




# Anticipation and Organization: Seeing, knowing and governing futures

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## Abstract

Anticipation is part of organizational attempts to manage their future affairs and shape their surroundings. Still, the ways in which organizations engage in anticipation have not been sufficiently conceptualized in the field of organization and management studies. This article conceptualizes organizational ways of shaping and orchestrating futures by engaging insights from Foucauldian scholarship that highlight the intersection between what we can see, know and govern. We highlight the importance of processes of knowledge production in governance efforts, and articulate how anticipatory governance is crafted through intricate combinations of resources such as narratives, numbers and digital traces. The main contribution is a conceptual typology outlining four different templates for anticipatory governance in organizational settings that we term 'indicative snapshots', 'prognostic correlations', 'projected transformations' and 'phantasmagoric fictions'. We posit anticipatory governance as a knowledge-based, performative phenomenon that addresses potential and desirable futures in and between organizations. Such anticipatory activities gauge and guide organizational processes and modes of thinking and acting along different temporal orientations, and have governance effects that makes anticipation performative by its very nature. This understanding of anticipatory governance, we suggest, offers both conceptual contributions and empirical avenues for research in organization and management studies.

## Keywords

anticipation, Foucauldian governmentality, governance, information systems, knowledge management, knowledge transfer, knowledge work, organizational control, technology

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## Introduction

Anticipatory action – foreseeing, foreshadowing, or forecasting future events – has gained increased currency as a way to engage with far-reaching societal challenges, such as the anthropocene, climate change, biopolitics and securitization. Anticipation involves the envisioning of a future event or state in the present, and is both a prevalent organizational activity and a fundamental societal aspiration about governing social, economic and political affairs. States, business corporations and civil society organizations find ‘knowledge’ about the future to be indispensable for a number of purposes. It is used to mobilize support for policy proposals, to ground strategies and decision-making in reasonable levels of facticity and predictability, and to project the appearance of professional credibility and competence in a world of contingencies (Nelson, Geltzer, & Hilgartner, 2008, p. 546). Also, anticipation is imbricated with the plurality of power relations that make up contemporary liberal democracies (Dean, 2007). As Anderson (2010, p. 793) suggests, ‘Anticipatory action is a key means through which life in contemporary liberal democracies is secured, conducted, disciplined and normalized.’ Still, the ways in which organizations engage in anticipation have not been sufficiently conceptualized in the field of organization and management studies.

In most work on anticipation, knowledge about the future is treated as neutral and unproblematic. Yet, from Foucault we know that knowledge is tightly related to power and governance. In the following, we build on literature on anticipation that examines the relation between knowledge and the governance of future affairs. We propose that anticipation should be conceptualized as a form of knowledge production with organizing effects, hence our focus on governance. There is now a plethora of work charting the transformation of organizational and political control under the rubric of ‘governance’. We rely on a Foucauldian theoretical foundation, as offered by governmentality approaches (Miller & Rose, 1990;

Rose, 1999). Accordingly, governance is an umbrella concept referring to any ‘strategy, tactic, process, procedure or programme for controlling, regulating, shaping, mastering or exercising authority over others in a nation, organization or locality’ (Rose, 1999, p. 15). This conceptualization has a focus on the production and deployment of knowledge and expertise as a foundation of all forms of governance. The connection between what we are able to sense, what we are able to produce knowledge about and what we come to consider important and act upon is central to Foucauldian scholarship (Brighenti, 2007; Dean, 1996; Foucault, 1988). Similar ideas have been explored in accounting (Power, 1997, 2008), in work on state control (Scott, 1998) and in work on transparency (Flyverbom, 2019; Garsten & Jacobsson, 2011; Hansen & Flyverbom, 2015). These accounts are consonant with our conceptualization of anticipatory governance as a matter of producing knowledge and offering templates for organizational action.

This implies that organizational futures involve more than simply the unfolding of events. Rather, anticipatory activities serve to gauge and guide organizational processes along different temporal orientations. This makes anticipation performative by its very nature. Inspired by Hacking’s (2004, 2007, 2012) theorization of the ‘looping effects’ of classification, and by Foucault’s (1991) work on the governmentality implications of seeing and knowing, we emphasize the feedback loop of knowledge production: When people and organizations engage with the future, they may also ‘produce a different world’ (Loxley, 2007, p. 2). Our interest in the performative dimensions of anticipation thus moves us away from the broader field of anticipation and into the domain of what we call *anticipatory governance*.

Furthermore, recent developments in digital technology and data analytics reignite questions about how organizations produce insights that guide attempts to anticipate and govern future affairs. Data analytics and automated forms of pattern recognition have given rise to new

forms of ‘algorithmic governance’ (Katzenbach & Ulbricht, 2019). These are often presented as more accurate, more proactive and more objective methods for anticipation and governance. Such technological transformations raise questions about the underpinnings, orientations and performative effects of different practices of knowledge production and the forms of anticipatory governance they may lead to.

The contribution of this article is to conceptualize *anticipatory governance* as a knowledge-based, performative phenomenon that addresses potential and desirable futures and operates as a mode of shaping, controlling and orchestrating organizations. We aim to establish anticipatory governance as a central but overlooked mode of managing organizational life. We structure this argument by first articulating our Foucauldian approach, and then show how anticipatory governance is crafted through processes of knowledge creation and the assembling of informational resources. By unpacking processes of knowledge production, we stress the intimate link between knowledge and governance in anticipatory action. We subsequently offer a typology of templates that organizations create in attempts to govern future affairs. Our typology compares four different templates for anticipatory governance, and highlights the varieties of temporal orientations involved and the forms of governance they may give rise to. Finally, we discuss the implications of anticipatory governance and suggest further research avenues.

## **Theoretical Background: A Foucauldian Perspective on Futures**

The question of how people and organizations anticipate and manage the future has been central in several streams of social theory and research, with different claims about how to know and change the future, and thus the world (Abbott 2001; Adam, 2006; Andersson, 2018; Appadurai, 2013; Emirbayer & Mische, 1998; Mische, 2009; Weick, 1979). These strands also conceive quite differently of the scope of human

action, the extent to which the future is open for intervention, and the temporal orientations involved. Most prominently, the interdisciplinary field of futures studies has long been concerned with ‘the future as an active principle in the present’ (Slaughter, 1993, p. 227). An amorphous and broad field of enquiry, futures studies has highlighted the role of futures as a central element in the construction of society and forms of community. As described by Andersson (2018), futures studies has played a role in reflecting on the role and limits of social science in the world, discussing the boundaries of knowability and influence, and emphasizing the role of imagination and globality, while rejecting key forms of Cold War science and its hardcore rationality assumptions.

