

The responsible learning organization

Can Senge (1990) teach organizations how to become responsible innovators?

Jens Ørding Hansen and Are Jensen
Nordland Research Institute, Bodø, Norway, and

Nhien Nguyen
*Nordland Research Institute, Bodø, Norway and
Norwegian University of Science and Technology, Trondheim, Norway*

The
responsible
learning
organization

65

Received 3 November 2019
Accepted 3 November 2019

Abstract

Purpose – This study aims to investigate whether the learning organization, as envisioned by Peter Senge in *The Fifth Discipline* (1990), facilitates responsible innovation.

Design/methodology/approach – The authors analyze the component characteristics of the learning organization as defined by Senge (1990) to identify any conceptual or causal connections to responsible research and innovation (RRI). To define RRI, the authors make use of a commonly cited framework from the academic literature that is consistent with the vision of RRI promoted in European Union policy.

Findings – The authors find significant complementarities between being a learning organization and practicing responsible innovation. Some of the practices and characteristics of a learning organization in the sense of Senge (1990) do not merely facilitate RRI, they are RRI by definition. One important caveat is that to qualify as a responsible innovator according to the proposed framework, an organization must involve external stakeholders in the innovation process, a requirement that has no parallel in *The Fifth Discipline*. The authors conclude that there is at most a small step from being a learning organization to becoming a responsibly innovating learning organization.

Originality/value – The authors propose a reconsideration of the scope of applicability of Senge's theory, opening new possibilities for drawing inspiration from *The Fifth Discipline* 30 years after the book was first published. The authors conclude that there may be significant non-economic advantages to being a learning organization, and that *The Fifth Discipline* may be more valuable for its ethical perspectives on the organization than as a prescription for how to achieve business success.

Keywords Learning organization, Responsible innovation, Responsible research and innovation, RRI, The fifth discipline

Paper type Conceptual paper

© Jens Ørding Hansen, Are Jensen and Nhien Nguyen. Emerald Publishing Limited. This article is published under the Creative Commons Attribution (CC BY 4.0) licence. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial and non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this licence may be seen at <http://creativecommons.org/licences/by/4.0/legalcode>

Plain language summary: How can organizations become responsible innovators? We show how a “learning organization” is better able to practice RRI. Our findings suggest that practicing RRI may give companies a competitive advantage.

The funding utilized to finance the open access version of this paper stems from the project SeeRRI (grant agreement number 824588) and the project IAMRRI (grant agreement number 788361) funded by the European Union's Horizon 2020 research and innovation program.



The Learning Organization
Vol. 27 No. 1, 2020
pp. 65-74
Emerald Publishing Limited
0969-6474
DOI 10.1108/TLO-11-2019-0164

Introduction

The 30th anniversary of the publication of Peter M. Senge's book *The Fifth Discipline* (1990), which famously launched the concept of the learning organization into the mainstream, is a fitting occasion for evaluating the legacy of this management literature classic. As we reflect on the durability of Senge's theory, we should not limit ourselves to assessing whether its original relevance is intact but also consider the possibility that it might have gained fresh relevance in new contexts specific to our time.

This article explores whether an organization engaged in research and innovation is more likely to practice "responsible innovation" if it is a learning organization in the sense of Senge (1990). Whereas the popularity of the learning organization concept peaked 20-30 years ago (Rebelo and Gomes, 2008; Pedler and Burgoyne, 2017), the concept of responsible innovation has only attracted significant attention in the past decade or so. Despite their asynchronous lifecycles, we shall argue that these two concepts are more closely related than they appear, and that there are valuable lessons to be gained from analyzing their interrelatedness.

The article proceeds as follows. First, we discuss some peculiarities of Senge's book *The Fifth Discipline* (1990), which motivate our analysis. Next, we briefly review the responsible innovation literature and introduce a simple framework capturing the basic elements of responsible innovation. We then address our main research question, whether being a learning organization facilitates responsible innovation. We do this by systematically considering how each of Senge's five "disciplines" relates to the elements of responsible innovation as defined by the framework. In the last section, we discuss various counterarguments to the thesis that *The Fifth Discipline* is useful for organizations that aspire to become responsible innovators, and sum up our findings.

