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Agile learning and management in times of crisis in the digital age: actor-reality construction in the COVID-19 pandemic

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Abstract

This chapter focuses on the role of digitalization in how actors produce and use knowledge for agile learning to respond effectively to the COVID-19 pandemic. It draws on pragmatic constructivism as a framework for understanding actors' more or less successful construction of their relationship to the world. It argues that, the actors to be effective in their construction, they should integrate the four dimensions of reality (facts, possibilities, values and communication), which is influenced by their capability to learn in an agile way. Empirical illustrations of actors' response to COVID-19 display how agile learning offers a basis to integrate the dimensions quite effectively, while non-agile learning forms the development of non-integration. Indeed, while digitalization enables quicker information dissemination and support for agile learning in crisis management, such information can also either overcomplicate or oversimplify the operational environment, and thus make quicker dissemination of disinformation possible as well. This chapter contributes to emerging knowledge on how different actors deal with crises from the viewpoint of digitalization in management, and how integrative, agile learning could be enabled by actor-reality construction.

1. Introduction

While the impacts of the COVID-19 pandemic are felt virtually everywhere and by everyone, there is no common body that would define and coordinate all the necessary responses. The problem is global, but the responses are also local. This means we need both *generic* and *particular* sense-making, learning and responses regarding the pandemic. The generic ones – provided by worldwide organizations such as the World Health Organization and researchers of medicine and virology – give generic guidelines (Van Bavel et al., 2020; Leoni et al., 2021). The particular ones result from the localization of these guidelines into national and regional contexts by local authorities (Ahmad et al., 2021; Ahn & Wickramasinghe, 2021; Ahrens & Ferry, 2021; Ferry et al., 2021; Huber et al., 2021; Leoni et al., 2021; Mitchell et al., 2021; Nikidehaghani & Cortese, 2021; Passetti et al., 2021; Sargiacomo et al., 2021). The response of each national, regional, organizational, and individual actor creates a reality construction that can display a more or less successful outcome (Nørreklit,

2017). On the basis of their experiences, each one makes sense of the situation, acts, observes signals of the impacts and essentially *learns* (Christianson & Barton, 2020; Müller-Seitz et al., 2014; Weick et al., 2005).

The knowledge formed regarding the pandemic can be seen as *actor-based*, that is, relative to each individual actor's representation of the problem in situ (Nørreklit, H., 2017). Thus, learning about the global threats takes place in a situated manner, in which everyone reacts to a situation, interprets information, and translates their experiences into learning based on their personal epistemic systems. As the environment changes, so does the individual actors' interpretations and responses to it. Digitalization enables the actors to collect information from an ever-wider range of sources. However, the context of creating information is often different from the local context in which this information is to be used (Quattrone, 2016). A generic model of knowledge creation, planning and action, despite its possible efficiency, could entail an increasing risk of omitting central particularities of increasingly dynamic and complex environments. Accordingly, the essential thing is what the actors' attention focuses on and what it is limited to in decision-making, action, impact assessment and transfer of learning from the particular in context, and possibly from the generic level of knowledge as well (Roux-Dufort, 2007). To effectively manage in times of crisis and enable agile learning, actor-reality construction in such situations needs to be better understood.

This chapter is concerned about how actors can produce and use digital systems-based knowledge for agile learning to create effective responses to the COVID-19 pandemic. To create such understandings, we explore how processes of digitalization can more or less effectively affect an actor's reality construction in this context. We address this problem theoretically through the paradigm of *pragmatic constructivism* (Nørreklit, H., 2017), which provides a framework for understanding actor-world relational construction. We find that, to create a functioning reality construction, people produce local *language games* about and learn from COVID-19. These language games are influenced by digitalization. The actors' abilities to use digital information to learn in an agile way is influenced by their abilities to integrate the four dimensions of *reality construction*, which, in accordance with pragmatic constructivism, are depicted as *facts*, *possibilities*, *values* and *communication* (Nørreklit, H., 2017; Nørreklit, H. et al., 2010, 2016; Nørreklit, H., 2017). When these dimensions are integrated, practices can become successful and, vice versa, if they are not integrated, only illusions of success might appear with lesser chances of functioning practice (Nørreklit, H., 2017). With the help of empirical illustrations, we analyze agile learning through language games used for the performance management of the COVID-19 pandemic in two European countries. We find that both integrative and non-integrative learning seem to exist due to several uncertainties and disinformation present during the initial and later phases of the COVID-19 pandemic. Overall, the findings of this chapter contribute to the emerging knowledge of how different actors deal with crises from the viewpoint of digitalization in management, and how integrative, agile learning could be enabled by actor-reality construction.

