Chapter 2
Work, Organisational Fragmentation and Safety

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Abstract In this chapter, I propose the following argument: the organisational landscape of today has and is currently going through changes that can be described as different forms of fragmentation. This has consequences for organisational theory, the ways work is described, coordinated and governed, and in turn, it influences safety theory and practice. By discussing three different stereotyped "stages" in this fragmentation, I will demonstrate how current organisational changes influence work practice and safety management, and I will argue that we need to understand the boundaries through which work and safety are managed and the role of information infrastructures in these processes.

2.1 Work and Changing Organisations

A paper I have cited again and again the last decade is Barley and Kunda's (2001) programmatic argument that organisational scientists need to "bring work back in" in order to avoid theory keep growing increasingly outdated. While organisational scholars are eagerly theorising new organisational forms and new technologies, their understanding of work and how it is changing is lagging behind and often based on studies done in the era of traditional bureaucratic and hierarchical organisations.

Even though much safety research could be said to be a sub-field of applied organisational theory, one could argue that several research traditions within safety research have indeed shown substantial interest in work practice. This is for example seen in the detailed ethnographies in the High Reliability strand of research (e.g. La Porte and Consolini 1991; Roberts 1990) and in the more recent discussions of resilience with its focus on situational variability and the terms "work as imagined" and "work as done" (Haavik et al. 2019; Hollnagel et al. 2006), in discussions of

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safety rules and compliance (e.g. Bourrier 2017; Hale and Borys 2013), and not least in accident investigations. Some interest in the nitty gritty details and contextual variability of work practice has always been a deed of necessity in safety research, as it might be a matter of life and death.

Still, radical organisational changes in several sectors and industries mean that we need to continuously update our understanding not only of organisational models, but also of work practice and how it is governed.

In the following, I will discuss how some such changes affect the way work is governed and its implications for safety. I will simplify trends that are continuous and complex to three main "stages" of development. These stages, or ideal types, are concerned with the contractual relation between the organisational systems and the sharp-end workers.

- Normal, "monolithic" organisation where operational work is conducted by in-house operators. This means that the workers are employed in the organisation that oversees their operations.
- Network organisations relying on subcontracting of operational work. This means that the workers work for organisations that are in contract relationships with the system owner.
- Platform work organisations. This means that each individual worker has an individual contract for providing services and is paid per task, usually with no fixed salary or permanent relationship to the organisation.

These are, of course, stereotypical forms, not at all representing the heterogeneity of organisations out there in the real world. The term "stages" may suggest that all organisations will follow the evolutionary trajectory described here. That is not my intention with the term and not the empirical reality. Rather, they can be seen as stages or degrees of fragmentation.

Another important framing is that I will focus on subcontracting of *operational work*, and I will seek to apply a quite narrow understanding of that. This means that, for example, subcontracting of specialist services or of projects will be outside or on the fringes of the scope of the discussion.

The chapter is a theoretical discussion drawing on my own and my colleagues' research and from the literature. The theoretical argument centres on what I call rationalistic discourses of work within these new developments and the role of digital technologies in these discourses. In a recent publication, Stian Antonsen and I connected these trends towards organisational fragmentation to digitalisation and standardisation and argue that the discourses of work inherent in these developments can be seen as important changes in "work as imagined" and that we need to consider what they mean for "work as done" in practice (Almklov and Antonsen 2019).

A penetrating topic throughout my discussion of these organisational forms will be the role of *information infrastructures* (IIs). On one hand, information infrastructures are networked computer systems through which information can move.[1]

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[1] Though IIs are normally discussed as digital systems today, I agree with Bowker and Star (1999) who state that for example a simple list written on paper is also an information infrastructure. It is

However, they also contain rules or standards regulating what kind of information can move. Thus, they provide mobility of information at the expense of contextual detail. Standardised descriptions of work either in procedures or different forms of reports or quantifications become mobile in IIs because they are decontextualised (Almklov and Antonsen 2019; Bowker and Star 1999; Hanseth and Monteiro 1997).

I will end the chapter with a synthesis of these approaches, arguing that IIs intersect organisational boundaries in ways that challenge our understanding of what an organisation is. Within this lies the argument that IIs change both the discourses of work and its coordination. They may lead to disempowerment of practitioners' perspectives and increasing managerial control but may also contain some possibilities for safety researchers, policymakers and practitioners to influence safety in new ways that counter that.