In the context of organization and management studies, questions about futures have been addressed in work on temporality and in discussions of strategy and innovation. The concept of ‘weak signals’ (Ansoff, 1975) carved out space for reflections about how the future can be known, and highlighted differences between strong authoritative and weak early sources of knowledge. Similarly, efforts of ‘horizon scanning’, the tracking of trends, and the envisioning of alternative future scenarios have been harnessed to capture the future of human development (Juech & Michelson, 2012). Such mainstream insights remain valuable, but they also carry significant limitations. They tend to consider the future as ‘factual’ and ‘perceptible’, and knowledge production largely as a matter of picking up signals that can function as evidence. As Miller, Rossel and Jorgensen (2012) put it, such accounts have ‘deterministic and instrumental limitations’ with respect to methods, knowledge and the status of the future. We therefore need to look elsewhere to find deeper engagement with the intertwinement of anticipation and governance and the processes of knowledge production involved.

Studies and theorizations of futures and temporality are increasingly refined and elaborate (see Ancona, Okhuysen, & Perlow, 2001; Augustine, Soderstrom, Milner, & Weber, 2019; Beckert, 2013; Chia, 2002; Gioia, Corley, &

Fabbri, 2002; Guyer, 2007; Hernes, 2014; Kaplan & Orlikowski, 2013; Langley, Smallman, Tsoukas, & Van de Ven, 2013; March, 1991, 1994; Roux-Rosier, Azambuja & Islam, 2018; Tsoukas & Shepherd, 2004). As recognized by Holt and Johnsen (2019, p. 1558), organization studies has, however, tended to ask *what* time is, and then provide answers: time is a measured scale indicated as a *t*-axis, or time is the temporal ordering of habit, or time is sedimented as stored and retrievable memory, or time is possibility. We now need to approach time differently, they argue, asking *how* time is, rather than *what* it is: how time appears, is apprehended and acted upon in human experience and in organizational settings.

In the different literatures on anticipation of futures, we are confronted with a plethora of observations and theoretical terms that, much like Blumer's (1954) 'sensitizing concepts', give us a sense of reference and guidance in approaching empirical instances, but less of a clear definition of the phenomenon and suggestions for avenues that scholars in organization studies can explore. For our purposes, we engage with a narrower set of discussions and theoretical approaches that highlight the intimate connection between knowledge and governance, paving the way for a focus on anticipatory governance. We see a need to engage imaginatively with ideas about anticipation (Swedberg, 2016; Mills, 1959), and to articulate how knowledge production for purposes of anticipation underpins different governance regimes that may have far-reaching implications for organizations.

Our approach to anticipatory governance starts from a focus on how organizations seek to make phenomena, problems and opportunities visible, knowable and possible to act on. Foucault's work (1972, 1980) established the basic tenet that we, as individuals, organizations and societies, are only capable of governing what we can see and know. An obvious illustration is the importance of maps for exploring and conquering the world. Consider how central the ability to (somewhat) accurately visualize territories, oceans and distances

was to the first attempts to colonize land far from home. For European colonizers and settlers, maps were indispensable tools that made it possible to see, know and govern what was previously inaccessible and out of reach (Law, 1986). All attempts at governance require the mobilization of forms of observation and knowledge. Drawing on Foucault, we conceptualize anticipatory governance as inseparable from the creation of knowledge, including the sources of insight and analytical procedures at play. Our use of the term knowledge is practice- and process-oriented, not normative or instrumental. As Foucault (2002b, pp. 13–14) put it, 'knowledge is an event that falls under the category of activity. Knowledge is not a faculty or a universal structure'. In line with this view, our approach serves to highlight the production of knowledge, and not to categorize some forms as knowledge as more accurate or essential than others.

The knowledge production processes involved in anticipatory governance invoke a range of resources in order to mobilize and guide visions for future actions. These may be narratives, numbers, digital traces or other knowledge resources. We seek to show how such different resources are combined, assembled and put to work in anticipatory governance. As Latour and Woolgar (1979) demonstrate in their work on the production of scientific facts, it is through the assembly of human, material and other resources that scientists produce results. Such insights have also shaped the literature on calculations, risk and uncertainty (Power, 2008) and the making of futures (Brown, Rappert, & Webster, 2000). Knowledge production involves processes of refining, selecting, reducing and integrating different kinds of resources with the goal of creating the foundations for decisions or other actions to be taken (Levin & Espeland, 2002; Rubio & Baert, 2012). Inspired by insights in science and technology studies, we also approach the production of knowledge for purposes of anticipatory governance as a matter of assembling socio-material resources and providing imaginaries and templates that come to guide attention and conduct (Jasanoff & Kim,

2015). Knowledge is thus more than information; it entails organizing resources in a way that has an *effect*.

In the case of anticipatory governance, knowledge has a clear temporal orientation. Every organizational regime, every political regime, implies a certain organization of time and a certain imposed temporality. There is a hitherto neglected bond between governance and ‘political temporality’ in Foucault’s work (Braun, 2007; Hamilton, 2018). A more careful reading suggests that what Foucault terms ‘governmentality’ – the complex operation of power within and beyond the state – depends fundamentally on time. That is, different forms of governance and governmentality are interlinked with particular political temporalities. This opens up a central dimension in the conceptualization of anticipatory governance; its emergence through, and continued dependence upon ‘the flow of time’ (Hernes, 2014; Holt & Johnsen, 2019; Kaplan & Orlikowski, 2013).

While most work in organization studies tends to assume a continuity between past, present and future, recent contributions have emphasized the ruptures between them. Augustine and colleagues (2019) introduce the concept of ‘distant future’ – ‘a representation of a future state of the world that is fictional in the sense that it presents a discontinuity with present reality and is not grounded in present experience’ (Beckert, 2013; Schütz, 1932/1967). Thus, ‘distant’ and ‘near’ futures represent qualitatively different ways of envisioning the future and therefore entail different consequences for organizing. How organizations orient to the future and come to articulate different temporalities is an important aspect of anticipatory governance. The future is not there to be observed and reported on at a distance, but is produced and perceived from a particular point of view with priorities and interests. Foucault (2002b, p. 14) also stressed the ‘perspectival nature of knowledge’ and suggested that ‘Knowledge simplifies, passes over differences, lumps things together, without any justification in regard to truth.’ We approach the crafting of organizations’ maps for future developments in

the same manner: they always come from somewhere, are shaped by particular logics, and they make us see, know and govern future affairs in certain ways. ‘To govern, in this sense, is to structure the possible field of action of others’ (Foucault, 2002a, p. 341).