The structure of the chapter is as follows. First, we provide some theoretical background on pragmatic constructivism, agility and digitalization. The theoretical background is synthesized with the framework in use in the chapter. Then, building on the framework, we illustrate and examine integrative and non-integrative ways of learning in the COVID-19 pandemic. The chapter ends with concluding remarks.

2. Theoretical background

Pragmatic constructivism and the meaning of language for action

Pragmatic constructivism builds on the core assumption that human activities are organized around the use of language games in which – according to the late Wittgenstein (1953) – thoughts, actions,

and language are interwoven into a totality. Human beings are creative and reflective actors who use language to construct practices and coordinate activities in an effort to build functioning practices (Nørreklit, H., 2017; Nørreklit, H. et al., 2010, 2016; Nørreklit, L., 2017). Actors resort to the language toolbox to construe and develop their realities and the particular types of practices by which they aim to control their reality constructions. Pragmatic constructivism emphasizes that in order for actors to build a set of functioning actions, the following four dimensions of reality need to be integrated: facts, possibilities, values, and communication (Nørreklit, H. et al., 2010; Nørreklit, L., 2017).

In order for intentional results to be realized, there must be action possibilities in place together with a factual basis for undertaking the actions. For instance, a vaccine has been an action possibility to protect the population against COVID-19 but, in order to obtain results, a vaccine with the protective features has had to be in place. Furthermore, it is crucial that the array of factual possibilities somehow reflects the actors' values. If an action cannot be interpreted as meaningful or valuable, actors will be disinclined to carry out the action in question. For instance, the government has had to be motivated to protect the population and the people have had to be motivated to get vaccinated. Finally, if actors are to create a well-functioning reality, they must communicate to construct and coordinate functioning practices, i.e. the government must communicate relevant information about the vaccine to the population. The integration of the four dimensions is a sufficient condition for successful actions in practice (Nørreklit, H., 2017), but, if not integrated, any project will just be an illusion (Nørreklit, L., 1987; 2017).

In local practices, actors use conceptual narratives and measurement models to control the integration of the four dimensions of reality. For the performance management of the pandemic, the managers involved need to develop a particular conceptual language, e.g. using concepts such as 'infected', 'death' and 'hospitalized'. Effective performance management requires a linguistic structure within which each concept has a fairly well-defined meaning (Nørreklit, H. et al., 2016). First, a concept must be given an abstract meaning. Actors must define the concept's cognitive content and thereby outline its abstract idea. For instance, they must outline the cognitive content of 'coronavirus', 'COVID-19-infected', 'death' and so on. Second, actors must agree on a specific set of exemplary references in order to establish a shared horizon of understanding of what the abstract idea implies in its practical use. For instance, in the specific case of COVID-19, virologists have had to be able to identify what a COVID-19 coronavirus is and what is not. When relating a concept to an abstract idea, the result might be overly broad definitions that are inadequate for planning and control purposes. Therefore, criteria must be applied in order to overcome subjectivity issues by transforming the qualitative basis of the conceptual content into observations and numerical measures.

The establishment of the above-mentioned qualities is crucial for the performance management of the pandemic. If concepts are properly constructed, they may assist actors in building functioning practices. However, from a PC perspective it is imperative not only that concepts function as a result of their conceptual quality; concepts also need to be integrated into a narrative integrating the four dimensions of reality described above: facts, possibilities, values, and communication. Therefore, these dimensions must be accounted for in a narrative that outlines the concept, in order to avoid producing illusions and confusion. For instance, the performance of a particular vaccine may look good, but whether it can correctly be described as performing well depends on whether people have actually received it (facts) and whether it can create the intended effects and avoid serious non-intended effects (possibility) and people intend to receive the vaccine (value). Furthermore, to create a social practice, the meaning of the concept must be communicated.