The dual identity of The Fifth Discipline

Some reviewers of *The Fifth Discipline* have commented, either explicitly or implicitly, on its curious dual identity: the book presents itself first and foremost as a recipe for achieving competitive advantage in business[1], yet at the same time, Senge has a preoccupation with morality and philosophy that seems to transcend the business context. Harris (1990) notes that, in Senge's vision, learning organizations "manifest the sentiment that organizational life should be a source of intrinsic satisfaction for their members and that individuals have a fundamental desire to be part of something noble" (p. 344). Caldwell (2012) criticizes the lack of clarity of argument that results when Senge "embellishes systems concepts with moral nuances and metaphysical meaning" (p. 44). Shields (1992) alternately praises the book for the universality of its message and bemoans its stubborn attachment to the realm of commerce. Flood (1999) attributes the success of the book in part to its uplifting message that providing employees with a sense of purpose at work is good for business. In Senge's learning organization, everybody wins.

Despite the book's anchoring in conventional business concerns (how can we become more competitive?), it is natural to ask whether Senge's principles might be useful for the purpose of achieving goals of an ethical nature, for several reasons. First of all, as already alluded to, an ethical dimension suffuses the book. Many popular management books point to personal ethics as a key to success, but few can match the range of *The Fifth Discipline* in this regard; Senge's well-diversified portfolio of benevolent habits to cultivate includes such basic virtues as compassion (Chapter 9), love (Chapter 13) and forgiveness (Chapter 14), in addition to more abstract ideals. If Al Dunlap's 1997 bestseller *Mean Business* – in which the author espouses ruthless cost-cutting to enhance profits and rejects the relevance of any stakeholders in a firm other than its owners – represented the most cynical extreme of 1990s

management literature, *The Fifth Discipline* is at the opposite, humanist extreme. Second, while the business world seems largely to have lost interest in the learning organization as a tool for making money, there is still significant interest in the learning organization in the not-for-profit sector. In an informal survey we carried out of Norwegian-language studies, nearly every mention of the learning organization we came across occurred in the context of a not-for-profit organization such as a school or public sector body (Nguyen *et al.*, 2019). This suggests the possibility that the true value of a learning organization may reside in something other than its ability to generate residual value for shareholders.

Only sporadically has the learning organization literature touched directly upon the role of ethics in the purpose and practices of the learning organization. Smith *et al.* (2014) compared the literatures on learning and ethical organizations and found significant overlaps between the two concepts; for example, learning and ethical organizations alike are characterized by a culture and form of leadership that encourage acceptance of new ideas, tolerance for disagreement and lessening of hierarchy. Verbos *et al.* (2007) proposed that a strong capacity for organizational learning is a necessary condition for being an ethical organization. Snell (2001) went further, arguing that morality provides the very foundations for a learning organization. Armstrong (2000) provided a contrarian perspective: starting from the assumption that the proponents of the learning organization tend to highlight its ethical dimensions, she argued that the learning organization is in fact just another device for increasing profits. As these citations indicate, ethics seems to be relevant to the learning organization, but there is little consensus on how.

Responsible innovation

To probe the relevance of Senge's ideas in an ethics-related context, we focus in this paper on the concept of responsible innovation, which has been gaining traction in recent years. Our mission is to analyze the component characteristics of the learning organization to determine whether Senge's learning organization can be expected to facilitate responsible innovation, and, more generally, to identify conceptual or causal links between responsible innovation and the learning organization.

The notion that one should act responsibly when doing research and innovation is not new but has attracted increasing attention lately. A gradual increase in academic interest in responsible innovation has been matched by a parallel movement among policymakers, especially in the European Union (EU), where considerable resources have been devoted to defining and promoting "responsible research and innovation" (RRI). Scholars tend to use the latter term interchangeably with "responsible innovation" (von Schomberg, 2013; Owen *et al.*, 2013; Stilgoe *et al.*, 2013).

One might ask why a special responsibility concept is needed for the domain of (research and) innovation. The justification for coining such a concept lies in the fact that innovation activities have unpredictable yet potentially wide-ranging social consequences. As technologies become progressively more powerful, they become more liable to produce significant unforeseen externalities to the detriment of society (Owen *et al.*, 2013). Laws and regulations are generally adapted to past experience and cannot take all future contingencies into account; thus, there is a need for promoting "responsible" behavior in innovation by non-regulatory means (Stilgoe *et al.*, 2013).

