation consortia

Robert Braun

Institute for Advanced Studies – Institut für Höhere Studien, Social and Sustainable Transformation Research Group, Vienna, Austria

ABSTRACT

This paper introduces the Societal Readiness Lab (SR-Lab) as a methodological framework for embedding reflexive societal readiness within research and innovation (R&I) consortia. It conceptualizes reflexive societal readiness as an organizational capacity to question and revise research trajectories in relation to changing societal concerns. Building on STS, ethnomethodology and organizational learning, the SR-Lab establishes a temporary learning infrastructure within ongoing research projects. Ethnomethodological observation of project practices informs reflexive workshops that combine critical examination of institutional assumptions with collective foresight. Field engagements, ludic experimentation and participatory socio-economic impact assessment bring external perspectives and alternative futures into this process. Societal Readiness Ambassadors sustain reflexive learning, institutionally anchoring emerging insights to project governance and decision-making. The SR-Lab seeks to develop the organizational capacity for anticipatory governance, keeping research trajectories open to societal contestation and revision. Its purpose is to make reflexive and anticipatory learning relevant for the everyday conduct of research and innovation..

ARTICLE HISTORY
Received 2 December 2025
Accepted 21 October 2026

KEYWORDS
Societal readiness; social labs; epistemic reflexivity; ludic experimentation; learning organization

Introduction

Over the past decade, the landscape of European research and innovation (R&I) governance has undergone a profound transformation. Driven by political and public concerns about legitimacy, societal value, and ethical orientation of scientific and technological development, institutions have increasingly sought to integrate broader societal considerations into R&I processes (EC 2014; Griessler et al. 2022; Mejlgaard et al. 2018; Owen et al. 2021; Owen and Pansera 2019; Owen, von Schomberg, and Macnaghten 2021; Stilgoe, Owen, and Macnaghten 2013; Von Schomberg 2013). This shift is visible across successive EU Framework Programmes, most notably Horizon 2020 and Horizon Europe, where Responsible Research and Innovation (RRI) emerged as a key governance paradigm intended to align scientific agendas with societal needs and values. Yet despite substantial political investment, empirical studies consistently show that implementation has remained uneven, fragmented, and often superficial. As Novitzky et al. (2020) demonstrate in their evaluation of H2020, RRI appeared frequently in policy discourse but was only weakly integrated into actual research practices, proposal templates, or evaluation criteria, effectively operating as an 'empty signifier' within much of the programme. This disconnect between normative ambition and institutional practice has led scholars to argue that new modes of learning, reflexivity, and organizational experimentation are needed if RRI principles are to meaningfully shape research trajectories.

Underlying these challenges is a deeper structural issue: European R&I is embedded in a highly networked governance system composed of diverse intermediary organizations: funding agencies, standard-setting bodies, ethics committees, evaluators, and research institutions, none of which have clear responsibility for initiating or sustaining reflexive learning about responsibility (Kjaer 2015; Schuijer et al. 2022). As Braun et al. (2022) show, science governance tends to function as a *non-learning environment*, in which

CONTACT Robert Braun braun@ihs.ac.at Institute for Advanced Studies – Institut für Höhere Studien, Social and Sustainable Transformation Research Group, Josefstädter Straße 39, Vienna 1080, Austria

© 2026 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. The terms on which this article has been published allow the posting of the Accepted Manuscript in a repository by the author(s) or with their consent.

responsibility is routinely delegated, deferred, or dispersed across organizational boundaries (Brunsson 1998). This structural fragmentation allows actors to acknowledge the importance of societal concerns rhetorically while maintaining existing operational routines, thereby limiting opportunities for collaborative reflection on the sociotechnical imaginaries shaping research trajectories. The consequence is a governance ecology that is formally committed to responsible innovation yet struggles to enact the reflexive, anticipatory, and responsive modes of practice envisioned by the AIRR framework (Stilgoe, Owen, and Macnaghten 2013).

These questions have acquired renewed relevance with the emergence of the concept of 'societal readiness' as a distinct vocabulary in research and innovation governance (Bernstein, Nielsen, and Alnor 2022). The concept belongs partly to the wider family of readiness approaches developed around Technology Readiness Levels and subsequent attempts to supplement technical maturity with market, demand, human, ethical and social considerations (Hjort and Brem 2016; Mankins 1995; Paun 2012; Sauser et al. 2006). Recent work, however, already moves beyond a simple extension of linear maturity scales. Francis et al. (2026) conceptualize societal readiness as a relational property between technology and society and combine guidance for product development with iterative qualitative self-assessment rather than a quantified progression toward deployment. In parallel, the European Commission's Societal Readiness Pilot defines societal readiness as an indicator that R&I results have accounted for different societal needs and concerns, while requiring those considerations to be integrated throughout project design and implementation. Its guiding questions explicitly mobilize the RRI dimensions of reflection, inclusion, anticipation and responsiveness. This said, to counter previous academic criticism of responsibility or RRI being a 'policy artefact' (Rip 2014), the societal readiness pilots and their monitoring project[1] aims to develop the concept both bottom-up by researchers themselves and top-down by integrating, intervening, sharing experiences, and bringing STS and RRI experience to bear on the conceptualization for future policy.

This emerging field therefore sits productively, but somewhat uneasily, between assessment and process. Societal readiness cannot simply be treated as another name for RRI: RRI provides the broader normative and procedural repertoire through which research and innovation can become more anticipatory, inclusive, reflexive and responsive. Nor, however, need readiness be understood as a terminal condition that an innovation reaches once societal requirements have been satisfied. Building on SRTT 2.0, we shift the emphasis from asking whether an innovation *is* societally ready to asking how research and innovation arrangements can develop and sustain the capacity to interrogate and revise their trajectories in relation to anticipating changing societal needs, concerns and conditions. We use reflexive societal readiness (R. Braun et al. 2025) to describe this situated and revisable accomplishment. The contribution developed here takes a further organizational step: it asks what kinds of methodological infrastructure can make such reflexivity recurrent and consequential within the everyday life of an R&I consortium.

In this context, there is growing recognition that new methodological infrastructures are needed to operationalize societal readiness as an ongoing, situated, and collective learning process (Büscher et al. 2023). One potential resource for such collective learning is earlier work on social labs. This has highlighted the potential of temporary, intermediary learning organizations to provoke reflection and experimentation within complex governance systems (R. Braun et al. 2022). Social labs in R&I create protected spaces where actors from diverse institutional positions can jointly surface assumptions, interrogate tensions, and prototype alternatives – activities that are difficult to pursue within the projectified, deliverable-driven logics of contemporary R&I (Marschalek et al. 2022; Timmermans et al. 2020). Empirical studies from the NewHoRRIzon project (R. Braun et al. 2022) indicate that such labs can activate Senge's learning disciplines – mental models, personal mastery, shared vision, team learning, and systems thinking (Senge 1990; Senge et al. 2005) – in ways that enable participants to reflect critically on institutional constraints and possibilities for responsible innovation.

Building on these insights, recent work in STS and the social study of R&I has argued for an expanded understanding of reflexivity (R. Braun et al. 2025). Rather than treating reflexivity as an individual cognitive stance or an ethical add-on, scholars emphasize its relational and performative character: reflexivity is accomplished in situated practices, shaped by institutional relations of ruling, and embedded in everyday coordination work. Reflexive societal readiness may be reconceptualized as a situated accomplishment – something enacted through ongoing interrogations of how problem framings, assumptions, and imaginaries shape research trajectories and futures. This resonates with broader debates in responsible innovation,

where scholars highlight that anticipatory and inclusive engagement requires not only new procedures but new forms of organizational learning (Owen, von Schomberg, and Macnaghten 2021).

Despite the conceptual advances, a crucial gap remained: there is little methodological guidance on how to embed such reflexive, relational, and learning-oriented practices inside the temporal and organizational structures of research projects themselves. Whereas RRI has often relied on external assessments, ethical oversight, or engagement tasks allocated to specific work packages, reflexive societal readiness demands a more deeply integrated approach, accomplished in practice – one that treats responsibility not as an outcome but as researcher's doings unfolding across the project's entire sociomaterial infrastructure.