2.2 Monolithic Organisations, In-House Workforce

To describe normal monolithic organisations, in all their variety, in a couple of pages of a slim chapter is a daunting task. However, focusing on how they differ from network organisations and some current changes in managerial ideology caused by technological change may be possible.

First of all, an organisation where the operational work is undertaken in-house can be expected to have a relatively stable workforce and will typically develop an organisational culture. In institutional theory, an important strand of organisational research, a typical observation is that the organisation is not only a rational system with a purpose, a division of labour and some coordinating mechanisms,[2] but also becomes a social system, with a culture, values, informal interactions and other social qualities (e.g. Christensen et al. 2020; Selznick 1957). An organisation is more than charts and diagrams; it is a social system, not only a set of functions or a collection of individuals. The (organisational) map is rationalistic, but the terrain contains institutionalised social dimensions and the material conditions in which work is conducted. In practice, for safety researchers, it means that we need to understand the sociology within the organisation and how it affects safety. The informal aspects of organisations with relevance for safety are often discussed using the umbrella term safety culture: the shared values, norms and basic assumptions that influence safety. As Antonsen (2009) reminds us, this should never lead us to forget that power struggles and fragmentation are important aspects of these social dimensions.[3]

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a structuring of information according to some rules or categories. For this discussion, however, an understanding of IIs as networked computer systems is sufficient.

[2] This minimal essential definition of organisation is loosely based on my reading of Mintzberg (1993).

[3] And though power struggles within an organisation might intuitively give negative associations, the assumption being that harmony is better, they can in some cases be constructive for safety as well, contributing to the maintenance of a plurality of perspectives and alternate voices, as illustrated

The positive side of viewing organisations as social systems is that it provides us with a well-stocked toolbox for working constructively with the social dimensions towards safety. This is one of the cornerstones of the HRO literature (e.g. Weick and Sutcliffe 2015). It is indeed hard to develop a sound safety culture, or more generally influence the informal traits of an organisation, but in comparison with the other organisational forms discussed in this chapter, managers of "normal" organisations have much leverage to do it, by training and culture programmes, by hiring decisions and by setting a good example. Controlling the boundaries of the organisation, having the operational personnel in-house over time, makes it possible to influence safety with a broad spectrum of organisational tools, through formal systems and in informal and indirect ways. It allows for safety-enhancing social and cultural traits to emerge over time. As Weick (1987) noted, the social dimensions of an organisation, including what we call organisational culture, can be a source of high reliability.

But there are also changes in the ways these traditional organisations are organised and operate that affect how work is described, prescribed and governed that affect the way safety is produced. One may argue that the last few decades have been characterised by more rationalistic discourses of work and more detailed management in terms of reporting and procedural control also within traditional organisations.[4] This can, on one hand, be attributed to the doctrines of managerialism: that management has become a discipline of its own and the adage that a good manager can lead any organisation. This transition from managers being specialists in specific industries and systems, to generations of managers that manage mainly by standardised measured output, e.g. through management by objectives, increases the importance of formal systems of accountability and audit also within organisations (see Power 2007). This again means more standardisation of how work is prescribed, more reporting, all in more detail. This goes hand in hand with digitalisation. Indeed, the transaction costs of detailed control through such auditing mechanisms would be prohibitive, were it not for the possibilities afforded by digital systems. When an operational worker gets an updated list of detailed procedural steps on his smartphone or tablet and reports back instantly when the task is complete, it changes the leverage for control, also for managers who do not understand the work itself but who can measure the production of pre-specified output. Thus, the information infrastructures through which work is prescribed and described, the organisational discourse of work, moves towards more detailed specification and towards more standardised descriptions.

This change has many advantages, also in terms of safety, but the increasing level of detailed standardisation and control of operational work also reduces workers' freedom to conduct on-site situational adaptations that can be very important in some cases (Almklov and Antonsen 2019). It also changes the organisational discourse of

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by Rosness and Forseth's (2013) discussion of "Boxing and dancing" in the Norwegian petroleum industry.

[4] The ways in which organisations are influenced by such developments is often discussed in the so-called neo-institutional theory (see DiMaggio and Powell 1983; Røvik 2011). A part of this is the spread of organisational ideas, such as managerialism, from the private to the public sector.

work in a rationalistic and more instrumental way, potentially suppressing its social dimensions, such as the networks of learning and collaboration within communities of practice (Lave and Wenger 1991), personal expertise, conceptual slack (Schulman 1993), some of which are often found to be important in HRO studies (Weick and Sutcliffe 2015) and in resilience theory (see, e.g. Haavik et al. 2019; Wiig and Fahlbruch 2019).