Drawing on such language, actors can develop, collect, calculate, and evaluate information about the nature of the virus, human behavior, and action possibilities, and hence create and evaluate the action plans. The meaning of language is learned and developed in local practices. Hence, the meaning of any concept is explained by the role it plays in the actors' construction of functioning practices. However, for language games to function in a certain practice, actors need to develop and adjust the meaning of the concepts. Yet this is not, however, a simple matter; actors must engage in a reflective and dialogical process to adapt the concepts and make clear what a particular concept means in a particular reality construction. This requires actors having sufficient cognitive competences and abilities to observe, analyze, and act.

Digital language in times of crisis

Human beings have been immersed in uncertain and very transformative contexts where intense intertwining of live language and digital language in the construction of COVID-19 reality and in the control and coordination of human activities took place (Leoni et al., 2021; Mitchell et al., 2021). The performance management and measurement of COVID-19 reality has in fact been greatly boosted by IT systems, which have facilitated the accumulation, retrieval, transmission and elaboration of a large volume of data across social space at a speed and to an extent never seen before (Ahn & Wickramasinghe, 2021). Simultaneously, new analytical models were used to steer central operational decisions since the spread of COVID-19 in the first months of 2020 (Siegenfeld et al., 2020; Leoni et al., 2021; Mitchell et al., 2021).

Continuous learning and adaptation are necessary to act successfully in such an uncertain and transformative environment. This requires advanced habitus-based competences and insights to understand and analyze problems and to develop solutions to handle those problems successfully. The habitus can be defined as "principles of the generation and structuring of practices and representations" (Bourdieu, 1977, p. 72). At the core of such a learning process is the production and use of information for the performance management of the pandemic, and digital language has constituted a major source of that information. However, the COVID-19 pandemic has shown the shortcomings of using digital language as a means to transfer knowledge quickly and reliably, and the unequivocality of using digital means for this knowledge transfer (Piekkari et al., 2020; Quattrone, 2016). The digital language of information technology (IT) systems operates with two-valued logic (Nørreklit, L. et al., 2019). Such digital logical structures imply that the statements of the phenomenon are shaped quantitatively, which facilitates advanced analyses, calculations and operations. There are many benefits of such a symbolic language, but it differs from live language games and hence is reductive. To intertwine productively with the local actors' knowledge creation processes, the meaning of the digitalized information system should be controlled by their advanced cognitive habitus. The cognitive habitus is required for the continuous creation of knowledge and learning about how to handle the pandemic most effectively. However, if the IT language takes control of the meaning overriding the advanced conceptual habitus, the many benefits of IT systems might transform themselves into drawbacks shaping dysfunctional reality constructions (Nørreklit, L. et al., 2019). Meaning produced in a reductive monologue communication undermines learning as it excludes the reflective, dialogical and pragmatic functions of live language games.

Reality construction and effective practice development (e.g., how to control COVID-19 spread) presuppose dialogues among actors, and effective dialogues presuppose human beings' engagement in those dialogues by means of effective language games made of effective concepts. This is central to learning and adaptation first and to action second. However, the COVID-19 event has twisted this basic assumption to some extent, especially when it comes to the relationship between those who have the decision-making power and the rest of the population. That is because those in charge of managing the crisis very often have adopted a form of top-down communication based mainly on

digital language without leaving space for live forms of language based on actors engaging in language plays and social interactions. An increasing unbalanced intertwining of live language and digital language in favor of the latter has been dominating the pandemic event. But how, then, can we acquire an integration of the dimensions of reality, to have a more balanced intertwining of these elements? We shall go into this next.

Agile learning for faster integration of the dimensions of reality

The pandemic has turned out to be an enormous source of *uncertainty* that has required local responses – not because there is a lack of knowledge, but a lack of knowing what knowledge is relevant. Indeed, decision-makers have had to face a lack of critical information in an unprecedented way and take this into account in their decisions, and have had to submit themselves to working under conditions in which they do not know what they need to know (Parviainen, 2020; Tovstiga & Tovstiga, 2020). Because of this, COVID-19 is not only a crisis of health but also a crisis of learning for administrators. From the point of view of learning, and the problem-solving capacity that develops through learning, it is particularly important for actors constantly to review their own presumptions and reconceptualize the phenomenon as new information and unexpected facts come to light (Greve, 2020; Henriksen et al., 2004; Lee et al., 2020). The acquisition of new information modifying established knowledge structures and the ability to examine oneself as part of learning systems are at the core of learning in such a field of not-knowing (Eschenbacher & Fleming, 2020; Feldman, 2004; Kallio, 2020; Wenger, 2000).