This conceptual paper introduces the idea of the Societal Readiness Lab (SR-Lab) as a response to this gap. Drawing inspiration from social labs (Marschalek et al. 2022; Timmermans et al. 2020; A. Loeber and Cohen 2021) and building on insights from SRTT 2.0 (R. Braun et al. 2025), the SR-Lab proposes a structured methodological framework embedded within the project consortium itself. Rather than externalizing responsibility, the SR-Lab establishes a temporary, intermediary learning infrastructure that enables the consortium to observe, question, and adjust how it enacts societal assumptions, engages with stakeholders, and constructs transition pathways. The SR-Lab integrates four iterative phases – situating practices, reflexive positioning, field engagements with ludic experimentation, and institutional anchoring – each designed to cultivate ongoing reflexive inquiry and support adaptive governance throughout the project lifecycle. In so doing it operationalizes a new mode of responsible research: one in which reflexive societal readiness is continuously enacted, not retroactively assessed.

The SR-Lab builds on the participatory and experimental tradition of Social Labs (Marschalek et al. 2022; Timmermans et al. 2020) and the situated, reflexive inquiry developed in SRTT 2.0 (R. Braun et al. 2025). Its distinctive contribution lies in its organizational design: bringing ethnographic observation, participatory foresight and experimental learning into recurrent workshops, while Societal Readiness Ambassadors sustain reflexive inquiry between them. Institutional anchoring connects these activities to project governance, allowing emerging insights to inform ongoing decisions. Table 1 summarizes the methodological continuities and differences between Social Labs, SRTT 2.0 and the proposed SR-Lab. The latter's distinctive contribution lies primarily in its organizational design: connecting situated practice inquiry, participatory anticipation and experimental learning to recurrent project governance through reflexive workshops and Societal Readiness Ambassadors.

By situating reflexive societal readiness within traditions of responsible innovation, organizational learning, and ethnomethodological practice inquiry, the SR-Lab responds to a long-standing challenge in RRI: how to move from normative aspiration to situated practice. It offers a methodological pathway for embedding responsibility into the everyday work of research projects, strengthening the capacity of consortia to navigate uncertainty, surface tensions, and cultivate socially robust innovation pathways.

Table 1. Comparing social labs, SRTT 2.0, and SR-Labs.

Dimension	Social labs	SRTT 2.0	SR-lab
Primary focus	Experimentation and collective learning around societal challenges.	Reflexive examination of research practices, assumptions and institutional constraints.	Developing and sustaining reflexive societal readiness within R&I consortia.
Methodological principles	Participation, experimentation, experiential learning and iterative inquiry.	Situated practice inquiry, epistemic reflexivity and collaborative learning.	Combines these approaches with ethnomethodological ethnography, organizational learning and participatory anticipation.
Participants	Heterogeneous societal actors and stakeholders.	Researchers and other R&I participants, with attention to wider societal perspectives.	Consortium members, Societal Readiness Ambassadors, relevant stakeholders and affected publics (SEIA/workshops).
Processes	Real-world experimentation, participatory engagement and iterative learning.	Observation, reflexive questioning and collaborative workshops throughout the research process.	Ethnographic observation, reflexive workshops, participatory foresight, field engagement, SEIA and ludic experimentation.
Normative orientation	Learning and experimentation directed at societal challenges and responsible innovation.	Reflexive societal readiness through critical examination of research practices and their institutional conditions.	Sustaining the organizational capacity to question and revise research trajectories in response to societal concerns and alternative futures.
Relationship to governance	Experimental insights can inform organizational and societal change.	Integrates reflexive inquiry into ongoing research practices.	Explicit institutional anchoring, supported by Ambassadors, connects reflexive learning to project coordination and decision-making.

To develop this argument, the paper proceeds as follows. We begin by situating the SR-Lab concept within the broader landscape of Responsible Research and Innovation and Science and Technology Studies, outlining the theoretical commitments that underpin our approach – particularly social constructivism of technology, ethnomethodological analyses of situated accomplishment, relations of ruling, and more-than-human sensibilities. We then elaborate the conceptual foundations of the SR-Lab by drawing on social lab theory, organizational learning, and experiential and ludic modes of experimentation, arguing that real-world, socio-material settings provide indispensable sites for cultivating reflexive, adaptive forms of responsibility. Building on this foundation, the third part of the paper introduces the SR-Lab framework in detail, explicating its four iterative phases and demonstrating how it reorganizes the conditions for learning and reflexivity within 'projectified' research environments. Finally, we conclude by discussing the conceptual and methodological contributions of the SR-Lab, highlighting how it provides a concrete pathway for embedding reflexive societal readiness as an ongoing, relational, and situated accomplishment within R&I consortia.

From STS to responsibility as situated learning accomplishment

RRI builds on a central STS insight: technological development is a sociotechnical accomplishment shaped by competing interpretations, institutional arrangements and political imaginaries (Bijker 1995; Jasanoff and Kim 2009, 2015; Pinch and Bijker 1984; Winner 1986). Its anticipatory and reflexive ambitions seek to keep alternative innovation trajectories open to societal scrutiny. For the present argument, this also requires attention to the mundane practices and material arrangements through which particular trajectories become established. Drawing on Lynch's (2013, 2019) understanding of ontography, reflexive societal readiness directs attention to how documents, templates, devices and everyday coordination practices shape what becomes recognizable as a problem, a solution or a legitimate societal concern.

STS and phenomenologically inspired praxeological sociology scholarship concerned with practice adds further depth to this understanding. Actor-network theory (Law 2009), laboratory studies (Latour and Woolgar 2013; Merz and Cetina 1997), and ethnomethodology (H. Garfinkel 2022) have shown how scientific and technological work is accomplished through situated practices – writing protocols, coordinating tasks, negotiating meanings, producing inscriptions, and handling breakdowns. Knowledge production and innovation are thus embedded in the mundane material, discursive, and organizational arrangements that structure daily work. Ethnomethodology, in particular, demonstrates that reflexivity is not an abstract cognitive stance but a practical, ongoing feature of how actors account for their actions, orient to norms, and enact local orders (H. Garfinkel 1960; Lynch 2000; Pollner 1991). This means that responsibility is accomplished within and through these situated practices. Such an ethnomethodological orientation foregrounds the 'witnessability' (Wiley 2019) of research practices: how researchers make their actions observable, reportable, and accountable to one another in the ongoing production of local order. Applied to reflexive societal readiness, an ethnomethodological sensitivity directs attention to how actors make risks, concerns and project assumptions visible, discussable and accountable in the course of their everyday work. Thus, ethnomethodology provides an analytic vocabulary for examining how such 'readiness' is practically accomplished within research settings (R. Braun 2024).

Yet these local accomplishments do not arise in a vacuum. Dorothy Smith's (1999; 2001) analysis of relations of ruling illuminates how everyday work is coordinated and shaped by extralocal institutional structures such as proposal templates, ethical guidelines, reporting protocols, evaluation metrics, and impact frameworks. These textual infrastructures or infratexture (R. Braun, Starkbaum, and Seiser 2026; Robert Braun and Zanotti 2026) organize practices at a distance, anticipating, directing, and legitimizing certain types of work while silencing or marginalizing others.

In research and innovation contexts, such relations of ruling shape what actors can perceive, articulate, and do. They create patterned expectations for how a consortium should organize itself, which stakeholders matter, how risks must be framed, and what counts as success. RRI must therefore grapple not only with individual or collective values, societal expectations or modes of embeddedness, but also with the institutional infrastructures that pre-structure action. The Societal Readiness Thinking Process 2.0 takes this insight seriously by framing reflexivity as an analysis of how societal assumptions, institutional templates,

and project logics are enacted within daily research practices – highlighting the need for methodological spaces that make these relations visible and amenable to change (R. Braun et al. 2025).