To summarise: If we consider a typical monolithic organisation which has its operational work in-house, this is a system where the tools for managers and workers for influencing safety in the sharp end are within the walls of the organisation. Moreover, it can be seen as a social system with both formal and informal traits.

2.3   Outsourcing of Operational Work

Much of my work the last decade has been focused on how outsourcing and organisational models where a market is a key coordinating mechanism (such as internal buyer–supplier models) lead to changes in how work is represented and managed. Where organisational research and theory, and particularly several ethnographic studies of work have highlighted the importance of informal social dimensions of the workplace, outsourcing and market-based coordination entail a more rationalistic way of describing work. Put simply, in the discourse of work in systems where it is outsourced, there is a conflation between work as imagined and work as done. When a buyer orders a task from a supplier, the procedure is the specification of the "product" he pays for. He does not pay for "social dimensions" and what have you.

When studying outsourcing of operational work in critical infrastructure sectors, a key observation was that outsourcing led to such a discourse of work. When operational work was outsourced, it was typically seen as standardised products described in detail. To be bought and sold on a market work was "commoditised", broken down to manageable entities that were standardised. Though standardisation makes the transaction simpler and lowers the transaction costs involved, it also decontextualises the descriptions of work. This, we observed, renders certain aspects of work organisationally "invisible" (Almklov and Antonsen 2010, 2014). That which would be a procedure in a traditional organisation, would be a product specification in an economic transaction in the outsourced model.

Though work is often understood as "those activities that are sold on a market for a price", as argued by Wadel (1979) and Orr (1991:12), this does not at all cover the activities that comprise work when it is studied ethnographically. Work is a situationally contingent and social activity, and decontextualised descriptions of it cannot capture all of this. The fact that parts of practice or aspects of it are invisible to people outside the community of practice is not necessarily a problem in itself as this can be a source of power and flexibility for the workers (see Star and Strauss 1999). When work becomes embedded in market-based or market-imitating transactions, however, this invisibility is more problematic. What typically gets lost when work is represented in rationalistic discourses and transactional logics, are aspects linked to

situational adjustments, ad hoc coordination, informal relationships among workers and learning in a community of practitioners. Many of these qualities are known to be relevant for safety and resilience.

2.4   Platform Work

Platform work, work in the "sharing" or gig economy has become a topic of much academic interest recently.[5] Though it arguably still comprises a limited part of the economy in most countries, it has spurred debate as it challenges our notions of working life and of the employer–employee relationship. It has also faced several legal challenges as it circumvents several protections afforded by labour regulation in many countries. A worker in the platform economy, an Uber driver or a food delivery cyclist, is typically not employed by the organisation he works for, but conducts tasks that are assigned by an app, and is paid for each trip or task. All their activities are governed by the app.

If we start with a classical instrumental understanding of an organisation as an entity with a goal and which relies on division of labour and coordination to reach it, one can argue that the technological platform, or information infrastructure, has taken the role of the organisation. The app is the manager and the organisational system. As argued by several authors,[6] some discourses on the platform economy tend to portray platforms as matchmakers, as technologies primarily. Conversely, Pujadas and Curto-Millet (2019) argue that they should be seen as socio-technical infrastructures, non-neutral inscriptions of practice. As is the case for information infrastructures more generally, the information infrastructures regulating platform work are also heavily based on standardised descriptions of work. In the previous section, I described a development towards commoditisation of work in network organisations: for the buyers of outsourced operational work, good control often hinges on detailed, standardised descriptions of atomistic tasks. This lowers transaction costs, since it makes it easier to decide prices and to control whether the task has been executed as ordered. In the platform economy, this commoditisation of work is taken to the extreme and controlled by an algorithm. For an electricity grid operator (in the outsourced model), commoditisation can, for example, mean standardising the periodic maintenance of a specific type of transformers to a delimited, standardised task, making it easier to compare tenders from different suppliers for this task. For platform workers, such processes are inscribed in the apps and automated.

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[5] See Kalleberg and Dunn (2016) for a short summary of different forms of work in the platform economy. Some of the types of platform work described by them, such as specialist freelancing, are characterised by more freedom and power for the workers, than the what I describe here as the typical app-work.

[6] Including my colleagues Marie Nilsen and Trond Kongsvik (Nilsen et al. 2020, 2022).