The perspectival nature of knowledge is intimately connected to the performative dimension of anticipatory governance. Coordinating, classifying and categorizing also change a given phenomenon, and these ‘looping effects’ of future coordination are important to capture. Speaking with Foucault (1977), one may say that the way one looks at the future – ‘the gaze’ (*le regard*) – also changes oneself and works as a mode of governance. To sum up, a Foucauldian conceptualization of anticipatory governance highlights processes of knowledge production, their perspectival and performative nature, and temporal orientations as central features of such efforts to shape conduct.

## The Production of Anticipatory Governance

Our contemporary world is a world of projections, statistical extrapolations, metrics-based foresight exercises, story-based scenarios and utopian/dystopian imaginings. In our own research on the anticipatory activities undertaken by think tanks, corporations and state agencies, we are confronted with a wide repertoire of anticipatory action, a plurality of knowledge claims, and an ambitious set of governance aspirations.<sup>1</sup> For example, in terrorist prevention work, we see how assemblies of data are used to visualize ongoing and prospective attacks, and thus to prevent such activities. In think tanks, the assembly of signals and narrations of geo-political scenarios are provided to prompt leaders in different types of organizations to take action for a variety of causes, such as sustainable transportation systems or the promotion of climate-smart food production. And in financial forecasting, we observe how a focus on distant future scenarios is complemented with the imminence of nanosecond precision in trading.



Below, we turn to the resources that go into knowledge production – narratives, metrics and digital traces – to substantiate our argument about how anticipatory governance is constructed.

## **Narratives, Numbers and Digital Traces as Resources**

Historically, guidance for future actions has taken the shape of fables, stories and other narrative renditions of human destinies and divine interventions. We can think of folk tales, religious narratives and collective story-telling as forceful vehicles for human wishes to imagine, see, know and govern what may come (Czarniawska, 1998; Ricoeur, 1990). That is, anticipation has always been practised by talking about futures to come. The reliance on narratives remains a central way to produce knowledge for purposes of anticipatory governance. Organizational actors make sense of past, present and future by way of narration, and shape the future by way of story-telling (Beigi, Callahan, & Michaelson, 2019; Boje, 1991; Boyce, 1996; Colón-Aguirre, 2015; Gabriel, 2000). Examples include the focus on how narratives and ‘prospective sensemaking’<sup>2</sup> shape innovation and technology implementation (Jacobs, Steyaert, & Ueberbacher, 2013; Krogh, 2018) and the role and dynamics of storylines and future scenarios in environmental governance (Garb, Pulver, & Vandever, 2008).

Inspired by a knowledge management perspective, the significance of narration in processes of anticipation has been emphasized by Tsoukas and Shepherd (2004). Discussing narratives (using Ricoeur, 1990) as one way of ‘stretching consciousness’ for purposes of anticipation, they suggest that: ‘Narratives enable us to appreciate the temporal dimension of human experience and think in “time-streams”’ (Tsoukas & Shepherd, 2004, p. 11). In such accounts, anticipation is one of the ‘key properties of organizations’, because a part of organizational life is about ‘institutionalizing cognitive representations, routines and sequences of predictable behaviour’ (Tsoukas

& Shepherd, 2004, p. 2). By focusing on different resources, such as numbers, statistics and digital data, we may capture how the production of knowledge about potential futures feeds into anticipatory governance efforts.

While all times and all societies give expression to various forms of representation and objectification, the passion for quantification is stronger at some points in time (Desrosières, 1993; Wernimont, 2019). In the 20th century, we have seen the growth of an unprecedented desire to quantify, propelled by advances made in the Renaissance (Crosby, 1997), the Enlightenment (Frängsmyr, Heilbron, & Rider, 1990) and the 19th century (Porter, 1995). Numbers continue to carry assumptions of truth, neutrality and objectivity. By looking at numerical depictions of market developments, annual earnings or expenditures, organizations seek to anticipate future opportunities and challenges, thereby leveraging strategic advantage (Denis, Langley, & Rouleau, 2006). Governance (such as through censuses) has for long involved aggregations of information, and relied on technological innovations in assembling, analysing and representing numerical data (Guyer, 2007).

Today, digital traces can easily be combined and analysed using automated forms of processing, such as the sorting carried out by algorithms. These technological developments, including widespread datafication, algorithmic operations and powerful systems, offer new ways of coordinating action, predicting crises and making decisions about the future in organizational settings (Katzenbach & Ulbricht, 2019). These new resources are commonly referred to as ‘big data’ or ‘datafication’ (Mayer-Schönberger & Cukier, 2013; Kitchin, 2014; Mejjias & Couldry, 2019). We not only access information, news stories or media products via digital platforms, but also leave a wealth of digital traces when we operate in digital spaces. These can be anything from a search history, log-ins on a wireless network, images and videos in digital formats, comments on a Facebook post, or traces left by a GPS-enabled device when we travel through the city. Increasingly, digital traces are also left by objects connected

to the internet, such as trash cans that signal when they are full, or chips on products indicating their current presence in a global production process. Digital traces and algorithmic operations are an increasingly important resource for attempts to produce knowledge and to shape the future, e.g. in border control, predictive policing, terrorism prevention and attempts to foresee cyber-attacks (Amoore, 2013; Amoore & Raley, 2016). As suggested by Steiner (2012), algorithmic operations have come to ‘rule our world’, and act as agents of a procedural logic with a capacity to anticipate our behaviour (Seaver, 2018).

In short, resources for knowledge creation come in different formats; as narratives, numbers and digital data aggregations, and may be combined in creative ways in anticipatory practices. Data visualizations, flow charts and aggregated reports promise to deliver insights into otherwise hidden aspects of human, organizational and societal phenomena. We are invited to treat numbers, statistical curves and pie charts as if they show us ‘the world as it is’ (Engle Merry, 2011; Muller, 2019; Porter, 1995). While the promises are appealing, we rarely understand how organizations concretely do the work of crafting them, and tend to disregard the intricate organizational practices and rationalities that go into the production of anticipatory knowledge. These issues speak to a need for more reflective and critical accounts of evidence, facts and truth claims (Berger & Luckmann, 1966; Rubio & Baert, 2012; Flyverbom & Reinecke, 2017).