Social labs (Hassan 2014; Mandl and Mandl 2021; Timmermans et al. 2020) offer one such methodological space. They are designed to facilitate iterative, real-world experimentation with practices of responsibility and societal engagement, while simultaneously generating empirical and conceptual insight. Timmermans et al. (2020) argue that RRI faces a fundamental circularity: to promote and mainstream RRI, we need conceptual clarity and empirical evidence, yet producing empirical evidence presupposes that RRI is already sufficiently instantiated in practice. This dual challenge is articulated clearly in their diagnosis that the RRI community 'is tasked with the dual objective of promoting RRI while at the same time still getting to understand it' (411) – a circular task made more difficult by RRI's conceptual contestation and limited empirical grounding.

Social labs embrace this circularity rather than treating it as a methodological flaw. Whereas traditional research methodologies are structured to avoid circularity – either by testing theory on established practice or by deriving theory from existing phenomena – social labs offer a setting where both theory and practice can co-emerge. Social labs thus create experimental environments in which the properties of the RRI approach and the practical solutions under development emerge together through iterative cycles of action, reflection, and collaborative interpretation. They provide precisely the 'spaces for doing social experiments in a practical context where experts and stakeholders join together … without knowing exactly how to proceed' (412). One of the strengths of social labs is that participants are convened not around pre-defined deliverables but around shared societal challenges, which themselves are complex, emergent, and characterized by uncertainty. This aligns with social labs as tackling emerging social phenomena whose properties 'arise from the interaction of the many parts' (414) and whose meaning changes as actors collectively interpret and enact them. In this way, social labs are uniquely suited to RRI, which – like sustainability transitions or social innovation – can only be understood hermeneutically, by 'going back and forth between the individual constitutive parts and the overall phenomenon while it comes into being' (413).

Phenomenologically, drawing on Schutz's (1967) notion of the stock of knowledge at hand, social labs can create conditions in which participants' taken-for-granted assumptions and habitual ways of understanding become open to questioning. Encounters with unfamiliar perspectives and material settings – walking through infrastructures, handling artefacts or witnessing breakdowns – can unsettle familiar typifications and practical recipes, making them available for collective reflection.

To do justice to this hermeneutic and emergent character, social labs exhibit six defining features, all of which are directly relevant for operationalizing RRI. They are experimental, action-oriented spaces where prototypes and interventions can be developed, tested, and revised. They are grounded in real-world contexts rather than abstract exercises, which allows experiments to be tested in the specific social context where the challenges stem from. They require broad participation from relevant societal stakeholders, reflecting the RRI commitment to inclusivity. They bring together multiple disciplines and knowledge forms. They aim for systemic solutions rather than piecemeal or symptomatic interventions. And they operate iteratively, with an agile process that accommodates emergent properties and new insights through repeated cycles of experimentation and learning (Timmermans et al. 2020).

These features reinforce the argument that social labs can reveal institutional frictions, power asymmetries, and tacit assumptions that remain hidden in more traditional formats of stakeholder engagement or project-based governance. Social labs are not merely vehicles for solving predefined problems but platforms capable of transforming the very ways problems are conceptualized. Because actors from different institutional domains engage on equal footing, the laboratory setting supports the mutual probing of assumptions and expectations, enabling forms of socio-epistemic negotiation integral to RRI.

Importantly, Timmermans et al. (2020) highlight that existing conceptualizations of social labs often lack a research orientation. For this reason, they propose complementing the social lab approach with established methodologies such as action research (Chevalier and Buckles 2019) and experiential learning (Kolb 1984). These additions allow social labs to meet the dual objective of promoting and studying RRI. Action research contributes a rigorous, participatory research dimension, embedding theory-building directly into experimental processes. Experiential learning provides the structured cycles – concrete experience, reflective observation, abstract conceptualization, and active experimentation – through which insights can accumulate and prototypes evolve. By integrating these methods, social labs become settings

where the emergent character of reflexive societal readiness can be systematically investigated while simultaneously being enacted and refined.

Adapting the Social Lab to the organizational setting of an R&I consortium necessarily changes its scale, but not its societal orientation. Hassan's (2014) original formulation addressed complex societal challenges through broad experimental engagement; the SR-Lab treats the consortium as one consequential site within the wider ecology of anticipatory governance (Guston 2014). Research projects, through problem definitions, technological choices, and transition pathways, participate in making some futures more likely and others less thinkable. Anticipation here involves collectively exploring possible and contested futures, exposing the assumptions and values through which they are constructed, and using these insights to inform present choices. Field engagements and participatory forms of foresight connect this anticipatory work to affected actors and wider societal perspectives, while subsequent institutional anchoring creates pathways through which what is learned can influence project governance. The SR-Lab discussed below seeks to build the organizational capacity through which research consortia can participate in anticipatory governance and remain responsive to contestation beyond their own boundaries.

The methodological logic of social labs shares important affinities with Peter Senge's concept of the learning organization, which offers a compelling vocabulary for understanding how groups and institutions can cultivate sustained, collective learning in the face of complexity (cf. R. Braun et al. 2022). Senge (1990) describes learning organizations as settings where people expand their capacity to create desired outcomes, where new ways of thinking are nurtured, and where members learn to see the whole together. This requires more than adaptive learning – reacting to external pressures – and instead demands generative learning, in which participants collectively shape the future through systemic reflection and shared inquiry.

Senge's (1990) learning disciplines offer three complementary resources for reflexive societal readiness. Systems thinking directs attention to how institutional arrangements, project routines and evaluation regimes shape research practices and constrain possible futures. Shared vision enables consortium members to examine their often-implicit assumptions about desirable futures, making differences in priorities and societal commitments open to discussion. Team learning provides the collective capacity to question these assumptions, experiment with alternative practices and respond to emerging societal concerns. Together, these disciplines help turn reflexive societal readiness into an organizational capacity sustained through the everyday work of research consortia.

The convergence of STS, ethnomethodological sensitivity (Crawley, Whitlock, and Earles 2021), social labs, and organizational learning offers a conceptual architecture for understanding reflexive societal readiness as a relational and situated accomplishment. STS reveals the political and constructed nature of technological development and highlights the need for reflexive engagement with sociotechnical imaginaries, institutional structures, and everyday practices. Social labs translate these insights into methodological infrastructures capable of sustaining iterative, participatory, and experimental governance. Senge's learning organization framework provides the conceptual tools for understanding how such infrastructures can cultivate systemic awareness, shared visions, and generative learning.

In this integrated theoretical perspective, responsible innovation is not a normative add-on or compliance mechanism but an ongoing sociotechnical practice. It requires new modes of organization and collective inquiry that allow research teams to surface institutional constraints, articulate shared futures, and develop alternative practices. By combining STS's analytical insights, social labs' experimental orientation, and learning organization theory's emphasis on collective capacity building, this conceptual framing positions societal readiness as a dynamic, emergent, and relational form of governance – one that is enacted within and through the everyday practices of research consortia.

The societal readiness lab

To ensure that a research and innovation project contributes to socially robust, equitable and contextually grounded transitions, we propose the Societal Readiness Lab (SR-Lab) as a structured methodological framework embedded within an R&I consortium. The SR-Lab functions as a temporary, intermediary learning infrastructure, enabling the project to reflect on and adjust how it engages with societal conditions throughout its progression. Rather than treating societal readiness as a downstream impact or communication task, the SR-Lab performs reflexive societal readiness as a continuous, situated process that unfolds

within everyday research practices, decision-making routines, and interactions with stakeholders and affected communities. The concept of the SR-Lab as a structured methodological framework is inspired by the social lab model discussed earlier, in which a time-limited yet institutionally supported group of (research) actors forms a temporary, intermediary learning organization that can experiment, reflect and iterate, in an engaged mode of research, outside the constraints of formal project management logics. Social labs create a space in which participants can jointly examine assumptions, surface tensions, and explore alternatives that would otherwise remain inaccessible within the normal flow of organizational routines or work package delivery. In the context of research and innovation projects, the SR-Lab takes up this function: it is not an external engagement tool, but an internal learning and reflexive capacity, materially and ecologically mediated, embedded within and responsive to the project's unfolding work.