What this means is that the organisation is enfolded in the app. But it is only the functional, rationalistic part of it. The organisation as a social system is eliminated or suppressed. An illustrative example of this is how Uber drivers complained when visiting the offices of Uber in San Francisco that they were not allowed to use employee restroom. This symbolises the fact that they are not parts of the organisation, they are not members of Uber as a social system. The app regulates their interaction with the company, and the app does not have a restroom.

There are several counterforces to the gig economy, particularly in the social democratic economies in Europe, such as my native Norway. Recently, food delivery cyclists won a court case recognising them as employees of the company they work for. However, if we consider this trend towards platform-regulated work more broadly, it poses some interesting questions regarding how we, as safety researchers and practitioners, can contribute to maintaining and improving acceptable safety and working conditions in industries where the operational work is moved outside the organisation as a social entity, and where "organisation" becomes pure essence, a matter of coordination and payment through a computer system. Platform work is an illustrative example, an extreme case, of information infrastructures replacing the organisation as we are used to thinking of it: as a company where people are employed, where managers lead and employees collaborate.

There are clearly safety-relevant power dimensions to be investigated within this development. In a classic study in sociology of work, Lysgaard describes how the "worker collectivity" (Lysgaard 1961 in Norwegian; see also Karlsson et al. 2015), the community of factory workers, represented a joint counter force against the relentless, insatiable demands of the management and technical systems. The individual app worker is largely on his own and has little ability to respond to these pressures to work ever harder and more efficiently. This has implications for general well-being at work, but also for safety in work execution. For example, Nilsen et al. (2020; 2022) discuss this app-driven efficiency pressure in the light of Rasmussen's (1997: p. 1990) drift-to-danger model, suggesting that the pressure for efficiency is poorly countered by safety measures that are found within traditional organisations, possibly leading to a drift towards unsafe situations and unacceptable workloads. While some of these counter-gradients may be recognised organisational safety measures, such as OHS training, also more general organisational traits such as the development of communities of practice, general professional training and a collective identity as well as more general medical and social support services can also counteract the efficiency pressure and the detrimental effects it might have on health and safety.

2.5 Discussion: Infrastructures and Fragmentation

The three stereotypical organisational forms I describe here clearly differ in the location of the formal organisational boundaries. This is illustrated in Fig. 2.1.

Governance of work increasingly transcends organisational boundaries. Figuratively, the boundaries around the "blobs" become less relevant, and the information
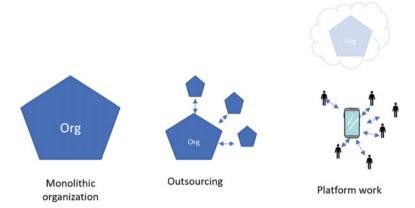
Fig. 2.1 Three stages of fragmentation

flow symbolised by the arrows, and the power exerted through them, becomes more important to understand how work is governed.

In both the monolithic organisations, networked organisations and in platform models, work is increasingly regulated through digital systems. This means that it is a general development in most sectors of working life of today that work is specified in more detail, both in terms of procedures and reports. Information infrastructures are fundamental in this development. They make it possible to govern work in more detail, with greater mobility of reports and procedures. This mode of governance depends on standardisation and leads to a more rationalistic discourse of work. Work, even for university professors, is increasingly viewed as consisting of a set of atomistic commensurable tasks and as producing measurable output (credits, students, journal papers). This is the mode of governance in the audit society of Michael Power (1997). This development occurs within all three stages discussed above. However, it is more pronounced and somewhat different in the two latter.

When operational work is outsourced, the standardised tasks are entities that are traded among the buyers and suppliers. This further emphasises the rationalism of the standardised representations. The work you order is what you specified in the tender. To do more is wasteful, to do less is breach of contract. Thus, the contractual dimensions of the regulation of work actively suppresses those aspects of work that are not specified. Serious buyers, who understand that it is more to work than in the specifications of it, will often want to incentivise a good working environment among their suppliers, but it is not easy to do it without specifying exactly what they want.[7]

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[7] This is a traditional principal-agent dilemma. If, for example, the buyer wants the supplier to have extra capacity and redundancy, they need to pay for it. But the supplier, striving to be effective may cut corners and reduce it, as it will be profitable for them to do so.

However, in contrast to platform work, the workers in a supplier within an outsourced model will belong to an organisation and have colleagues and a management that has an obligation to take care of their rights according to labour laws and regulations. In some cases, as we for example saw among outsourced electricity fitters (Almklov and Antonsen 2014), the workers in outsourced companies also became more specialised and attained a more distinct professional identity. Their work situation may, as in the case of platform workers, be more precarious and stressful because their employment depends on their ability to get the next contract, but this pressure rarely hinges on the single individual.