Due to the limited nature of information and knowledge relevant for resolving a crisis (any crisis) that is ongoing (i.e., it is not proven how the crisis is overcome), lessons should particularly be learned from crises at the conceptual level, as this allows us to understand the dynamic structures of events and respond to unexpected kinds of events as well (Borell & Eriksson, 2013). Thus, administrators could avoid the tempting opportunity to learn what is immediate, clearly visible, easily verbalized and translated into action in and about a crisis. Following this tempting opportunity would mean that we might fail to understand the dynamics of the underlying mechanisms of crises (Sharpe, 2016), possibly leading to insufficient concepts in use and excessively rigid mechanisms that communicate information.

In a crisis situation, it is essential to translate the perceived, experienced and obtained knowledge into lessons and to integrate the lessons into the operation of the system – already during the crisis, not only afterwards (Müller-Seitz et al., 2014). But where can we learn if the crisis is not over? When the perceived knowledge of past events is the only thing available, one may ask what or how lessons should be learned from it so that what is learned serves the ability to face an ever-changing crisis. As noted, perceptions of the situation are constantly changing, but what is also characteristic of modern crises is that the mechanisms that produce that change are also inherently changing and uncertain. Information that may be useful in a context and over a period of time may not as such be transferrable to another context or over a longer period of time.

In this case, reconceptualization would be needed (Henriksen et al., 2004). Thus, actors need to revisit their understanding of how concepts work, i.e. they need to reconceptualize different phenomena in the reality. For this, pragmatic constructivism offers a useful methodology. Through an alternation of successes and failures, humans experience life and accumulate knowledge that determines successful actions. Pragmatic constructivism could help to continuously develop effective conceptual models for handling problems, and ultimately to create successful outcomes. In times of crisis in the digital age, such help would be particularly necessary.

Tentative framework based on the theoretical background

All in all, our theoretical framework can be schematically represented as sketched in Figure 1. The x-axis represents time. The y-axis indicates the achieved degree of integration of the four dimensions of reality. The resulting graph illustrates the likely learning process actors go through in situations of crisis and high uncertainty in the digital age as extreme as the COVID-19 pandemic.