Organizational embedding does not mean that societal readiness can be determined from within the consortium alone. The SR-Lab therefore distinguishes between consortial reflexivity and societal input. Societal needs and concerns are plural, situated and often contested, and must be encountered also through engagement with affected actors, communities and other relevant publics. The Lab is therefore internally embedded but socially open: its reflexive work is repeatedly exposed to perspectives and experiences beyond the consortium, particularly through a stakeholder facing Socio-Economic Impact Assessment (see below). The aim is not to *certify* societal readiness, but to strengthen the project's procedural capacity to recognize disagreement, revise its assumptions and respond to concerns that emerge as the innovation trajectory develops.

The SR-Lab should therefore not be understood as an assessment or decision tool that determines whether an innovation has become 'societally ready.' Readiness, used here, does not denote a terminal state of conformity with a fixed set of societal values. It refers instead to a project's capacity to remain open to epistemic and societal questioning, to anticipate possible consequences and alternative trajectories, and to revise its practices in response to what is learned. Any judgement about social desirability remains situated, plural and contestable. The role of the SR-Lab is consequently to support deliberation and course adjustment, not to endorse an innovation as acceptable or ready for deployment.

The SR-Lab is legible within a vocabulary already in active use: the SRTT and the Horizon Europe Societal Readiness Pilots have established 'readiness' as the term through which RRI-adjacent reflexive work is currently recognized by funders and evaluators. We use the SR-Lab to reclaim the term from its assessment-oriented uses rather than cede it to them: reflexive societal readiness addresses a capacity, not a level, and the qualifier does the work that 'readiness' alone cannot.

The SR-Lab comprises four recurrent and partly overlapping phases: (1) situating practices and reflexive positioning; (2) field engagement and participatory assessment; (3) reflexive experimentation and anticipatory learning; and (4) institutional anchoring. Reflexive workshops connect these phases, while Societal Readiness Ambassadors sustain learning and facilitate the circulation of insights between workshops and everyday project activities. Three methodological strands operate throughout: practice inquiry, organizational learning, and participatory and anticipatory engagement (Figure 1).

Situating practices and reflexive positioning

The SR-Lab begins with an ethnomethodological ethnography (Eisenmann and Mitchell 2022) of project kick-off and subsequent consortium meetings, examining how societal assumptions, values and priorities are enacted in everyday project work. This inquiry traces how institutional requirements, mundane artefacts and everyday practices shape project decisions. It also examines how participants invoke their expertise, institutional mandates and responsibilities when negotiating research priorities and anticipated outcomes.

These observations inform the first reflexive workshop, alongside a collective foresight exercise in which participants imagine the state of the world at the project's anticipated technology deployment horizon, taking its current TRL into account. Bourdieu's (2003) reflexivity introduces a further dimension: participants examine how their institutional positions, disciplinary commitments and investments shape both their present practices and their expectations of the future. Comparing observed practices with imagined futures makes implicit sociotechnical imaginaries visible and opens them to collective questioning and revision.

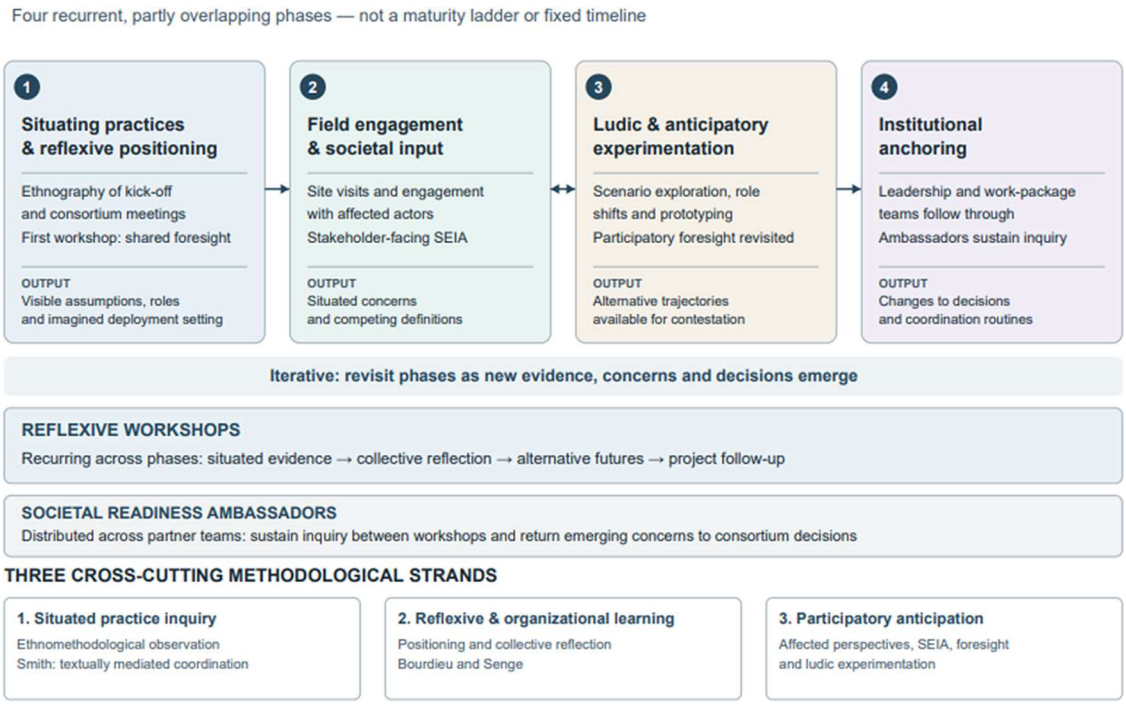


Figure 1. Societal readiness lab: methodological architecture.

Field engagement and participatory assessment

The next phase introduces field engagements – visits to relevant infrastructures, communities, operational contexts or governance environments depending on research context – to ensure that reflection remains grounded in real socio-material settings rather than drifting into abstract discussion. As Marschalek et al. (2022) emphasize, social labs are not laboratories in the metaphorical sense but real-life experimental spaces in which actors collectively probe the frictions, constraints and affordances of the settings in which societal challenges are actually enacted. The notion of 'social experiments' in such labs rests on the idea that experimentation is only meaningful when conducted *in situ*, where institutional routines, material arrangements, power asymmetries, and epistemic uncertainties can be encountered directly rather than represented through models or stakeholder narratives. Field visits thus function as what Marschalek et al. term *contact zones*: spaces where participants experience first-hand how organizational processes, regulatory environments, technological infrastructures, and everyday practices stabilize specific understandings of responsibility, legitimacy, public value, or innovation trajectories. The phase therefore results in a collectively constructed understanding of how the consortium's current practices already shape particular imaginaries of transition, responsibility and public relevance.

Field engagements can also foreground more-than-human entanglements (Bastian 2017). Encounters with landscapes, infrastructures, organisms, and environmental processes, sites where research and innovation is potentially done, make visible how technological futures are co-produced with soils, water flows, microbial ecologies, machinery and climate dynamics. These situated, ecological relations complicate linear innovation narratives and invite participants to engage with responsibility as a multispecies, multisited negotiation rather than a purely human deliberation.

In our approach, field engagements are not only observational or diagnostic. They become experimental platforms in their own right through the systematic integration of ludic experimentation (cf. Miguel Sicart 2022b) as a mode of speculative, imaginative and counter-inscriptive inquiry. Whereas conventional foresight methods often stabilize dominant imaginaries by narrowing uncertainty and aligning actors around preferred futures, ludic practices intentionally open interpretive space. As an experimental modality of anticipatory governance, they do so by foregrounding play, narrative multiplicity, embodied interaction and improvisation as legitimate modes of inquiry (M. Sicart 2022a). During field engagements, participants also engage in collaborative ludic exercises – speculative re-worlding, character-based scenario play, visual

storytelling, and exploratory prototyping – that reconfigure their vantage points. Instead of treating field data as given, ludic experimentation transforms field settings into generative fiction-spaces in which alternative roles, relations, and problem definitions can be enacted, disrupted, and recombined. This practice follows the insight that institutional and sociotechnical orders persist through ruling relations and the mundane reasoning that makes them appear natural; ludic interventions create Garfinkelian 'breaches' (Harold Garfinkel 1991) that temporarily suspend those naturalized orders and reveal their contingency.