## **Anticipatory Governance Templates: A Typology**

How are we to make sense of and conceptualize these complex dynamics of anticipatory governance? In the spirit of Whitehead (1929) and as suggested by Swedberg (2014, 2016), after observation of messy facts, and in the attempt to get a good empirical and conceptual grip on the topic, one may turn to analogies, metaphors or typologies. To order our observations and existing scholarly contributions, we

present a typology of four templates for anticipatory governance as a way to distinguish between different future projections and forms of ordering. By ‘templates for anticipatory governance’ we mean socio-material imaginaries (Jasanoff & Kim, 2015) resulting from processes of knowledge production that have the capacity to guide organizational processes of anticipating the future. Inspired by Hacking (2012) and Crombie (1994), we assert that a template signifies a distinct ‘style of thinking’, a ‘mode of reasoning’, and as such acts performatively on future orientations. With Swedberg (2014, 2016) we believe that such a heuristic attempt to organize and name social phenomena may uncover social and organizational dimensions of the topic that have hitherto been left undiscovered.

Processes of anticipatory knowledge production in organizations engage a range of resources and temporal orientations. Our typology seeks to capture the variety of forms that anticipatory governance takes in organization and management. By exploring extant literature in the field, and by use of extensive ethnographic fieldwork in and among different types of organizations, we identify and illustrate four major templates, presented in the typology below. The four templates were chosen for comparative purposes, illustrating the different resources, temporal orientations and forms of governance they entail. The typology is thus a result of a process of simplification of a complex set of observations, with the aim to further understanding of anticipatory governance practices (Hazelrigg, 2010). Studying such practices offers a way into understanding how futures are made manageable in organizational settings, since a given template works as a way to direct and fashion subsequent modes of thinking and acting.

Our visualization (Table 1) offers (a) an illustrative example of each template, and highlights; (b) the resources for knowledge production that go into each template; (c) the temporal orientation associated with each template; and (d) and the forms of governance that may result from each template.

**Table 1.** Templates of anticipatory governance in organizational settings.

	Indicative snapshots	Prognostic correlations	Projected transformations	Phantasmagoric fictions
Illustrative example	Statistical reports or digital data visualizations of the present and indications of trends	Data-based, targeted profiling in advertising or political campaigns with the aim of foreseeing actions and events	Scenarios and projections of present and future developments	Futurists', consultants' and think tanks' predictions of possible futures, including counter-factual scenarios
Resources for knowledge production	Often numbers, but also narratives, numbers and digital traces, assembled into quantifications	Often digital traces, but also numbers and narratives, assembled into digital data visualizations	Often narratives, but also numbers and digital traces, assembled into projections and scenarios	Often narratives, but often also digital traces and numbers, assembled into predictions and fictional imaginations
Temporal orientation	Focus on the present as basis for (near) future action	Focused on the near future to be shaped by modifying behaviour	'The future' as an entity that can be projected and designed at a distance	Oriented to distant futures as uncertain and disconnected from present
Forms of governance	Rational, explicit and factual or experience-based decisions reacting to a stable and predictable future	Hidden, indirect and targeted via emotions that can be shaped to proactively design futures	Reduce uncertainty and calibrate forces that determine a more or less given future in a reactive or proactive manner	Speculative, imaginary, decoupled from experience and present, and proactively speaking to worries or hopes in uncertain times



### *Anticipation via indicative snapshots*

Anticipatory governance may draw on simple numbers-based tables, statistical reports or data visualizations – what we term ‘indicative snapshots’. When organizations need guidance about future affairs, they often turn to such sources of insight that reduce vast complexities to a single score, a ranked list or a visualization of connections. Metrics, in the form of statistics, indices, rankings and ratings, have become integral to multiple forms of governance, used by corporations, NGOs and public agencies alike. We know them from the World Bank, from Transparency International and from market analyses. As a result of digital transformations, much anticipatory knowledge now takes the shape of data visualizations. These are often spectacular mappings of both extensive and granular data points capturing global cell phone activity, movements in global cities or other large-scale phenomena that produce digital traces and can be sorted and visualized in real time via algorithmic operations (Flyverbom & Madsen, 2015). From financial planning and anti-corruption, over policing, intelligence and security efforts, to global development and health initiatives, data visualizations have emerged as a new source of insight. While statistics and digital data visualizations may seem like very different phenomena, they are often presented and understood in similar ways – as what Engle Merry (2011) terms ‘modern facts’.

*Illustrative example.* One example of an indicative snapshot is the Commitment to Development Index (CDI), produced by the think tank Center for Global Development. This index aims to improve the policies and practices of rich countries, international bodies and others of means and influence to reduce global poverty and inequality. Each year, since 2003, the index has scored wealthy governments on their record of helping poor countries. It ranks twenty-two of the world’s richest countries based on their dedication to policies that benefit poor nations worldwide. The index focuses on development ‘spillovers’ or policies that affect the development prospects of countries beyond one’s own

borders, and it covers seven distinct policy areas: development finance, investment, migration, trade, environment, security and technology. Each component is underpinned by a series of indicators of policy effectiveness in these areas, which are standardized and weighted according to their importance in development (see Center for Global Development, 2020). The index is intended to educate and inspire the rich-world public and policy-makers to engage in a ‘race to the top’ by motivating more development-friendly policies. The CDI is reportedly utilized by national governments as external validation of their commitment to global development. It has become a valuable tool for policy-makers, for advocacy and for governance (Garsten, 2017). Several countries claim to use the index as an official performance metric for their future development policies and as a backdrop for future decisions on financial allocations to global development projects.

*Resources for knowledge production.* Just like other kinds of knowledge, indicative snapshots are assembled from multiple resources through particular methods and ways of reasoning. Whether such representations of reality are put together via traditional quantitative means or via mappings of digital traces that have been sorted algorithmically, they offer indications of developments on the horizon, built on information about the recent past. Indicative snapshots simplify complex processes by quantifying different resources to offer simple scores or statistical representations. They have the ability to reduce complexity to a simple score or set of relations that creates a seductive and illusory sense of clarity and precision. This form of ‘encoded knowledge’ (Blackler, 1995), i.e. knowledge that has been recorded in symbolic codes, is easily retrievable by people who know how to (or have tools that help them) decode that knowledge. The CDI is a quantitative and indicator-based index, in which readings on thousands of data points and more than a hundred indicators are combined. Yet, it is produced to be easily accessible for the interested layperson. As with any index, or any form of

abstraction, there is a trade-off of rich and nuanced versus simple and streamlined information (Center for Global Development, 2020, p. 8).

What renders quantification so seductive is the capacity of numbers or data visualizations to act as 'truth-bearers' and to provide knowledge about phenomena that are often highly complex and muddy. As Engle Merry (2011, p. S89) has it: 'Numbers have become the bedrock of systematic knowledge because they seem free of interpretation, as neutral and descriptive. They are presented as objective, with an interpretive narrative attached to them by which they are given meaning.' This is not to say that people, organizations or societies treat numbers or statistical representations without suspicion. But suspicion is more often directed at the source of such numbers or whoever has crunched them, not the ability of numbers to represent the world truthfully and factually: 'Even though rankings are seriously questioned methodologically, they appear as objective representations. Indexes and rankings are very often designed to anticipate expectations, facilitating alignment to specific plans and programs for action' (Hansen & Flyverbom, 2015).