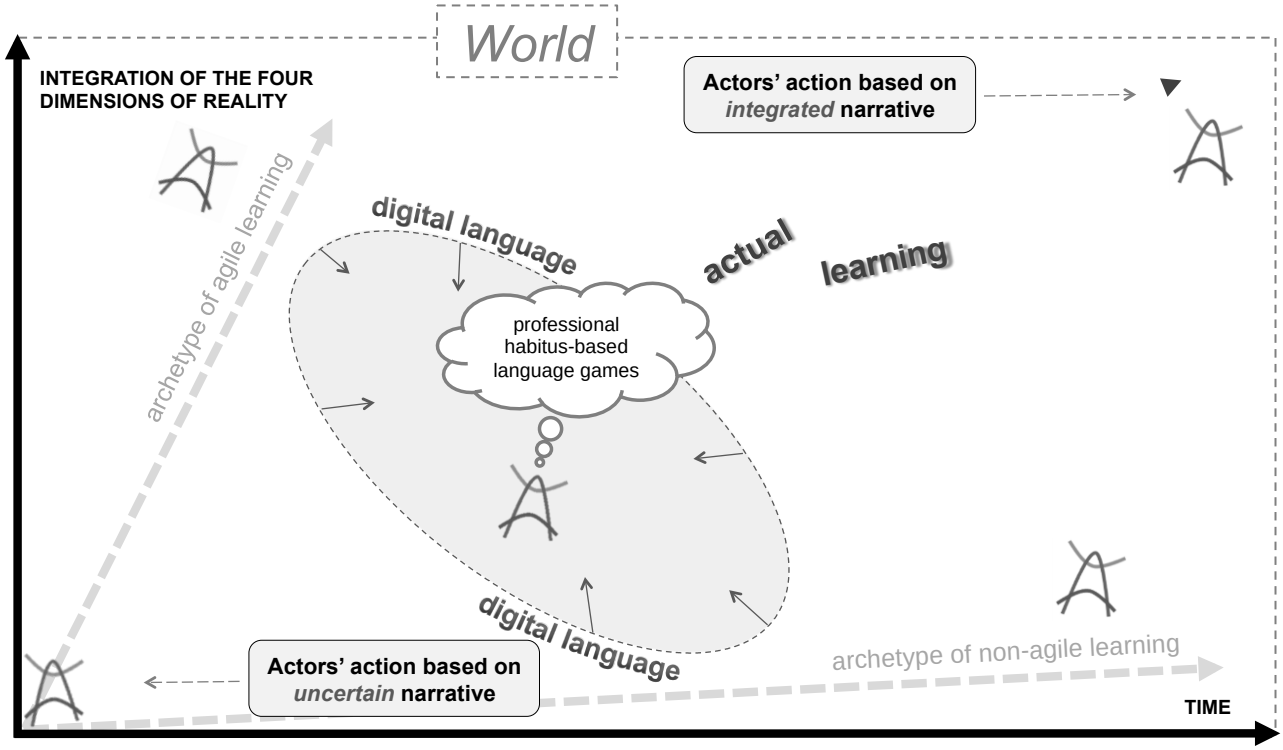

Figure 1. Actor-world relational construction.

Faced with a new pandemic, the world in which all actors are immersed manifests itself into an uncertain and very transformative context that demands continuous learning and adaptation to act and succeed. The effectiveness of such a learning and adaptation process varies among actors and depends on their ability to successfully integrate the four dimensions of reality. Accordingly, the lower dotted line shows an archetype of non-agile learning where actors are not able to accomplish integration of the four dimensions of reality over time; the upper dotted line shows an archetype of agile learning with an ideal, fast and linear integration of the four dimensions. Actual learning is an intricate transformative experience that follows a process of maturation over time, the agility and effectiveness of which depend on the quality of the actor-world relational complex construction (solid drawn line in the middle). In the perspective of pragmatic constructivism, such a construction implies the engagement of professional actors in the integration of facts, possibilities, values and communication, and thus the creation of construct causality. In their professional habitus-based language games (reported on the graph inside the cloud), actors make use of concepts, create meaning, develop narratives and act based on the narratives they co-created. Since this process of reality construction happens in a world imbued with IT systems and digital language, the way actors construct their realities and the way they act accordingly is influenced by digitalization. Therefore, the way digitalization enters the process of reality construction impacts the outcome of actors' practices and actions. In this regard, we can imagine digital language as a 'cloud' (dotted oval in Figure 1), rich in data and information always available 'out there', which stands between the actor and its operating environment every time it attempts to establish a relational complex to it. In this task, digital language can function both as catalyst and inhibitor depending on the way it intertwines with live language and professional habitus-based language games in the creation of actions'

narratives. When the two-valued logic of digital language is controlled by the cognitive habitus of the actors concerned, it acts as a catalyst that very likely leads to an integrated narrative and successful actions. On the contrary, when IT systems take the lead harming social interactions, digital language might act as an inhibitor in the process of reality construction resulting in uncertain narratives that are likely to determine actors' failures or inaction. In the former scenario, learning tends to be an agile and effective process; in the latter scenario, it tends to move towards non-agility and less effectiveness.

Next, we will reflect upon the framework using empirical illustrations of the COVID-19 pandemic. The viewpoints were formulated in the spring of 2021.

3. Actor-reality construction in the COVID-19 pandemic: empirical evidence

From the early stages of the pandemic, countries struggled to create narratives that integrated factual possibilities within value range and communicated them to citizens (Mitchell et al., 2021). Although many aspects of COVID-19 mean that there is no proper knowledge to guide action, not everything about COVID-19 is uncertain. Experts on infectious diseases have been quite unanimous across the board that the number of COVID-19 cases diagnosed and deaths and hospitalizations depend on country-specific measures and on the extent to which people manage to change their behavior with respect to pre-COVID-19 times. Performance management of the COVID-19 crisis requires at least an acquired understanding of the illness and how it mutates and spreads in different environments, as well as the effects of measures and how these can be implemented to successfully affect the behavior of people from different groups.

The process of learning on these matters has been occurring in different ways in different countries with more or less successful outcome (Mitchell et al., 2021). Below, we first provide insights into attempting integration in two cases and, subsequently, a case of misinformation facilitating non-integrated learning. We use pseudonyms for the countries because we do not wish to focus the chapter on specific countries but rather more generally on agile learning.