As a result of the intense engagement of policymakers with RRI in the past decade, two types of definitions of responsible innovation can be distinguished: administrative definitions, used mainly in the EU, and academic definitions (Borget *et al.*, 2017). Although the two types tend to draw on each other, no clear consensus has emerged so far on the precise meaning of responsible innovation either among policymakers (Rip, 2016) or in

academia (Burget *et al.*, 2017). Nevertheless, it is possible to extract some common themes from the visions of responsible innovation that have been put forward.

Dimensions of responsible innovation. According to a conceptual framework developed by Stilgoe *et al.* (2013), RRI comprises four distinct dimensions: *inclusion*, *anticipation*, *responsiveness* and *reflexivity*. Burget *et al.* (2017), in a comprehensive review of the RRI literature, single out the same four dimensions as particularly salient in the literature, noting that they appear in some guise or other across a variety of definitions and explications of RRI. The framework also aligns closely, at a general level, with the approach to RRI taken by EU policymakers[2]. The following brief explanations of the four dimensions are based on Stilgoe *et al.* (2013).

Anticipation refers to the practice of systematically reflecting on possible future harmful consequences of research and innovation activities, and taking any risks thus identified into consideration when making decisions related to research and innovation.

Reflexivity refers to the practice of systematic self-critique, of continuously scrutinizing one's own activities, assumptions, commitments, knowledge and values to make better-informed, more responsible decisions. For example, the practice of reflexivity may alert innovators to assumptions they have been making that might not be universally accepted, which could in turn inspire them to proceed with caution when doing innovation.

Inclusion refers to the principle that those engaged in research and innovation activities should be open to the views of external stakeholders, including the public at large, when making decisions related to the future direction of research and innovation. According to the theory, by consulting and sharing information with a variety of stakeholders, innovators are in a better position to assess the consequences of their work and make decisions that are aligned with the interests of society.

Responsiveness refers to actions that adjust the course of research and innovation activities in response to new knowledge, new perspectives, emerging social norms, etc. Responsiveness plays a crucial role in rendering the previously mentioned dimensions effective. Anticipation, reflexivity and inclusion might all be present in a given innovation context, but if the information generated by these processes is not acted upon, the innovation is still irresponsible.

The learning organization and responsible innovation

Our objective is to decide whether being a learning organization in the sense of Senge is likely to facilitate responsible innovation in the organization. In what follows, we will argue that being a learning organization not only *facilitates* responsible innovation; to some extent, research and innovation activities carried out by a learning organization *are* responsible innovation, or something very close to it. In other words, there is an overlap between the set of values discussed in the previous section defining responsibility in innovation and the characteristics of Senge's learning organization. If one accepts the premise that practicing responsible innovation (e.g. in the form endorsed by the European Commission) is meritorious, then being a learning organization is more than just a means to an end – it is a commendable state of being in its own right.

A similar argument cannot be made for the link between being a learning organization and achieving competitive advantage. None of the characteristics of the learning organization (to be discussed below) is inherently profit-making. Moreover, while there is some empirical evidence that being a learning organization is correlated with positive financial outcomes (Ellinger *et al.*, 2002), the direction of causality is difficult to verify. For these reasons, there is arguably a closer link between learning organization status and

positive ethical outcomes than between learning organization status and positive financial outcomes.

Senge's theory is structured around five "disciplines" practiced by a learning organization and its members. We will discuss these in turn to explore how they may be connected to responsible innovation.

Systems thinking. While technically the fifth discipline in Senge's repository, we will discuss systems thinking first because it is the "conceptual cornerstone" underlying all the other disciplines (Senge, 2006, p. 69[3]) – important enough for *The Fifth Discipline* to be named after it.

Senge sets out his core vision of systems thinking on the first page of the first chapter of the book:

The tools and ideas presented in this book are for destroying the illusion that the world is created of separate, unrelated forces. When we give up this illusion—we can then build "learning organizations", organizations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together (Senge, 2006, p. 3).