As part of this phase, we also integrate a stakeholder facing Socio-Economic Impact Assessment (SEIA) into the SR-Lab process (Rodrigues and Rituerto 2022). Conventionally, SEIAs have been understood as standardized, post-hoc tools for determining the societal acceptability of technologies or infrastructures, typically emphasizing risk mitigation against predefined indicators established by technical experts. The recent participatory turn in technology assessment (Anne Loeber, Versteeg, and Griessler 2011) has sought to include perspectives from vulnerable or affected groups; yet, these participatory exercises generally remain add-ons to an already completed innovation process, rather than sites of epistemic engagement within it.

Within the SR-Lab, the SEIA is reconceptualized as a reflexive and generative component of the innovation process itself. Rather than assessing impacts after the fact, the SEIA becomes a situated inquiry into how 'impact' is defined, by whom, and from which epistemic positions. This involves combining systematic scientific evidence (via literature review) with alternative epistemic standpoints gathered from diverse stakeholder groups through online questionnaires and semi-structured interviews. During analysis, particular attention is given to how stakeholders themselves define impact, value, and benefit, and how these definitions may expose blind spots or reductionisms in prevailing scientific framings. By comparing these situated understandings with conventional strategies for stakeholder engagement and risk mitigation, the SEIA operates as a reflexive diagnostic tool that foregrounds the multiplicity of possible futures implied in the project's work.

The findings from the SEIA are brought back into reflexive workshops as 'tangential directions' for thinking about the project's objectives and its longer-term implications beyond the formal project life cycle. In this way, the SEIA becomes part of the learning ecology of the SR-Lab: it expands the scope of epistemic reflexivity by introducing plural definitions of impact and by embedding assessment within the ongoing cycles of field engagement, experimentation, and organizational learning.

Reflexive experimentation and anticipatory learning

Building on the initial foresight exercise and insights from field engagement and SEIA, the third phase revisits the futures imagined during the first workshop. Participants examine how these imagined futures change when confronted with external perspectives, situated experiences and alternative understandings of societal needs. Ludic experimentation (M. Sicart 2022a) provides a means of exploring these tensions through speculative scenarios, role-switching, visual storytelling and exploratory prototyping. Ludic prototypes or 'playthings' (Miguel Sicart 2022b) developed during field visits – visual narratives, storyboards, object-based models, rule-based micro-games, or situated speculative scenarios – do not function as whimsical add-ons but as situated experiments in alternative worlding. Because these prototypes emerge from prior practice analysis, stakeholder dialogue, and empirical observations of the visited sites, they are not abstract imaginative exercises but grounded attempts to rediscover what else could be possible within the constraints of the actual sociotechnical system. They help participants articulate submerged tensions, surface unspoken assumptions, and identify hidden infrastructures of decision-making. Importantly, these ludic interventions reorient participants away from solutionism toward a mode of inquiry that treats practices, norms and infrastructures as mutable rather than given. In so doing, ludic experimentation strengthens the social lab's core methodological claim: that understanding and transforming complex sociotechnical systems requires performative engagement with the very material-discursive conditions that shape those systems. By mobilizing both real-life immersion and playful counter-inscription, the field engagement phase becomes a site of reflexive, experimental, and speculative practice in which participants collectively rehearse the possibility of governing and enacting transitions differently. Ludic experimentation functions as a form of participatory foresight and anticipatory governance: not by predicting a singular future, but by making alternative trajectories available for collective exploration and contestation.

Connecting the phases: reflexive workshops and societal readiness ambassadors

Structured reflexive workshops with a broader set of consortium members at the end of each phase allow participants to identify how their assumptions and conceptual frames influence research directions and interpretations of societal impact. This phase operationalises Senge's learning disciplines, particularly 'shared vision', in order to build the consortium's capacity to reflect on its own reasoning processes. The goal is to clarify where differences in values, priorities or commitments matter for the project's work.

Feedback loops are integrated through the reflexive workshops that follow the principles of social labs. Rather than operating as information-sharing meetings or consensus-seeking consultations, these workshops function as structured learning environments in which participants are invited to interrogate existing practices, surface tensions, and explore alternative pathways. Each workshop is designed to cycle iteratively between (1) situated experience (e.g. field visits, practice observation), (2) shared reflection (collective sense-making and positionality work), and (3) experimental re-staging (trying out new framings or approaches in ludic formats).

Drawing on the social lab approach, the workshops bring together heterogeneous research and innovation actors (e.g. scientific partners, practitioners, project managers, affected publics where and if appropriate) to hold multiple viewpoints in active relation. Facilitation techniques emphasize non-closure, exploration, and suspension of habitual roles. Rather than solving disagreements, the workshops treat disagreement as a source of learning about the sociotechnical imaginaries that guide decision-making within the consortium.

The workshops are sequenced to gradually deepen the consortium's reflexive capacity. Early workshops focus on describing and making visible existing practices, rationales, and implicit assumptions as well as engaging in visioning exercise (*shared vision*). Mid-stage workshops invite participants to experiment with alternative framings and narrative reconstructions using ludic methods such as scenario divergence, role-switching, situated reenactment, and visual narrative prototyping (*mental models, personal mastery*). Later workshops move toward re-integration and institutional anchoring, identifying how insights can be translated into adjustments in governance routines, documentation practices, or collaboration formats (*team learning; systems thinking*).

The workshops are interwoven with field engagements and ongoing project activities. Ethnographic observations and field encounters provide material for collective reflection, while workshop insights are subsequently tested in everyday project work. To sustain this iterative process, each partner team nominates a *Societal Readiness Ambassador*, responsible for facilitating regular reflection, questioning established assumptions and encouraging practical adjustments. Ambassadors bring emerging concerns and experiences back to subsequent workshops and exchange insights across the consortium. Their role is not to assume responsibility for societal readiness on behalf of their colleagues, but to help embed reflexive inquiry in the consortium's everyday practices. This distributed arrangement connects collective learning to ongoing research and institutional decision-making.

In designing and facilitating the SR-Lab workshops, Senge's five learning disciplines are mobilized, which provide the conceptual scaffolding for how the consortium develops reflexive capacity over time. First, the workshops work with mental models by making explicit the assumptions, problem framings and evaluative criteria that partners routinely rely on, often without recognition. These models are surfaced, compared, and held open to collective inquiry rather than resolved prematurely. Second, the workshops support personal mastery, not in the sense of individual improvement, but as cultivating an awareness of one's own stakes, attachments, and limits in relation to the project's mission. Third, the workshops contribute to forming a shared vision, not as consensus on outcomes but as a shared understanding of the tensions, uncertainties, and choices the consortium faces in enacting transitions. Fourth, the workshops foster team learning by making space for constructive disagreement and perspective-shifting, thereby enabling partners to learn from one another's institutional constraints and epistemic commitments. Finally, the workshops enable systems thinking by contextualizing the project's decisions within wider infrastructures, governance regimes, sociotechnical histories, and relations of ruling. In this way, the workshops do not simply communicate information; they facilitate the ongoing development of learning as a collective practice, enabling the consortium to reflect on and transform the conditions under which its decisions are made.

Senge's learning disciplines complement Bourdieu's notion of reflexivity, by enabling participants to recognise not only their own assumptions, but also the field positions and distributions of authority that structure who can speak, which arguments carry weight, and which forms of knowledge are considered legitimate within the consortium. Reflexivity thus becomes an examination of how one's role and institutional mandate are socially produced and reproduced within transition-oriented research.