Case of attempting integration in the first phase in Country A

In Country A, measures for managing the pandemic have been relatively successful (in terms of, for example, relatively low death toll). The country was fortunate that the epidemic landed in the country relatively late, which is why control measures could be planned and implemented at a very early stage and their timing targeted as efficiently as possible regarding various factors, based on factual possibilities that had been established by agile learning. The country gradually moved to the hybrid strategy taking into account the values of health, economy and human freedom. Thus, it sought to curb the spread of the disease and protect those at risk, but also to cause as little economic loss and interference with fundamental human rights as possible. (Tynkkynen et al., 2020; Tiirinki et al., 2020.) Reflections on many details and specific measures enabled the emergence of an integrated narrative based on the "test - trace - isolate - treat" approach as a factual action possibility to achieve an outcome that is a compromise between the three set of values. However, the factual basis for such narrative requires constant attention and development.

More specifically, during the first wave in particular, the effectiveness of contact tracing proved to be a significant factor in curbing the spread of the disease and proved its value in protecting the population's health. At this stage, there were only limited facts available on the actual mechanisms of the spread of the disease, despite the increasingly availability of digital information from the first

wave, both locally and globally. The development of a digital mobile app for contact tracking was started at an early stage as a means (a possibility) to help to build a *fact-based narrative* about the pandemic. The idea of the app was to report if a person (or actually their cell phone) had been in close proximity to a person (their cell phone) who had tested positive for COVID-19, and had indicated that in the app with a clear conscience. In terms of controlling a pandemic, the effectiveness of an app depends on the extent of the effective communication of its arrangement, its factual possibility accurately to detect the people exposed, and people's opinion on its advantages and disadvantages in terms of their personal values (Currie, 2020; Trang et al., 2020; Coggin, 2020). In the beginning, the app was well received by people and authorities, as they were informed that it could provide the desired facts, making it possible to control the spread of the pandemic and thereby meet the values of protecting people's health. Later, critical discourse emerged, as the accuracy of the app was not always good enough for find the contacts, as people needed to have it on wherever they went. Thus, doubts were raised about the usefulness of the app in curbing the pandemic, i.e., the actual possibility to detect the facts. All in all, the app provided a digital platform for learning about the pandemic, with citizens being able to learn whether they had been exposed to the virus themselves, and thus adhere to the wider *values of public safety*.

Another example of agile learning has been the evolving information on the effectiveness of face masks, i.e. their actual effectiveness in shielding people from the virus. At first there were not even enough masks available for healthcare professionals, let alone the public. Then, when masks became available, the possible benefits of the masks were interpreted differently because facts were uncertain. This led to strong political upheaval driven by conflicting values. Motivated by the prospect of protecting public health, strong recommendations for using them in public transport and later on more broadly in public places were communicated by the health authorities and by many individuals in social media, for instance. Concerned by the intervention made in humans' personal space, critical discourses emerged regarding the use of masks due to lack of evidence of their immediate effect on the pandemic situation. In particular, social media, i.e. digital platforms, became an arena for anti-mask narratives, with people saying that they would not use masks or support their compulsory use.

However, the situation in Country A followed a more general trend in which, at early stages of the crisis, people generally set out to support the political leadership (Jennings et al., 2020; Moynihan, 2012). Trust in policy-makers and authorities was exceptionally strong in the early stages of the pandemic. Later, this support declined even though the strategy could be classified as relatively successful in terms of the death rate. The later actions of isolation were not as successful as in the early stages of the pandemic because large-scale social isolation measures were thought to be detrimental to health. Although they were considered to be particular important, there were shortcomings in the timeliness of the measures and their proper targeting (Miles et al., 2020). Confusion about the truth gave reason to doubt the relationship between policy-making and factual scientific evidence (Tynkkynen et al., 2020). On the one hand, there was criticism of politicians for not disclosing the information used in decision-making. It was not clear whether it was scientific facts or political interests that were guiding decision-making. On the other hand, there was also a debate about whether the models should be judged based on their ability to predict future facts accurately (Siegenfield et al., 2020), or on their ability to serve decision-making on actions leading to intentional outcome and hence pragmatic success.

All in all, the country followed a process of integrative learning although there were challenges of integrating factual possibilities along the way, i.e. the agility of learning was not easily acquired all the time. Indeed, agility was sought for in the process as conflicting factual possibilities and values emerged (see the curves in Figure 1).