Conveniently for us, he later explicitly addresses the implications of systems thinking for responsibility:

In mastering systems thinking, we give up the assumption that there must be an individual, or individual agent, responsible. The feedback perspective suggests that everyone shares responsibility for problems generated by a system (Senge, 2006, p. 78).

This notion of responsibility being shared at the system level is mirrored closely in some of the most influential papers on responsible innovation. Owen *et al.* (2013) argue that "irresponsible innovation" and "irresponsible science" rarely result from the actions of an individual scientist or innovator but are the results of the workings of a system:

Irresponsibility, we (and others) argue, is often the product of a globalized and complex ecosystem of innovation, involving the creation by many (separated across space and time) [. . .] It is within such an ecosystem that responsible innovation must be located (Owen *et al.*, 2013, p. 30).

Similar statements can be found in e.g. von Schomberg (2013) and Stilgoe *et al.* (2013).

The tricky problem of how to manage shared responsibility is an important topic of debate in the responsible innovation literature and plays a role in motivating the definitions of the four dimensions of the RRI framework, especially the dimension of *inclusion* (if responsibility is shared across an ecosystem, decision processes should also be collective to the extent that this is possible), but also the dimensions of *anticipation*, *reflexivity* and *responsiveness* because the interconnectedness of the innovation ecosystem confers a responsibility on individual actors to understand how their actions might affect the system and participate actively in a process of "collective stewardship of science and innovation" (Stilgoe *et al.*, 2013).

Having established the centrality of systems thinking in responsible innovation, we conclude that organizations in which systems thinking is deeply embedded are better able to practice responsible innovation. If we further assume that *The Fifth Discipline* can help teach organizations and their members systems thinking (which was certainly Senge's intention), we can conclude that the book has a potential role to play in facilitating responsible innovation.

One might argue that the emphasis in RRI on cooperation with stakeholders outside one's own organization is at odds with Senge's principles. This is only partly the case. To be

sure, as Senge's focus is on individual organizations, he does not emphasize cooperation with outside stakeholders to any major extent. However, he acknowledges the importance of inter-organizational learning, observing: "One could argue that the entire global business community is learning to learn together, becoming a learning community" (Senge, 2006, p. 4).

Personal mastery. Senge's discipline of "personal mastery" might not strike one right away as a concept likely to be tightly connected to responsible innovation. On closer examination, however, the connections are obvious.

Senge outlines two key elements in the discipline of personal mastery as follows:

When personal mastery becomes a discipline – an activity we integrate into our lives – it embodies two underlying movements. The first is continually clarifying what is important to us. We often spend too much time coping with problems along our path that we forget why we are on that path, in the first place. The result is that we only have a dim, or even inaccurate, view of what's really important to us.

The second is continually learning how to see current reality more clearly. We've all known people entangled in counterproductive relationships, who remain stuck because they keep pretending everything is all right (Senge, 2006, p. 102).

Senge devotes considerable space to the elaboration of these points – how to clarify through introspection what is truly important to oneself, and how to develop a "commitment to truth." He also stresses the need to cultivate one's ability to see how one is "connected to the world" (a prerequisite for systems thinking). Finally, he discusses the need for cultivating the qualities of "caring" and "compassion."

Most of these practices overlap to some extent with the introspective RRI practice of *reflexivity*, which requires innovators to reflect on questions such as which ultimate purposes ought to drive their research and innovation work (Owen *et al.*, 2013) and whether their understanding of the world might be flawed.

Senge's notion of "caring" also has a parallel in the responsible innovation literature. As it is impossible to regulate RRI in detail, practicing RRI must be at least partly voluntary, rooted in norms of behavior. Ethical principles are hard to follow if they are abstract and disconnected from what we directly care about. It is perhaps natural, then, that several authors advocate for a view of ethics tied to the concept of care, including Adam and Groves (2011):

[To] care effectively for others involves all our capacities, producing finely discriminating judgments in sometimes entirely novel circumstances, all of which are interwoven with our need for meaning [...] The capacity to care in this way is learnt through experiences (Adam and Groves, 2011, p. 23).

Senge, in his chapter on personal mastery, endeavors to teach us how to care. If successful, his effort can play a role in facilitating RRI, at least on paper.

In sum, we conclude that the major elements of Senge's discipline of personal mastery either constitute RRI practices in their own right or facilitate RRI.