Platform work, on the other hand, is a form of work that is purely rationalistic. The procedure, or order, is the work. The outcome is the measured and reported result. And typically, there is no organisation in the sense of a social system that counteracts efficiency pressures that may lead to unsafe and unhealthy work situations. Moreover, since many of them are self-employed, the labour laws and regulations do not protect them in the same ways as they do traditional employees. In my discussion of platform workers, I have focused on transport and delivery services. These work alone, and the extent of interaction with other workers is highly limited as well, so the informal protection provided by belonging to a community of practitioners is rudimentary at best.

However, as I will discuss in the concluding section, the digital technologies may also be appropriated to improve OHS in the platform industry.

2.6 Conclusion and Implications

Many of the readers of this book will be managers. Many will also be in roles where they can influence safety. Few will, however, be placed so high in the hierarchy that they can influence the key strategic decisions regarding the business model or organisational strategy, e.g. on whether the organisation should outsource operational work. So, the challenge is, for most of us, how to work constructively with safety within different business models.

Within these constraints, I see two takeaways from this discussion, areas where researchers and practitioners can influence safety.

First of all: I believe that there is a never-ending and ongoing struggle of always nuancing and elaborating rationalistic conceptions of work in organisational models. As managers and researchers, we need to go beyond standardised formal descriptions of work and seek to understand it, as much as possible, in the context of its execution. Furthermore, as resilience theory reminds us, variability (where the terrain of execution deviates from procedures and plans) is not necessarily a problem. It can also be a resource for safety and resilience. Managers and safety professionals must have a keen eye for what is beyond standardised representations of work and accept that

non-standard variation and imperfections in work execution are not only necessary for safety, but often for efficiency.[8]

Secondly, as we see new organisational boundaries emerge between system owners and practitioners, we should also see the new pathways of communication across them, in the forms of ICT systems, as resources not only for rigid control, but also as resources for more diverse and dynamic ways to influence safety. Though ICT systems are extremely well suited for control through standardisation, rigid accountability and audit-based control, they can also provide avenues for worker empowerment and collaboration. An implication of this is that actors with an interest or mandate for improving OHS, such as unions or regulators, can seek to establish new digital (or physical) arenas, or support those who emerge among workers, to replace what is lost in the traditional organisational models.

In the case of platform workers, these may contribute to exchange of information and experience, inspire collective action against unreasonable demands, lead to professional development and for example give opportunities for collective insurance bargaining. Many of the OHS problems associated with this model lie in the power difference between a large corporation and an individual worker. This may be somewhat improved by establishing arenas seeking to nurture some sort of community among them.

References

P.G. Almklov, S. Antonsen, The commoditization of societal safety. J. Contingencies Crisis Manag **18**(3), 132–144 (2010)

P.G. Almklov, S. Antonsen, Making work invisible: new public management and operational work in critical infrastructure sectors. Public Adm. **92**(2), 477–492 (2014)

P.G. Almklov, R. Rosness, K. Størkersen, When safety science meets the practitioners: does safety science contribute to marginalization of practical knowledge? Saf. Sci. **67**, 25–36 (2014)

P.G. Almklov, S. Antonsen, Standardisation and digitalisation: changes in work as imagined and what this means for safety science, in Le Coze (ed) *Safety Science Research: Evolution, Challenges and New Directions* (2019)

S. Antonsen, *Safety Culture: Theory, Method and Improvement* (Ashgate Publishing Ltd., 2009)

S.R. Barley, G. Kunda, Bringing work back in. Organ. Sci., **12**(1), 76–95 (2001)

M. Bourrier, *Trapping Safety Into Rules: How Desirable or Avoidable is Proceduralization?* (CRC Press, 2017)

G.C. Bowker, S.L. Star, *Sorting Things Out: Classification and Its Consequences* (MIT press, 1999)

T. Christensen, P. Lægreid, K.A. Røvik, *Organisation Theory and the Public Sector: Instrument, Culture and Myth* (Routledge, 2020)

P.J. DiMaggio, W.W. Powell, The iron cage revisited: institutional isomorphism and collective rationality in organisational fields. Am. Social. Rev. **48**(2), 147–160 (1983)

T.K. Haavik, S. Antonsen, R. Rosness, A. Hale, HRO and RE: a pragmatic perspective. Saf. Sci. **117**, 479–489 (2019)

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[8] Interestingly, safety management systems, often heavily based on standardisation, can also lead to a disempowerment of practitioners' perspectives and suppress the discourse regarding situational adaptation (Almklov et al. 2014).