Case of attempting integration in the second phase in Country B

In Country B, as in many other countries, one of the most important processes in the management of the whole COVID-19 pandemic has been the vaccination process. A vaccination plan was made and, at the same time, vaccines were procured. Those prioritized for vaccination (i.e. medical personnel) received an e-mail inviting them register for a dose on a digital platform. Hence, the communication of such a pivotal process in the management of the whole COVID-19 crisis was based on digital language only, without any kind of interaction between those who set up the platform and those who were supposed to use it to obtain the vaccine. The objective of those who set up the platform was to find out the number of vaccines needed for the first phase of the vaccination program. The e-mail was received by medical personnel on the day before the date on which their chance to secure a dose of the vaccine was due to expire. Narratives around the use of the platform by the people to be vaccinated, on the rules governing that platform and those governing the whole vaccination process have almost been absent. Even though the e-mail reported some information about the vaccine and some informative material was attached to the e-mail, the material concerned another type of COVID-19 vaccine – the one that at that time was already available elsewhere and was different to the one that would have been available in Country B.

Lack of exhaustive information on the vaccine (facts), lack of actual integrated narratives around that type of vaccine, the short time frame to decide whether or not to attend the vaccination event (factual possibility), and the lack of social interaction (communication) with other people resulted in uncertainty that, in turn, resulted in many individuals not accessing the digital platform to secure a dose of vaccine, even if they were intrinsically motivated (values) to do so.

The process of learning about and adaptation to the first phase of the vaccination process thus resulted in failure for many individuals. The communication based on digital language, the short time frame, and the lack of dialogue and social interaction meant that the actual possibility of getting the vaccine did not match (integrate) the reality construction of many individuals so, accordingly, they did not act. Digital language completely – but ineffectively – replaced live language, and the short time frame prevented parallel social interaction from taking place in the time available. Although country B cannot be classified as an example of pure non-agile learning (i.e. low integration of the dimensions of reality per time, see Figure 1), it could be said that the lack of social interaction among actors hindered agility to some extent.

Mis-information facilitating non-integrated learning

Across the world, the COVID-19 pandemic has been characterized by the highly confusing effect of mis- and disinformation among the population. Mis- and disinformation spreads above all on social media platforms, making the formation and distribution of pandemic-related information less clear. This is a huge challenge for fact-based, agile learning in different societies. Fake news and conspiracy theories, for example, have created confusion about the nature of the pandemic, influencing people's ways to learn and behave – to integrate the dimensions of reality in a successful manner. People who tend to believe alternative facts and conspiracy theories are also less willing to follow the guidelines and instructions issued by authorities (Uscinski et al., 2020; Van Bavel et al., 2020).

Overall, the distorted and unreliable information spread by the Internet has created a risky environment for public health, hampering the realization of possibilities (e.g., masks and vaccinations). In response, administrations and authorities have been encouraged to develop strategies to counteract mis- and disinformation (Ali, 2020; Cuan-Baltazar et al., 2020; Jayaseelan

et al., 2020). However, fact checking and the correction of erroneous information inevitably occur with a time lag, since the misleading information is diffused considerably faster, more deeply and more broadly than true information (Milewski, 2020; Vosoughi et al., 2018; Huynh, 2020; Brashier et al., 2021). This has hindered acting based on an integrated narrative.

The situation is aggravated by the fact that COVID-19-related information has rarely been clear-cut and easily definable as either true or false. Even scientific knowledge does not often form a consensus in this regard. In other words, as the information itself is constantly changing, this complicates actors' reconceptualization and agile learning. In such information environment that is tormented by ambiguity, learning has hardly been purely agile (cf. Figure 1). Integration of the dimensions of reality has been greatly influenced by local and global language games of COVID-19.

4. Conclusion

This chapter focuses on the role of digitalization in the way actors produce and use knowledge for agile learning to create effective responses in times of a pandemic crisis. Drawing on pragmatic constructivism, it proposes a framework for agile learning within the dynamics of a pandemic situation such as COVID-19. Yet, we claim that the chapter could be helpful in understanding different kinds of crises (e.g. financial, ecologic, social) and agile learning therein.