Mental models. Senge's "mental models" discipline involves developing an awareness of one's own worldview and how this may be adjusted and refined, e.g. by discarding outdated assumptions, as well as of the powerful role mental models play in driving actions. At the organizational level, there are collective benefits to be gained from sharing and discussing mental models.

The practice of scrutinizing one's mental models overlaps with the RRI dimension of reflexivity, for reasons similar to those stated under personal mastery above. Reflexivity

requires the careful examination of one's assumptions, i.e. mental models. When an innovator practices the discipline of working with mental models, he or she is performing one of the constituent tasks of RRI.

Senge's espousal of the merits of exchanging mental models with others also has a parallel in RRI. The importance of dialogue in exposing and challenging entrenched assumptions has been emphasized as one of the benefits of practicing inclusion in innovation (Stilgoe *et al.*, 2013). Admittedly, Senge discusses such exercises only in an intra-organizational rather than an inter-stakeholder context, but a learning organization that has developed a strong internal capacity for this kind of dialogue would presumably have an advantage when engaging in the same with external stakeholders.

We conclude that, for an innovator, working with mental models in the manner prescribed by Senge *constitutes* an RRI activity, and doing so *facilitates* joint RRI activities with external stakeholders in the long run.

Shared vision. One of the recurring themes in *The Fifth Discipline* is Senge's belief in the motivational effect of being part of something that is "larger than oneself" – of working for a common goal that transcends narrow self-interest. This theme plays an important role in the chapter on mental mastery and takes center stage in the chapter on shared vision. Building a shared vision in an organization, according to Senge, simultaneously fosters team spirit and motivates individuals by giving them a sense of purpose. "Few, if any, forces in human affairs are as powerful as shared vision" (Senge, 2006, p. 192).

It is not hard to see a link between shared vision and responsible innovation, yet the link seems to us more tenuous than the other links we have looked at so far. One of the long-term ambitions for RRI, among academics and policymakers alike, is to define a shared vision that can help unite the disparate actors involved in innovation, but we have rarely seen this prospect discussed in such rapturous terms as those used by Senge. The more subdued tone is likely due to the fact that it is harder to nurture a sense of shared purpose across organizations as within an organization. For RRI to achieve enough cooperation among the diverse stakeholders in an innovation ecosystem to keep the harm to society from innovation to a minimum is already an ambitious goal.

Team learning. Senge's final discipline, "team learning," focuses attention on the fact that individuals in an organization must learn to learn together if the organization aspires to be a true learning organization. As in the mental models discipline, dialogue plays a key role – but is supplemented by "discussion":

The discipline of team learning involves mastering the practices of dialogue and discussion, the two distinct ways that teams converse. In dialogue, there is the free and creative exploration of complex and subtle issues, a deep "listening" to one another and suspending of one's own views. By contrast, in discussion different views are presented and defended and there is a search for the best view to support decisions that must be made at this time. Dialogue and discussion are potentially complementary, but most teams lack the ability to distinguish between the two and to move consciously between them (Senge, 2006, p. 220).

While responsible innovation emphasizes the role of dialogue in managing shared responsibilities among research and innovation actors, the "teams" in RRI cross organizational boundaries, and the diversity of values and worldviews represented among the actors engaging in dialogue is likely to be substantially higher than in Senge's scenario of team learning within an organization.

Nevertheless, we think it is reasonable to conclude that a learning organization that has mastered the discipline of team learning should have an enhanced capacity to engage in collective learning processes with external stakeholders.

Concluding remarks

We have demonstrated that Senge's vision of a learning organization bears strong similarities to an emerging vision of responsible innovation that enjoys not only scholarly attention but also government backing in one of the largest economic regions of the world. Some of the habits practiced by a learning organization facilitate responsible innovation; some *are* responsible innovation; and a few have little or no connection to responsible innovation. On the whole, we find it credible that striving to become a learning organization will also make it easier to cultivate RRI.

For practitioners, this article offers a novel justification for aspiring to become a learning organization. For policymakers, our findings provide a novel way to argue the case for responsible innovation (which can be a challenge, as [Stahl et al. \(2017\)](#) have pointed out). As practicing responsible innovation is very similar to being a learning organization, and as being a learning organization has long been claimed by scholars such as Senge to confer competitive advantage, companies who practice responsible innovation not only act ethically but just might strike it rich as well.