*Temporal orientation.* This has implications for the temporal orientation that such forms of anticipation involve. They largely focus on offering a snapshot of the current state of affairs to make projections for the 'near future' (Guyer, 2007), a future that appears to be within reach for planning, strategizing and policy-making. They offer the present as a starting point for future action, thereby presenting the future as largely determined by the present. These modes of reaching into the near future are based on a techno-economical relationship to a resource that is to be predicted, allocated, managed and controlled in the present (Adam, 1998). The near future is, so to speak, brought into the present via snapshots that allow for prediction, allocation of resources and management of implications, and hence for anticipatory governance.

*Forms of governance.* As argued by Poovey (1998), numbers embody theoretical assumptions

about what should be counted, how to understand material reality, and how quantification contributes to systematic knowledge about the world and, we might add, about plausible future projections. In indicative snapshots, digital traces operate together with numbers and narratives as resources in assemblages that purport to anticipate and steer public policy. Such simplified, quantified snapshots are presented as largely rational and factual. The focus is on the present and considers the future largely to be a result or projection of a current state of affairs. The performative power of such indicative snapshots is that they present supposedly factual matters and thereby depict near futures as predictable. From this perspective, 'the future is a realm of mere temporary uncertainty, open in principle to exploitation and control' as Adam (1998, p. 58) has it. This leaves little room for deliberation and negotiation. Indicative snapshots thus simplify the task of anticipatory governance to a matter of reacting to a seemingly certain future on the horizon. In this sense, the looping effects of anticipation by way of indicative snapshots may be considerable. Knowledge captured in metrics and granular data points interacts with our understanding of these 'facts', thereby shaping our ways of relating to them as well as to the scope of future options available.

### *Anticipation via prognostic correlations*

Anticipation not only relies on indicative snapshots of present states of affairs, but also attempts to purposefully and intentionally shape concrete practices and rationalities at play in organizations and the lives of individuals. Such forms of knowledge production and intervention range from attempts to map the psychological profiles of individuals to grasping institutional logics and market dynamics. While the search for these insights goes back a long way and has been approached through qualitative (e.g. interviews and narratives) and quantitative methods (e.g. surveys and statistics), digital transformations ignite the hope (or fear) that we can gain more direct access to mechanisms underlying decisions and actions,

and thereby influence them. The use of digital traces is most prevalent in anticipation via ‘prognostic correlations’, where impulsive actions and rapid developments may be monitored by media and fed into anticipatory decision-making processes. Aggregations of digital traces allow organizations to see what people are interested in, align their messaging with those personas, and precisely segment and target individuals that will be most likely to interact with them in the near future.

*Illustrative example.* Tech companies, such as Google, Facebook, Palantir and others, have introduced innovations in data processing technologies that allow for aggregations of massive data for purposes of predictive analytics. Also, tools developed for advertising, such as Google’s AdWords, have been used to profile people in the process of becoming radicalized online (Flyverbom & Schade, forthcoming). The benefits that such algorithmic data analysis may bring to the table are speed and efficiency, the possibility to develop insights for both immediate and more long-term decisions, and also to shape behavior in subtle ways, as in ‘nudging’ (Sunstein & Thaler, 2008). A ‘nudge’, as understood in behavioral economics and behavioral sciences, makes it more likely that an individual will make a particular choice, or behave in a particular way, by altering the environment so that automatic cognitive processes are triggered to favour the desired outcome.

We see these forms of nudging in systems such as the GPS navigation software application Waze, owned by Google. Waze describes itself as a community-driven GPS-navigation app, free to download and to use. On top of regular turn-by-turn navigation information, the app integrates user-submitted travel times and route details, while downloading location-dependent information. The Waze Carpool function also lets you match up with others, chat with other users, and arrange pool rides with people already going your way. Waze has furthermore partnered with other applications to offer seamless integration of additional functions, such as music streaming. By simply driving around with Waze, users passively

contribute traffic and other road data, as well as data on their destinations, stops and communications with others. Users can also take a more active role by sharing road reports on accidents, police traps, moods, or any other events or hazards along the way, helping to give other users in the area a ‘heads-up’ about what is to come. Based on this information and upon frequent use, it then not only estimates driving and arrival times, but also anticipates your next driving destination and suggests the fastest route.

Similarly, other digital solutions are set up in ways that seek to modify human behaviour (Zuboff, 2019). Digital systems rely on data structuring techniques that both make information available – and anticipate and shape behaviour in subtle ways (Helles & Flyverbom, 2019). Increasingly, such mappings and visualizations have become a resource in processes of segmenting, calculating and profiling humans, movements and societal developments, and are used to shape future behaviour and developments. Unlike indicative snapshots, such forms of anticipatory knowledge can be said to ‘trade in human futures’ and aim at modifying human behaviour in proactive and hidden ways in what Zuboff (2019) terms ‘surveillance capitalism’.

*Resources for knowledge production.* To grasp and trigger underlying behavioural mechanisms, the process of knowledge production may involve combining a wide range of digital traces, such as streaming data from devices, on-premises batch data, application logs, or mobile-app analytics. It also involves storing data in a format that is durable and accessible, transforming ‘algorithmic’ insights into ‘actionable’ knowledge (Flyverbom & Madsen, 2015). While the anticipatory mode of prognostic correlations may seem highly technical, other types of resources and modes of representation also make their way into such calculated predictions of future actions. As captured by Veel (2018), data visualizations are often entangled with stories, and there is a growing industry seeking to ‘make data sing’ by turning datasets into narratives and other accessible formats. As suggested by McCosker and Wilken (2014),

digital data may even seem to represent a form of ‘visual knowledge’.

*Temporal orientation.* The focus on prognoses implies a temporal orientation focusing on the here-and-now as something that cannot be accessed directly, as would be the case for indicative snapshots. Rather, the present appears by way of a set of proxies and the accumulation of indices; an aggregation of actions and decisions taken by a great multitude of actors. These actions and decisions are taken as ‘proof’ of priorities and inclinations and are assumed to suggest preferences in the immediate future. Time appears as punctuated rather than enduring (Guyer, 2007), as consisting of fateful moments, distinct activities and turning points. In such a cumulative matrix of events, actions and imaginations pivot around the multiple possibilities for aggregating data, for profiling, and thus for anticipation. Such types of data may then serve the ambition of organizations to shape the future through attempts to modify or trigger (future) behaviour, such as when people are induced to buy products, cast their votes or form opinions about sociopolitical issues (Murray & Flyverbom, 2020; Zuboff, 2019). These data-based approaches come with expectations and desires to shape and direct the near future.