Altogether, the chapter states that, to create a functioning reality construction in situ, professionals must engage through habitus-based language games in learning about and developing solutions to handle different events such as crises. These language games are influenced by digitalization. While digitalization enables quicker information dissemination and thus support for agile learning in crisis management, such information does not necessarily lead to an integrated, agile learning process. Also, drawing on pragmatic constructivism, the chapter empirically analyzes how authorities in different countries have responded to the COVID-19 pandemic based on different narratives. Thereby, the chapter provides the perspective of actor-world relational construction to the timely debate in academic research on the localization of general guidelines of responding to crises (Ahmad et al., 2021; Ahn & Wickramasinghe, 2021; Ahrens & Ferry, 2021; Ferry et al., 2021; Huber et al., 2021; Leoni et al., 2021; Mitchell et al., 2021; Nikidehaghani & Cortese, 2021; Passetti et al., 2021; Sargiacomo et al., 2021).

In particular, the chapter shows that the translation of live ideas into digital language raises serious concerns if not supported by live language games and meaningful integrated narratives. Instead of reducing the high uncertainty already permeating the context of practice, the high digital reaction time demanded by IT systems can lead to uncertainty that is even higher than the initial situation. People need narratives and social interactions to effectively learn, generate meaning, adapt and successfully act. The better narratives are formulated by integrating factual possibilities into a value range, and the more actors are engaged in the formulation of those narratives, the more those narratives become meaningful, uncertainty is reduced and learning and adaptation become agile, virtuous and effective processes that lead to action.

As a result, we conclude that, in a dynamic and uncertain context where IT systems and digital language play a predominant role, the role of narratives is pivotal. Individuals need compelling stories about change (Aiken & Keller, 2009; De la Boutetière et al., 2018), which not only outline relevant factual possibilities but also put all actors in the position of partaking (Nørreklit, L. et al., 2019) to these stories, while understanding them in depth. Furthermore, such narratives should be orchestrated in advance by those in management positions, that is, in a time frame that fits not only the speed of digital technologies but also the different times when people are online. Not everybody

is ‘glued to the screen’ waiting for digital language to enter their reality construction. The digital vernacular notion, “in real life, IRL” is important from this perspective.

Prior research has provided comparisons between different countries through certain measures and indicators, and has determined which measures or decisions have served to achieve the objectives of responding to the COVID-19 pandemic (Mitchell et al., 2021). The chapter contributes to emerging knowledge on how different actors deal with crises in terms of digitalization in management, and how integrative, agile learning could be enabled by actor-reality construction. In particular, the chapter contributes by identifying the need to profoundly examine the motivations behind different response strategies: what guides an actor’s response depends on the theory or model used by the actor to link the comparative information to the perception of reality and the logic that connects the pieces of information to each other (Nørreklit, H., 2017). Different crises such as pandemics then force actors to question the assumptions behind current theories, and thus revise those theories (Henriksen et al., 2004; Greve, 2020; Lee et al., 2020). A rapid response is then required and learning needs to be agile – i.e. agile learning needs to take place. This chapter shows how that agile learning could be possible by integrating the dimensions of reality. It also adds to current academic understanding by showing that digitalization has changed how actors are able to consume and produce information and construct knowledge, including in times of crisis. To respond to the pandemic effectively, actors’ actions need to be fact-based and knowledgeable. However, new types of uncertainties are posing continuous challenges to such knowledgeable actions. This viewpoint highlights the need for learning on multiple levels, partly enabled, but also complicated by digitalization.

Finally, while this chapter has unveiled some important aspects of responding to crises by agile learning, ample scope for future research exists. Researchers could examine how and through which cognitive processes agility is created. Or, they could examine the types of actors and their roles in supporting agile learning. Furthermore, digitalization is a megatrend but only one among many, so researchers might find it useful to examine agile learning in relation to other megatrends or challenges that require both large-scale and grass-root responses (such as aging, global warming, or urbanization), and new ideologies that aspire to overcome some of those challenges (such as degrowth). Whereas the COVID-19 pandemic provides a very palpable example of an event for which agile, quick learning is needed, some of these other grand challenges are more lingering and thus challenge the concept of agile learning. If a crisis manifests itself in less tangible but equally (if not more) grave and complex consequences, how could agile learning become a part of toolboxes used in responding these challenges? We hope this chapter inspires such possibly relevant thoughts on overcoming future challenges.

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