There are several possible counterarguments to the idea that organizations engaged in research and innovation should become learning organizations because it would help them practice RRI. First, even if we accept the merits of being a learning organization (including the benefits for RRI), it is unclear how effectively *The Fifth Discipline* can teach organizations how to become one, or how many resources they would have to spend to become one. Becoming a learning organization might not be worthwhile, all things considered. Second, it is unproven whether being a learning organization brings about the performance benefits promised by Senge. Without the performance benefits, it is questionable if for-profit companies would be willing to become learning organizations. Third, even if we accept the links between being a learning organization and practicing responsible innovation, it is unclear whether going the roundabout route via the learning organization is the *best* way to implement RRI. Companies that are interested in RRI but have little interest in the learning organization *per se* might want to look for advice focused specifically on how to practice RRI.

Those who are attracted to RRI but are not directly interested in the learning organization might still find something of value in *The Fifth Discipline*. The rational approach for them would be to adopt some of Senge's teachings while ignoring others. Such a piecemeal approach would ironically run counter to Senge's notion of systems thinking, treating the elements of his book as "separate, unrelated forces." This is not what Senge would ideally prefer, but we assume he will take it.

To the best of our knowledge, the present article is the first to address explicitly the link between the learning organization and RRI. In so doing, the article straddles three streams of literature – the learning organization literature, the RRI literature and the innovation management literature – and contributes, in its modest way, to each. With respect to the RRI literature, our findings offer a novel way of legitimizing RRI as a construct of relevance to organizations. With respect to the learning organization literature, our findings suggest how the learning organization may be beneficial for society. And, from the perspective of the innovation management literature, our findings suggest how this literature may look to the learning organization for clues as to how innovation can be managed in a responsible manner.

Our study suggests several directions for future research. First of all, clarity needs to be added to the theory of the learning organization regarding the role of ethics and responsible behavior within the theory. Studies such as [Smith et al. \(2014\)](#) and the present paper have demonstrated overlaps between how the learning organization is conceptualized and

common notions of ethical or responsible conduct; but should the ethical aspects of the learning organization be considered its *raison d'être* or merely side benefits subordinate to other objectives? To shed light on this issue, future studies should not only seek to clarify the extent to which being a learning organization facilitates ethical or responsible behavior, but should also continue the quest to determine whether it can enhance productivity and competitiveness. Second, future research could probe the generalizability of our conclusions by considering alternative definitions of the learning organization and responsible innovation, respectively. Peter Senge is not the only scholar to have offered a vision of the learning organization, and the four-dimensional framework of RRI that we have presented is not the only way to look at RRI. Finally, future studies could add nuance to our conclusions by considering how the relationship between the learning organization and RRI may be influenced by various contextual distinctions, e.g. organization type, organization size and cultural setting.

Notes

1. This ultimate purpose is spelled-out in no uncertain terms. The first sentence on the front flap of the book reads, "In the long run, the only sustainable source of competitive advantage is your organization's ability to learn faster than its competition."
2. For example, the framework closely resembles an oft-cited list of RRI "process dimensions" assembled by [RRI Tools \(2016\)](#), an EU-funded project.
3. The page numbers that accompany quotes from *The Fifth Discipline* in this article refer to the revised 2006 version of the book, which is the version that is currently commercially available. However, the exact same quotes appear in the original 1990 version.