*Forms of governance.* The production, circulation and effects of such datafied, algorithmic knowledge should be central in our attempts to grasp anticipatory governance, and discussed critically. Prognostic correlations promise to do away with well-known problems, such as the time lag between the compilation and publication of data, and ostensibly deliver more accurate, direct and unbiased forms of knowing the insides and (re-)actions of people, organizations and societies. Data analytics and the potential for anticipatory governance that it opens up is valuable for corporations, advertising agencies, poll institutes, as well as for organizations involved in security and policing. But prognostic correlations also tend to rely on simplistic forms of categorization, such as when Cambridge Analytica divided peoples’

personalities along the lines of OCEAN models and other forms of psychological profiling (Schwartz et al., 2013). Commercial data profiling may open up for more exact market targeting, but may also create spurious connections. People can be rated on, for example, creditworthiness based on sets of variables that yield correlations with little explanatory power, but with the potential to have wide-ranging and unfair impacts (O’Neil, 2016). Information from cell-phone logs, rental payments and data from social media can all be factored into how people are evaluated for loans, insurances or criminal activities.

As a form of governance that relies on micro-targeting and behavioral modification, prognostic correlations are subtle and operate through emotions, senses and visibilities. The hidden nature of such forms of anticipatory governance should not make us think of them as harmless or ineffective, but rather as emergent and potentially powerful ways for organizations to shape future affairs. Unlike indicative snapshots, anticipation via prognostic correlations using data analytics and psychological profiling allows for much more invasive attempts to shape future patterns of action.

As a form of anticipatory governance, such templates facilitate control by making existing forces work for organizations in largely hidden and indirect ways that benefit their goals and ambitions – commercial and otherwise. Datafied approaches also reduce social worlds and complexities to data points and install problematic logics that we may think of as ‘information reductionism’ (Tsoukas, 1997) and ‘post-political forms of regulation’ (Garsten & Jacobsson, 2013). As Google and other organizations get to know more about people’s whereabouts, this information will also produce a looping effect by interacting with, and changing, future patterns of action. Making sense of the workings and effects of such opaque forms of algorithmic governance (Danaher et al, 2017), both in the context of anticipation and in other domains of governance, remains a looming task for scholars, policy-makers and practitioners in years to come.

## *Anticipation via projected transformations*

‘Projected transformations’ as templates for anticipatory governance abound in the organizational literature, reflecting the saturation of organizational environs with numbers and narratives as ways of accounting for reality. In this category, we find forms of knowledge that provide an interpretive lens to what is going on in the world and to what may come, given certain kinds of decisions and chains of events.

In projected transformations, numerical datasets, often based on indexes or digital traces, and narratives are assembled into projections of possible and desirable futures. We see such forms of anticipation in the narratives of advocacy papers produced by lobby firms or think tanks, in forward-looking speeches and high-stake political debates, in news reports of military conflicts or pandemic contagion, or in boardroom meetings with a policy intent (Garsten & Sörbom, 2018). Across these genres, projected transformations speak about the future as if it were already out there in some tangible form, and possible to describe with some accuracy.

*Illustrative example.* An example of this kind is a 2017 report, co-published by the World Economic Forum and Deloitte, *Shaping the Future of Global Food Systems: A Scenarios Analysis*, which presents four scenarios for the future of global food systems (World Economic Forum, 2017). The main question addressed in the report is: how will food systems nutritiously and sustainably feed 8.5 billion people in 2030? The projection of possible futures of global food systems is intended to both uncover blind spots and broaden perspectives about alternative future environments in which today’s decisions might play out. Pairing critical uncertainties of shifts in demands for food and developments in market connectivity, the report offers a matrix revealing four scenarios for the future of global food systems. As stated in the report, ‘The opportunity of this analysis is to imagine walking into these worlds – Survival of

the Richest, Unchecked Consumption, Open-source Sustainability or Local is the New Global – and explore their implications’ (World Economic Forum, 2017). The analysis recognizes opportunities for leaders to pursue food systems transformation with the potential to determine paths into uncertain futures.

*Resources for knowledge production.* Anticipation via ‘projected transformations’ generally involves identification of a focal issue and present-day factors seen to be of significance for decision-making about future affairs, and distinguishing between what seems certain and what seems uncertain. In the example above, such factors would be ‘predictable forces of change’, such as climate change, paired with ‘critical uncertainties’, such as the future demand for food and agricultural commodities, the openness of trade, trust in and resilience of commodity markets, and inclusivity of technological innovations. Based on knowledge gathered about forces of change, the WEF report offers knowledge about potential and plausible scenarios, proposing alternative futures depending on the decisions taken by leaders in the relevant policy areas and how these play out at a larger scale. This relies on what we call ‘estimative knowledge’, i.e. knowledge based on tentative evaluations and judgements.

*Temporal orientation.* The temporal orientation of projected transformations tends to be long-term, coupled with an acute awareness of the immediate present. With Guyer (2007), we may see that the contemporary dominance of macroeconomic theory and monetarism has contributed to shifting the focus more confidently toward the long run, with the aim to free up market dynamics, at the same time as we are made acutely aware of the immediate future. The ‘near’ future, i.e. the future seen to be the ‘reach of thought and imagination, of planning and hoping, of tracing out mutual influences, of engaging in struggles for specific goals’ is ‘evacuated’ in Guyer’s (2007, p. 409) sense. Instead, departing from an immediate and instantaneous here-and-now, projected versions



of a ‘distant future’ are privileged. This genre of anticipation is thus oriented towards the future as something that can be designed and realized in the long term.

*Forms of governance.* This also has implications for the ensuing kinds of governance. Projected transformations suggest that the future can be rendered visible and should be inherently governable; a central part of the high modernist attempt to rationalize uncharted territory (Andersson, 2018; Scott, 1998). In the WEF report, decisions are seen as contributing or setting limits to developments that are already under way, such as imminent food crises or climate change. Governing the future becomes a matter of calibrating capabilities in preparation for things to come, and a matter of balancing the forces that determine a more or less given state of affairs on the horizon.