Moreover, the focus on collective learning aligns with relations of ruling, as the workshops make visible how coordination work in the project is shaped by infratexture –proposal templates, deliverable formats, policy framings, and reporting conventions – that standardize what counts as relevant knowledge and appropriate action. By tracing and discussing these textual mediations, the workshops help participants understand how institutional and policy logics structure their room to maneuver, and where there is space to reinterpret, stretch, or rework these constraints in support of more socially responsive and contextually grounded transitions.

The integration of Senge's learning disciplines into this workshop process directly responds to the challenges identified in Braun et al.'s (2025) development of SRTT 2.0. In their analysis, they have demonstrated how researchers already attempt to engage with sustainability, regulation, and inclusion, but often in ways that deflect, outsource, or substitute more demanding forms of reflexivity. This tendency, they argued, emerges from the saturation of everyday project work by extralocal relations of ruling – funding logics, policy framings, proposal templates, and evaluation criteria – that stabilize technosolutionist trajectories and narrow the scope of what can be problematized. Within this environment, local practices become 'projectified,' 'deliverified,' and 'occasioned,' making it difficult for researchers to reflect on how their own routines contribute to the reproduction of particular sociotechnical futures. Bringing Senge's disciplines into the SR-Lab workshops is therefore not only about cultivating better individual awareness, but about enabling collective, situated learning that can identify and hold open these tensions: surfacing the mental models that naturalize project trajectories; developing shared visions that acknowledge uncertainty rather than suppress it; practicing team learning that treats disagreement as epistemically productive; and using systems thinking to trace how ruling relations shape what researchers can do, say, and imagine in the first place. The SR-Lab operationalizes reflexive societal readiness not as a state to be achieved, but as an ongoing, performative practice in which researchers critically examine how their own work co-produces societal futures.

Institutional anchoring

The final phase concerns institutional anchoring. Consortium leadership is engaged; work package leads and operational teams translate insights from the SR-Lab into feasible and lightweight adjustments to ongoing governance and coordination routines. This may include changes to meeting structures, documentation practices, stakeholder interaction formats or evaluation criteria. Societal Readiness Ambassadors support this process by sustaining reflexive inquiry within partner teams, following up on workshop outcomes and bringing emerging concerns back into the SR-Lab and consortium decision-making. The intention is not to overhaul project governance, but to implement small, credible, and durable mechanisms that preserve the consortium's capacity for reflection, learning and responsiveness as the project evolves.

Institutional anchoring gives anticipation a decision-support function: insights generated through foresight, field engagement and experimentation can feed back into present choices about project direction, rather than remaining speculative exercises detached from governance. It also has a phenomenological dimension: participants must re-orient their habitual ways of seeing, interpreting and acting within existing institutional structures. This involves what Merleau-Ponty (1962) describes as a 'relearning' of perception – coming to inhabit new organizational possibilities, revising embodied dispositions, and cultivating a felt sense of alternative futures within the constraints of existing governance regimes (cf. Wiskus 2018).

Throughout the four phases, three methodological strands remain integrated:

(1) *Situated practice inquiry*: Ethnomethodological observation examines how researchers accomplish everyday project work and how institutional arrangements shape their practices and assumptions.
(2) *Reflexive and organizational learning*: Drawing on Senge's learning disciplines, reflexive workshops support collective examination of assumptions, institutional positions and shared visions, sustaining the capacity to question and revise project practices.

(3) *Participatory and anticipatory engagement*: Field encounters, stakeholder-based SEIA, participatory foresight and ludic experimentation bring external perspectives and alternative futures into the consortium's reflexive learning.

These strands operate across all four phases, connected through recurrent reflexive workshops and sustained in everyday project work by Societal Readiness Ambassadors. The SR-Lab thus treats responsibility and societal alignment as something performed in practice, and it provides the structured conditions in which new practices, imaginaries and forms of coordination can emerge. By embedding this learning infrastructure within the core of the project, the SR-Lab supports just, legitimate and durable transition pathways, strengthens the consortium's ability to adapt to evolving expectations and contexts, and increases the long-term uptake and relevance of the project's results.

Conclusion

The theoretical strands developed in this paper – spanning STS accounts of sociotechnical construction and the politics of technology, ethnomethodological analyses of situated accomplishment, relations of ruling, social lab methodologies, and learning organization theory – demonstrate a shared insight: responsibility in research and innovation is not a procedural add-on, but a dynamic, relational, and situational practice. It emerges through the concrete ways consortia coordinate work, frame problems, build artefacts, engage stakeholders, and navigate the institutional infrastructures that shape their decisions. As the analysis of SRTT 2.0 indicates, researchers already attempt to consider societal implications, yet their reflexive capacities are structurally constrained by project logics, proposal framings, and policy expectations that stabilize particular imaginaries of innovation and pre-empt alternative pathways.

This leads to a critical realization: efforts to enhance societal readiness must extend beyond providing tools or checklists. They require infrastructures that reorganize the conditions under which learning, reflexivity, and experimentation can occur. The problem is not a lack of normative ambition – RRI has articulated these ambitions for over a decade – but the absence of embedded mechanisms that allow research consortia to enact them meaningfully. Institutionalized non-learning, as documented in contemporary R&I systems, is not a failure of individual will but a structural feature of 'projectified' research governance. Without altering these learning conditions, attempts to promote responsibility risk reinforcing the very patterns they seek to challenge.

The Societal Readiness Lab (SR-Lab) proposed here directly addresses this systemic limitation. By creating a temporary, intermediary learning infrastructure within the consortium, the SR-Lab provides a space where institutional routines can be questioned, where tacit assumptions can be surfaced, and where actors can collectively explore alternative trajectories without threatening project coherence. This approach aligns with insights from social labs, which show that experimentation with governance and collaboration practices requires dedicated spaces protected from the pressures of deliverables, timelines, and pre-defined outcomes. The SR-Lab builds on this logic but adapts it to the realities of mission-oriented, solution-driven R&I projects, ensuring that reflexive inquiry is not externalized but embedded within the project's unfolding sociomaterial work.

At the same time, the SR-Lab draws on Senge's framework to cultivate the learning capacities necessary for responsible innovation: shared vision, team learning, systems thinking, and the ability to interrogate and revise mental models. These capacities are not innately occurring within consortia; they must be nurtured through structured processes of reflection, engagement, and experimentation. By operationalizing these learning disciplines through iterative workshops, field engagements, and ludic experimentation, the SR-Lab turns reflexivity from an abstract ideal into an actionable, collaborative practice. It supports the emergence of a shared understanding of reflexive societal readiness as an ongoing achievement rather than a metric to be reported.

Reflexive societal readiness is a performative, relational and more-than-human accomplishment. It emerges through the ongoing coordination work among researchers, policy actors, infrastructures, ecological systems, and sociomaterial artefacts. The SR-Lab makes this complex ecology of action visible and pliable, enabling participants to rehearse alternative relations and to, potentially, cultivate new practices of collective, multispecies responsibility. From an STS perspective, the SR-Lab is relevant because it treats

responsibility as something performed through material-discursive practices. From an organizational learning perspective, it is relevant because it enables generative rather than merely adaptive learning. From a RRI policy perspective, it is relevant because it offers a concrete mechanism for bridging the gap between normative commitments and institutionalized routines – a gap extensively documented but rarely resolved. And from the standpoint of research consortia navigating complex transitions, it is relevant because it strengthens their capacity to respond to evolving societal expectations, uncertainties, and constraints.

The ongoing European societal readiness monitoring initiative offers an opportunity to learn how societal readiness is interpreted and practiced across different R&I consortia. Insights from this work may inform the further development of the SR-Lab, particularly its capacity to embed reflexive learning and anticipatory engagement in everyday research practices. More broadly, these experiences could contribute to a better understanding of the organizational conditions under which reflexive societal readiness can be sustained.