References

- Adam, B. and Groves, C. (2011), "Futures tended: care and future-oriented responsibility", *Bulletin of Science, Technology and Society*, Vol. 31 No. 1, pp. 17-27.
- Armstrong, H. (2000), "The learning organization: changed means to an unchanged end", *Organization*, Vol. 7 No. 2, pp. 355-361.
- Burget, M., Bardone, E. and Pedaste, M. (2017), "Definitions and conceptual dimensions of responsible research and innovation: a literature review", *Science and Engineering Ethics*, Vol. 23 No. 1, pp. 1-19.
- Caldwell, R. (2012), "Leadership and learning: a critical reexamination of Senge's learning organization", *Systemic Practice and Action Research*, Vol. 25 No. 1, pp. 39-55.
- Ellinger, A.D., Ellinger, A.E., Yang, B. and Howton, S.W. (2002), "The relationship between the learning organization concept and firms' financial performance: an empirical assessment", *Human Resource Development Quarterly*, Vol. 13 No. 1, pp. 5-22.
- Flood, R.L. (1999), *Rethinking the Fifth Discipline: Learning within the Unknowable*, Routledge, London.
- Harris, S.G. (1990), "Review of 'the fifth discipline: the art and practice of the learning organization', by Peter Senge", *Human Resource Management*, Vol. 29 No. 3, pp. 343-348.
- Nguyen, N., Hansen, J.Ø. and Jensen, A. (2019), "How best to study the learning organization", in Ørtenblad, A. (Ed.), *The Oxford Handbook of the Learning Organization*, Oxford University Press, Oxford, pp. 347-359.
- Owen, R., Stilgoe, J., Macnaghten, P., Gorman, M., Fisher, E. and Guston, D. (2013), "A framework for responsible innovation", in Owen, R., Bessant, J. and Heintz, M. (Eds), *Responsible Innovation: Managing the Responsible Emergence of Science and Innovation in Society*, John Wiley and Sons, Hoboken, NJ, pp. 27-50.

- Pedler, M. and Burgoyne, J.G. (2017), "Is the learning organisation still alive?", *The Learning Organization*, Vol. 24 No. 2, pp. 119-126.
- Rebelo, T.M. and Gomes, A.D. (2008), "Organizational learning and the learning organization: reviewing evolution for prospecting the future", *The Learning Organization*, Vol. 15 No. 4, pp. 294-308.
- Rip, A. (2016), "The clothes of the emperor: an essay on RRI in and around Brussels", *Journal of Responsible Innovation*, Vol. 3 No. 3, pp. 290-304.
- RRI Tools (2016), available at: www.rri-tools.eu (accessed 1 November 2019).
- Senge, P.M. (1990), *The Fifth Discipline: The Art and Practice of the Learning Organization*, Doubleday/Currency, New York, NY.
- Senge, P.M. (2006), *The Fifth Discipline: The Art and Practice of the Learning Organization*, Doubleday/Currency, New York, NY.
- Shields, C.M. (1992), "Review of 'the fifth discipline: the art and practice of the learning organization', by Peter Senge", *Educational Administration Quarterly*, Vol. 28 No. 4, pp. 555-562.
- Smith, G.E., Barnes, K.J. and Harris, C. (2014), "A learning approach to the ethical organization", *The Learning Organization*, Vol. 21 No. 2, pp. 113-125.
- Snell, R.S. (2001), "Moral foundations of the learning organization", *Human Relations*, Vol. 54 No. 3, pp. 319-342.
- Stahl, B.C., Obach, M., Yaghmaei, E., Ikonen, V., Chatfield, K. and Brem, A. (2017), "The responsible research and innovation (RRI) maturity model: linking theory and practice", *Sustainability*, Vol. 9 No. 6, pp. 1-19.
- Stilgoe, J., Owen, R. and Macnaghten, P. (2013), "Developing a framework for responsible innovation", *Research Policy*, Vol. 42 No. 9, pp. 1568-1580.
- Verbos, A.K., Gerard, J.A., Forshey, P.R., Harding, C.S. and Miller, J.S. (2007), "The positive ethical organization: enacting a living code of ethics and ethical organizational identity", *Journal of Business Ethics*, Vol. 76 No. 1, pp. 17-33.
- von Schomberg, R. (2013), "A vision of responsible research and innovation", in Owen, R., Bessant, J. and Heintz, M. (Eds), *Responsible Innovation: Managing the Responsible Emergence of Science and Innovation in Society*, John Wiley and Sons, Hoboken, NJ, pp. 51-74.

Further reading

- Dunlap, A.J. and Andelman, B. (1997), *Mean Business: How I save Bad Companies and Make Good Companies Great*, Fireside, New York, NY.

Corresponding author

Nhien Nguyen can be contacted at: nhien.nguyen@ntnu.no

For instructions on how to order reprints of this article, please visit our website:

www.emeraldgroupublishing.com/licensing/reprints.htm

Or contact us for further details: permissions@emeraldinsight.com