In this context, the notion of ‘futures-literacy’ is informative (Miller, 2015). Deployed by large-scale international organizations (such as UNESCO), it directs attention to the powerful forces that shape our futures; the need to learn about what signals and influences to be observant of; and thus learning to be agile and responsive in relation to the diversity of plausible scenarios. Anticipatory governance in this form is mostly a matter of reducing uncertainty and attuning capacities in a reactive or proactive manner. Responsiveness towards futures can thus be learnt, it is stipulated. The governance effects of projected scenarios build on and extend rationalistic, modernist ideals about planning and policy intervention, and underline the continuities between present choices and future outcomes. In this context, looping effects may be considerable, since scenarios imply the articulation of certain plausible futures, which are then acted upon, thereby contributing to their realization.

### *Anticipation via phantasmagoric fictions*

A fourth starting point for anticipatory governance is what we call ‘phantasmagoric fictions’

– templates for organizational action that depict the future through fantastic imagery, impressionistic suggestions and incongruous juxtapositions. With this term, we wish to draw attention to the tendency for such templates to extend beyond immediately plausible futures to the uncertain, distant and even fictional. Furthermore, the notion of the phantasmagoric points to the constantly shifting and changing nature of events that these templates present. They may provide bizarre or unlikely combinations, collections, or assemblages of ideas and events. Phantasmagoric templates are often produced by individual scholars or futurists loosely attached to organizations like think tanks or forecasting firms. However, one may also find them in the long-term political visions in certain kinds of centralized states, and in the visionary programme statements of international organizations with large-scale and long-term programmes of change. We also see these templates exemplified in the scenarios for global development offered by technologists, pundits and mega-thinkers, and in suggestions about future technological inventions. Here, the entrepreneur Elon Musk’s ambitions for a technology-facilitated human future in outer space come to mind. This is a genre that invites scientists, engineers and artists, operating in a broad range of organizations, to visualize and articulate their visions of alternative futures.

*Illustrative example.* The Institute for the Future, IFTF, a Silicon Valley-based think tank, may serve as an example of an organization engaged in this kind of work. A non-profit, independent research organization, the IFTF focuses on the identification of ‘signals’ in the present to point to large-scale innovations and disruptions in the future. The organization works with all kinds of organizations ‘to catalyze a better future’ (IFTF, 2017). It offers classes through which individuals get to ‘explore’ a wide range of plausible and potential futures, with the aim to ‘help people make better decisions today’ (IFTF, 2017). Part of this procedure involves getting participants to think more imaginatively about the choices they face in different scenarios, or

versions of plausible futures. Rather than trying to make predictions, participants learn to use foresight to draw out critical insights that would help guide decisions and actions, and ultimately to assist them in creating the future they want. The methods used to surface and interpret change are manifold and varied, involving the use of games, maps of envisioned futures, creation of artifacts from the future, signal identification, surveys, expert workshops and interviews. The IFTF also invited a magician-in-residence, Ferdinando Buscema, to ‘inject even more wonder into Futures Thinking’ and to spark the imagination of participants in events and ‘playfully challenge the very notion of what’s possible, fueling curiosity, and renewing people’s sense of wonder about the world’. The Institute describes its collaboration as a way ‘to help organizations and the public think systematically about the future in astonishing new ways and, ultimately, make better decisions in the present’.<sup>3</sup> The IFTF thus presents foresight as a competence that may be learnt by way of training and by employing an experimental methodological toolkit that aids in sensing change, communicating visions and building capacity for the future. To become ‘future-ready’ is a stipulated goal of much training that is offered by the organization.

*Resources for knowledge production.* Templates in the shape of phantasmagoric fictions tend to be based on a wide range of sources, often put together in colourful visualizations or feisty narratives. In general, they involve narrations as a baseline for articulating imaginings of potential futures. Numerical data are less prominent as resources for knowledge production, but may figure as ingredients in predictions and fictional imaginings and be coupled with imaginative narratives. At the IFTF, quantitative surveys are combined with artistic drawings of maps, and with ‘future stories’. In this way, use of numerical data is combined with collective speculation and tapping of participants’ imaginations.

In this genre, propositional knowledge gives way to what we may call ‘speculative knowledge’, i.e. knowledge that is phantasmagoric in

character and meant to be so, rather than depicting the immediately plausible. Simulated futures (as in science fiction) may swap our present into something imminent, reframe our ways of thinking about the future (Jameson, 2005) and thus govern our actions. These processes often combine the use of visual material, artistic drawings and mappings as well as data presented in the form of ‘visual knowledge’. The motivation is often to free people’s minds from the established conventions of thinking and acting, to open up for new modes of being, and thus to make room for radical change and intervention.

*Temporal orientation.* Phantasmagoric fictions have a tendency to involve normative or otherwise slanted thinking that speaks to audiences with a special interest in utopian or dystopian futures. The temporal orientation in this genre of anticipation is towards the very long-term, the distant future. As Adam (2009, p. 21) puts it,

the scientific mode of understanding the world is incapable of encompassing human futurity not only in terms of the world of ideas but also in terms of the world of invisible, latent, immanent processes that permeate matter, stretch across space and reach into deep time.

Future-based uncertainty, the process world of the potential, of virtuality, the unknown and unknowable cannot be dealt with by conventional scientific methods. ‘Yet’, she continues, ‘many of the most intractable problems of contemporary existence are precisely of the processual, futuring, time-space distantiated kind that fall outside the past- and present-based domain of empirical science investigation.’ Examples of such problems are the regulation of biotechnology, genetic modification of food and nanotechnology products, international efforts to deal with global warming and the extinction of species. As their ‘known factuality fades into indeterminate potentiality extending into the furthest reaches of the future’ (Adam, 2009, p. 22), they lose their factual, observable status and slip into the phantasmagoric. This is evidenced in thought experiments intended to

provide direct and real-world experience of innovations that are changing the future, as well as in the emphasis placed on the tapping of collective imagination and telling of ‘future stories’.

*Forms of governance.* Relative to the other templates in our typology, this one tends to distance itself from certainty and facticity. By doing so, a space, not only for imagination but also for intervention and governance, is created. In times of uncertainty, phantasmagoric fictions may ignite both fear and hope, cultivate a sense of urgency as well as agency and empowerment, and feed into political and regulatory projects. Insights may come together in policy propositions about how to ‘design the future’, i.e. to make use of lofty, long-term visions and aspirations to construct and govern future versions of organizations, populations and individuals (Garsten & Sörbom, 2019).