The SR-Lab offers a novel and necessary contribution to the landscape of responsible innovation. It reconceptualizes societal readiness not as a downstream assessment task but as a relational, performative, and iterative process embedded within the life of a project. By providing a methodological infrastructure for collective learning and reflexive practice, the SR-Lab enhances the ability of R&I consortia to produce socially robust, equitable, and contextually grounded innovations. In doing so, it helps realize the latent promise of RRI: to transform not only what research and innovation produce, but how they are done.

Note

1. Cf. https://cordis.europa.eu/programme/id/HORIZON_HORIZON-CL5-2026-01-D2-09.

Acknowledgements

I would like to thank the participants of the AGRI4AGRI project as well as my colleagues Arnab Chakraborty, Florian Winkler and Ingrid Marin Cabezas for their contributions to the research grounding this paper. All AI-mediated outputs were critically evaluated, selected, revised where necessary, and verified by the author. The author reviewed the manuscript in full, checked claims and references where required, and assumes sole responsibility for the final text, including its framing, interpretation, wording, and citations. Robert Braun: Conceptualization; Methodology; Formal analysis; Investigation; Writing – original draft; Writing – review & editing; Supervision; Project administration; Verification and accountability.

Author contributions

CRediT: **Robert Braun:** Conceptualization, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Writing – original draft, Writing – review & editing.

Disclosure statement

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

Funding

This work was supported by HORIZON EUROPE Framework Programme [grant number 101130890].

ORCID

Robert Braun http://orcid.org/0000-0003-0579-3532

References

Bastian, M. 2017. "Towards a More-Than-Human Participatory Research." In *Participatory Research in More-Than-Human Worlds*, edited by M. Bastian, O. Jones, N. Moore, and E. Roe, 19–37. London: Routledge.

Bernstein, M. J., M. W. Nielsen, and E. Alnor. 2022. "The Societal Readiness Thinking Tool: A Practical Resource for Maturing the Societal Readiness of Research Projects." *Science and Engineering Ethics* 28:6. https://doi.org/10.1007/s11948-021-00360-3.

Bijker, Wiebe E. 1995. *Of Bicycles, Bakelites, and Bulbs: Toward a Theory of Sociotechnical Change. Cambridge*. Massachusetts: MIT Press.

Bourdieu, P. 2003. "Participant Objectivation." *The Journal of the Royal Anthropological Institute* 9 (2): 281–294. https://doi.org/10.1111/1467-9655.00150

Braun, R. 2024. "Radical Reflexivity, Experimental Ontology and RRI." *Journal of Responsible Innovation* 11 (1). https://doi.org/10.1080/23299460.2024.2331651.

Braun, R., M. J. Bernstein, A. Chakraborty, J. Starkbaum, and F. Winkler. 2025. "Societal Readiness Thinking Process 2.0: Incorporating Epistemic Reflexivity for Responsible Innovation." *Science and Engineering Ethics* 31 (42). https://doi.org/10.1007/s11948-025-00568-7.

Braun, R., A. Loeber, M. Vinther Christensen, J. Cohen, E. Frankus, E. Griessler, H. Hönigmayer, and J. Starkbaum. 2022. "Social Labs as Temporary Intermediary Learning Organizations to Help Implement Complex Normative Policies. The Case of Responsible Research and Innovation in European Science Governance." *The Learning Organization* 30 (6): 713–739. https://doi.org/10.1108/TLO-09-2021-0118.

Braun, R., J. Starkbaum, and F. Seiser. 2026. "Doing Things with Things: The European Accident Statement (EAS)." *Mobilities*: 1–19. https://doi.org/10.1080/17450101.2026.2691010.

Braun, Robert, and Laura Zanotti. 2026, September. "Challenging the Cosmocracy of Certainty and Engaging the AI Hyperpharmakon: Regulation, Ethics, and Resonance." *International Political Sociology* 20(3): olag023. https://doi.org/10.1093/ips/olag023.

Brunsson, K. 1998. "Non-Learning Organizations." *Scandinavian Journal of Management* 14 (4): 421–432. https://doi.org/10.1016/S0956-5221(98)00002-5.

Büscher, M., C. Cronshaw, A. Kirkbride, and N. Spurling. 2023. "Making Response-Ability: Societal Readiness Assessment for Sustainability Governance." *Sustainability* 15:6. https://doi.org/10.3390/su15065140.

Chevalier, J. M., and D. J. Buckles. 2019. *Participatory Action Research*. London: Routledge.

Crawley, S. L., M. C. Whitlock, and Jennifer Earles. 2021. "Smithing Queer Empiricism: Engaging Ethnomethodology for a Queer Social Science." *Sociological Theory* 39 (3): 127–152. https://doi.org/10.1177/07352751211026357.

EC. 2014. *Responsible Research and Innovation*. Edited by DG Research and Innovation. Brussels: European Commission.

Eisenmann, C., and R. Mitchell. 2022. "Doing Ethnomethodological Ethnography. Moving between Autoethnography and the Phenomenon in "Hybrid Studies" of Taiji, Ballet, and Yoga." *Qualitative Research in Psychology* 24 (1): 32–59. https://doi.org/10.1177/14687941221132956.

Francis, Bennet, Tynke Schepers, Andrea Porcari, and Philip Brey. 2026. "A Societal Readiness Tool for Responsible Product Innovation." *Technology in Society* 85:103183. https://doi.org/10.1016/j.techsoc.2025.103183.

Garfinkel, H. 1960. "The Rational Properties of Scientific and Common Sense Activities." *Behavioral Science* 5:72–83. https://doi.org/10.1002/bs.3830050106.

Garfinkel, Harold. 1991. *Studies in Ethnomethodology*. London: Polity Press.

Garfinkel, H. 2022. *Harold Garfinkel: Studies of Work in the Sciences*. Edited by M. Lynch. London: Routledge.

Griessler, E., R. Braun, M. Wicher, and M. Yorulmaz. 2022. "The Drama of Responsible Research and Innovation: The Ups and Downs of a Policy Concept." In *Responsible Research and Innovation: An Evidence-Based Reconceptualization*, edited by V. Blok. Dordrecht: Springer.

Guston, David H. 2014. "Understanding 'Anticipatory Governance'." *Social Studies of Science* 44 (2): 218–242. https://doi.org/10.1177/0306312713508669.

Hassan, Zaid. 2014. *The Social Labs Revolution: A New Approach to Solving Our Most Complex Challenges*. San Francisco, CA: Berrett-Koehler Publishers.

Hjort, S. S., and A. M. Brem. 2016. "How to Assess Market Readiness for an Innovative Solution: The Case of Heat Recovery Technologies for SMEs." *Sustainability* 8:1–16.

Jasanoff, Sheila, and Sang-Hyun Kim. 2009. "Containing the Atom: Sociotechnical Imaginaries and Nuclear Power in the United States and South Korea." *Minerva* 47: 119–146. https://doi.org/10.1007/s11024-009-9124-4.

Jasanoff, Sheila, and Sang-Hyun Kim. 2015. *Dreamscapes of Modernity*. Chicago: Chicago University Press.

Kjaer, Poul F. 2015. "From Corporatism to Governance: Dimensions of a Theory of Intermediary Institutions." In *The Evolution of Intermediary Institutions in Europe: From Corporatism to Governance*, edited by Eva Hartmann and Poul F. Kjaer, 11–28. London: Palgrave Macmillan UK.

Kolb, D. A. 1984. *Experiential Learning: Experience as the Source of Learning and Development*. Englewood Cliffs: Prentice Hall.

Latour, B., and S. Woolgar. 2013. *Laboratory Life: The Construction of Scientific Facts*. Princeton, NJ: Princeton University Press.

Law, J. 2009. "Actor Network Theory and Material Semiotics." In *The New Blackwell Companion to Social Theory*, edited by B. S. Turner, 141–158. Oxford: Blackwell.

Loeber, A., and J. Cohen. 2021. *Comparative Assessment and Evaluation of the Social Labs*. Vienna: NewHoRRIzon. https://newhorrizon.eu/deliverables/.