A. Hale, D. Borys, Working to rule, or working safely? Part 1: a state of the art review. Saf. Sci. **55**, 207–221 (2013)

O. Hanseth, E. Monteiro, Inscribing behaviour in information infrastructure standards. Account. Manag. Inf. Technol. **7**(4), 183–211 (1997)

E. Hollnagel, D.D. Woods, N. Leveson (eds.), *Resilience Engineering: Concepts and Precepts* (Ashgate Publishing Ltd., 2006)

A.L. Kalleberg, M. Dunn, Good jobs, bad jobs in the gig economy. LERA Libr. **20**, 1–2 (2016)

J.C. Karlsson, E.J. Skorstad, J. Axelsson, On the track of the worker collectivity: its various adventures over the past 60 years. SAGE Open, **5**(2), 1–13 (2015)

T.R. La Porte, P.M. Consolini, Working in practice but not in theory: theoretical challenges of "high-reliability organisations". J. Public Adm. Res. Theor. J-PART **1**(1), 19–48 (1991)

J. Lave, E. Wenger, *Situated Learning: Legitimate Peripheral Participation* (Cambridge University Press, 1991)

S. Lysgaard, *Arbeiderkollektivet [The Worker Collectivity]* (Universitetsforlaget, Oslo, Norway, 2001, Originally published 1961)

H. Mintzberg, *Structure in Fives: Designing Effective Organisations* (Prentice-Hall, Inc., 1993)

M. Nilsen, T. Kongsvik, S. Antonsen, Working conditions and safety in the gig economy—a media coverage analysis, in *30th European Safety and Reliability Conference, ESREL 2020 and 15th Probabilistic Safety Assessment and Management Conference, PSAM 2020* (2020), pp. 3172–3179

M. Nilsen, T.K. Kongsvik, P.G. Almklov, Splintered structures and workers without a workplace: how should safety science address the fragmentation of organisations? Saf. Sci. **148**, 105644 (2022). https://doi.org/10.1016/j.ssci.2021.105644

J.E. Orr, Contested knowledge. Anthropol. Work. Rev. **12**(3), 12–17 (1991)

M. Power, *The Audit Society: Rituals of Verification.* OUP Oxford (1997)

M. Power, *Organized Uncertainty: Designing a World of Risk Management*. Oxford University Press (2007)

R. Pujadas, D. Curto-Millet, From matchmaking to boundary making: thinking infrastructures and decentring digital platforms in the sharing economy. In *Thinking Infrastructures* (Emerald Publishing Limited, 2019)

J. Rasmussen, Risk management in a dynamic society: a modelling problem. Saf. Sci. **27**(2–3), 183–213 (1997)

K.H. Roberts, Some characteristics of one type of high reliability organisation. Organ. Sci. **1**(2), 160–176 (1990)

R. Rosness, U. Forseth, Boxing and dancing. Tripartite collaboration as an integral part of a regulatory regime, in *Risk Governance of Offshore Oil and Gas Operations*, ed. by P.H. Lindøe, M. Baram, O. Renn. (New York, 2013), p. 309

K.A. Røvik, From fashion to virus: an alternative theory of organisations' handling of management ideas. Organ. Stud. **32**(5), 631–653 (2011)

P.R. Schulman, The negotiated order of organisational reliability. Adm. Soc. **25**(3), 353–372 (1993)

P. Selznick, *Leadership in Administration* (Harper and Row, New York, 1957)

S.L. Star, A. Strauss, Layers of silence, arenas of voice: the ecology of visible and invisible work. Comput. Support. Coop. Work (CSCW) **8**(1–2), 9–30 (1999)

C. Wadel, The hidden work of everyday life, in *Social Anthropology of Work* (1979), pp. 365–384

K.E. Weick, Organisational culture as a source of high reliability. Calif. Manage. Rev. **29**(2), 112–127 (1987)

K.E. Weick, K.M. Sutcliffe, *Managing the Unexpected: Sustained Performance in a Complex World* (Wiley, 2015)

S. Wiig, B. Fahlbruch, *Exploring Resilience: A Scientific Journey from Practice to Theory*, p. 128 (Springer Nature, 2019)