Loeber, Anne, Wytske Versteeg, and Erich Griessler. 2011. "Stop Looking up the Ladder: Analyzing the Impact of Participatory Technology Assessment from a Process Perspective." *Science and Public Policy* 38 (8): 599–608. https://doi.org/10.3152/030234211X13111546663296.

Lynch, Michael. 2000. "Against Reflexivity as an Academic Virtue and Source of Privileged Knowledge." *Theory, Culture & Society* 17 (3): 26–54. https://doi.org/10.1177/02632760022051202.

Lynch, Michael. 2013. "Ontography: Investigating the Production of Things, Deflating Ontology." *Social Studies of Science* 43 (3): 444–462. https://doi.org/10.1177/0306312713475925.

Lynch, Michael. 2019. "Ontography as the Study of Locally Organized Ontologies." *ZMK Zeitschrift für Medien- und Kulturforschung. Ontography* 10 (1): 147–160. https://doi.org/10.25969/mediarep/18719

Mandl, Christoph E., and Hanna Mandl. 2021. "Social Labs Entwickeln und Gestalten." In *Kunst der Veränderung*, edited by Gerhard Fatzer and Daniel Schmied, 213–226. Nomos e-library.

Mankins, J. C. 1995. *Technology Readiness Levels*. Advanced Concept Office. Office of Space Access and Technology, NASA (Washington).

Marschalek, I., V. Blok, M. J. Bernstein, R. Braun, J. B. Cohen, S. Daimer, M. Hofer, …, R. Kumar Thapa. 2022. "The Social Lab as a Method for Experimental Engagement in Participatory Research." *Journal of Responsible Innovation* 9 (3): 419–442. https://doi.org/10.1080/23299460.2022.2119003.

Mejlgaard, Niels, Carter Bloch, Emil B. Madsen, Erich Griessler, Milena Wutekich, Ingeborg Meijer, Richard Woolley, et al. 2018. *Monitoring the Evolution and Benefits of Responsible Research and Innovation in Europe*. European Commission. http://www.technopolis-group.com/wp-content/uploads/2018/05/Final_report_MoRRI.pdf.

Merleau-Ponty, Maurice. 1962. *Phenomenology of Perception*. Translated by Colin Smith. New York: Routledge & Kegan Paul.

Merz, M., and K. K. Cetina. 1997. "Deconstruction in a `Thinking' Science: Theoretical Physicists at Work." *Social Studies of Science* 27 (1): 73–111. https://doi.org/10.1177/030631297027001004.

Novitzky, Peter, Michael J. Bernstein, Vincent Blok, Robert Braun, Tung Tung Chan, Wout Lamers, Anne Loeber, Ingeborg Meijer, Ralf Lindner, and Erich Griessler. 2020. "Improve Alignment of Research Policy and Societal Values." *Science* 369 (6499): 39–41. https://doi.org/10.1126/science.abb3415.

Owen, Richard, and Mario Pansera. 2019. "Responsible Innovation and Responsible Research and Innovation." In *Handbook on Science and Public Policy*, edited by Dagmar Simon, Stefan Kuhlmann, Julia Stamm, and Weert Canzler, 26–48. Cheltenham: Edward Elgar Publishing.

Owen, Richard, Mario Pansera, Phil Macnaghten, and Sally Randles. 2021. "Organisational Institutionalisation of Responsible Innovation." *Research Policy* 50 (1): 104132. https://doi.org/10.1016/j.respol.2020.104132.

Owen, Richard, René von Schomberg, and Phil Macnaghten. 2021. "An Unfinished Journey? Reflections on a Decade of Responsible Research and Innovation." *Journal of Responsible Innovation*: 8 (2): 217–233. https://doi.org/10.1080/23299460.2021.1948789.

Paun, F. 2012. "The Demand Readiness Level Scale as New Proposed Tool to Hybridise Market Pull with Technology Push Approaches in Technology Transfer Practices." In *Technology Transfer in a Global Economy*, edited by D. B. Audretsch, E. E. Lehmann, A. N. Link, and A. Starnecker, 353–366. Dordrecht: Springer.

Pinch, Trevor J., and Wiebe E. Bijker. 1984. "The Social Construction of Facts and Artefacts: Or How the Sociology of Science and the Sociology of Technology Might Benefit Each Other." *Social Studies of Science* 14(3): 399–441. https://doi.org/10.1177/030631284014003004

Pollner, M. 1991. "Left of Ethnomethodology: The Rise and Decline of Radical Reflexivity." *American Sociological Review* 56 (3): 370–380. https://doi.org/10.2307/2096110.

Rip, A. 2014. "The Past and Future of RRI." *Life Sciences, Society and Policy* 10 (17): 1–15. https://doi.org/10.1186/s40504-014-0017-4

Rodrigues, Rowena, and Marina Diez Rituerto. 2022. "Socio-economic Impact Assessments for new and Emerging Technologies." *Journal of Responsible Technology* 9: 1–11. https://doi.org/10.1016/j.jrt.2021.100019.

Sauser, B., D. Verma, J. Ramirez-Marquez, and R. Gove. 2006. "From TRL to SRL: The Concept of Systems Readiness Levels." *Proceedings of the Conference on Systems Engineering Research*.

Schuijer, J. W., M. G. van der Meij, J. E. W. Broerse, and F. Kupper. 2022. "Participation Brokers in the Making: Intermediaries Taking Up and Embedding a New Role at the Science-Society Interface." *Journal of Science Communication* 21(1). https://doi.org/10.22323/2.21010201

Schutz, Alfred. 1967. *Phenomenology of the Social World*. Evanston: Northwestern University Press.

Senge, Peter M. 1990. *The Fifth Discipline: The Art and Practice of the Learning Organization*. New York: Doubleday.

Senge, Peter M, C. Otto Scharmer, Joseph Jaworski, and Betty Sue Flowers. 2005. *Presence: An Exploration of Profound Change in People, Organizations, and Society*. London: Doubleday.

Sicart, M. 2022a. "Thinking the Things We Play with." In *Material Game Studies: A Philosophy of Analogue Play*, edited by C. Germaine and P. Wake, 21–31. London: Bloomsbury Academic.

Sicart, Miguel. 2022b. "Playthings." *Games and Culture* 17 (1): 140–155. https://doi.org/10.1177/15554120211020380.

Smith, Dorothy E. 1999. *Writing the Social: Critique, Theory, and Investigations*. Toronto: Toronto University Press.

Smith, Dorothy E. 2001. "Texts and the Ontology of Organizations and Institutions." *Studies in Cultures, Organizations and Societies* 7 (2): 159–198. https://doi.org/10.1080/10245280108523557.

Stilgoe, Jack, Richard Owen, and Phil Macnaghten. 2013. "Developing a Framework for Responsible Innovation." *Research Policy* 42 (9): 1568–1580. https://doi.org/10.1016/j.respol.2013.05.008

Timmermans, Job, Vincent Blok, Robert Braun, Renate Wesselink, and Rasmus Øjvind Nielsen. 2020. "Social Labs as an Inclusive Methodology to Implement and Study Social Change: The Case of Responsible Research and Innovation." *Journal of Responsible Innovation* 7 (3): 410–426, https://doi.org/10.1080/23299460.2020.1787751.

Von Schomberg, Rene. 2013. "A Vision of Responsible Innovation." In *Responsible Innovation: Managing the Responsible Emergence of Science and Innovation in Society*, edited by Richard Owen, John Bessant, and Maggy Heintz, 51–74. John Wiley & Sons.

Wiley, N. 2019. "Interview with Harold Garfinkel." *Human Studies* 42: 165–181. https://doi.org/10.1007/s10746-019-09517-3.

Winner, L. 1986. "Do Artifacts Have Politics?" In *The Whale and the Reactor: A Search for Limits in an Age of High Technology*, edited by L. Winner, 19–39. Chicago: Chicago University Press.

Wiskus, Jessica. 2018. "From the Body to the Melody: "Relearning" the Experience of Time in the Later Merleau-Ponty." *Avant: Trends in Interdisciplinary Studies* 9 (2): 129–140. https://doi.org/10.26913/avant.2018.02.08