Participants in such foresight exercises are provided with tools, processes, platforms and networks intended to assist them in shaping the future they desire. Equipped with strategic foresight skills, as it were, participants may leave with a sense of ‘augmented agency’ (Hernández-Ramirez, 2019). The performative effects of leadership education in scenario-creation should not be underestimated, as organizational leaders bring the tools of scenario-creation with them back into their organizations, and start working on them. This augmented agency (broadly understood as the capacity of an agent to bring about specific changes in the world, which implies that the agent can decide to act (or not), choose to do it in a certain way, and execute the action (see Bunnin & Yu, 2009), is however, illusory and may come at a cost that far exceeds the benefits. While participants may be led to think that they possess the power and capacity to act, to make decisions and to design their futures, the often random and speculative mix of information and knowledge that blends into a phantasmagoric imagination may instead narrow the range of choices and decisions, and curtail human freedom. With Zuboff (2019), we see that the technologies that come with

‘surveillance capitalism’ may instead be hampering human self-transformation, thus producing an incapacitating looping effect.

Our anticipatory governance typology highlights interlinkages between informational resources, processes of knowledge production and modes of anticipatory governance. Thus, our conceptualization of different templates serves as a starting point for discussing how anticipation shapes and comes to govern organizational life. Below, we point out how our contribution ties in with existing work in organization theory, and offer some suggestions for research avenues to be pursued.

## **Contributions to Organization Theory and Avenues for Future Research**

As we have highlighted, anticipation revolves around knowledge production. Claims to knowledge, the forms of knowledge that are created and the way these are represented in anticipatory practices have implications for the kind of governance at play. This argument builds on the Foucauldian point that power and knowledge are interconnected, and we use this to suggest that different forms of knowledge production involve different logics of temporality and pave the way for different kinds of governance. In the case of anticipation, this is important because it highlights how production of knowledge about the future performs particular functions in organizations, such as developing strategies, setting priorities and orienting to time. Organizational practices involved in such efforts are thus far from simple number-crunching exercises, data visualizations, mere stories, or simply fiction. They may have an impact on how certain images of the futures are, not only created, but made to ‘stick’, and thus influence decision-making, strategy, policy and long-term planning.

As we pointed out at the outset, organization theory has not been oblivious to questions about futures. How anticipatory knowledge claims relate to governance is a matter of concern, at least implicitly, in some parts of the discipline.

Still, organization theory has much to gain by linking these concerns more explicitly. This linking can be done both at the level of broad concerns about knowledge and performativity across the field of organization theory, and within more specialized discussions, such as strategy, sensemaking, and innovation. In the following, we highlight how our conceptualization opens up avenues for future research in both broad, cross-cutting discussions, as well as in more specialized orientations that are central to organization theory.

First and foremost, our conceptualization of knowledge production and the ‘looping effects’ and performativity implications of anticipation offer a range of ideas of relevance across many disciplines in organization and management studies. It opens up these questions in more detail and offers a vocabulary focusing on resources and assembly as significant dimensions, particularly in light of digital transformations and processes of datafication. Producing knowledge about the future may in effect change the future, hence exerting a form of governance (Inayatullah, 2006; Nelson et al., 2008). Our conception of anticipatory governance as enabled by the production of actionable knowledge concurs with a body of accountability research that looks at the mechanisms or ‘technologies of calculation’ (Law & Mol, 1998, p. 27) used to render phenomena amenable to assessment. The very production of actionable knowledge – i.e. the assembly, framing and calculability processes, and the combining of resources into synthetic templates for action – are important foundations for anticipatory governance and its usage in organizational processes. By looking carefully at how particular futures are brought into play in such processes, how they are rendered possible, plausible and desirable, we may gain a fuller understanding of the governance implications of knowledge production.

This ties in with broader discussions about the performative nature of theories and other forms of knowledge that may produce ‘self-fulfilling prophecies’ (Martí & Gond, 2018). Templates, as emphasized by Hacking (2012),

tend to guide or block areas and methods of inquiry, to mould scientific reasoning and what counts as ‘true’. Templates provide genres and styles of inquiry that shape both scientific discovery and discourse. As noted by Martí and Gond (2018), when a new theory succeeds in challenging existing practices; has the capacity to make elusive elements in the theory visible (as for example by way of scores, rankings, or indexes); when leaders start experimenting with it; and it is endorsed by high-status academics and corporations, organizations may start to experiment with the new theory, and it may become self-fulfilling. The more they experiment, the higher the likelihood that they will produce effects that contradict widely shared expectations but are in line with the new theory. This is also what anticipatory templates may accomplish. Theories are performative within a broader assemblage that connects actors, artifacts and practices (Callon, 1998). D’Adderio and Pollock (2014, p. 1814) have advocated that ‘[scholars] study [theory] as an emergent phenomenon, one which is deeply and inextricably entangled with . . . the sociomaterial practices that perform it’. This assemblage, we contend, includes resources for anticipatory knowledge production as a necessary and integral prerequisite for the performative realization of a theory and its accompanying governance potential. With new resources and technological developments at hand, new zones of interference, intervention and surveillance are opened up.

Our findings also invite further research into how anticipation and perceptions of possible futures come into play in the framing of organizational visions and strategies. The focus on knowledge and anticipatory governance is relevant for a number of more specialized disciplines that seek to account for the ways in which certain framings of the future gain authority and organize social orders. In the following, we offer three examples of key discussions in the field of organization and management studies that may pick up on ideas developed in this article, namely strategy, organizational sensemaking, and innovation.

As a central field in organization studies, *strategy* involves questions about anticipation, at least implicitly. Strategies are naturally about considering and shaping future developments (Jarzabkowski, 2004; Prahalad & Hamel, 1994), and strategic work in organizations has an obvious orientation towards temporal issues (Kunisch, Bartunek, Mueller, & Huy, 2017). Still, specific questions about the knowledge foundations of anticipation and the forms of governance it gives rise to are rarely explicitly conceptualized in work on strategy. Often, more operational questions about how to design and implement strategies, enroll allies or measure the outcomes of strategies, are in focus. Our conceptualization invites a deeper engagement with questions about informational resources and their assembly into templates for anticipation that involve particular worldviews, knowledge claims and understandings of temporality. By bringing these out, conceptions of anticipation may make strategy theories more reflexive and able to grasp the characteristics of future orientations and modes of governance that organizational strategies rely on. As Boyd, Nykvist, Borgström and Stacewicz (2015, p. S157) have it: ‘Anticipatory governance . . . can be seen as a new concept that has significant relevance for developing strategies under uncertain environmental futures.’

Attention to anticipatory practices has a clear bearing on research in the domain of *organizational sensemaking*. Scholars have suggested that sensemaking with regard to the future (i.e. ‘prospective sensemaking’) may be more than just a variant of retrospective sensemaking (see Gioia, Thomas, Clark, & Chittipeddi, 1994; Gioia & Mehra, 1996; MacKay, 2009), and have empirically identified some attributes of future-oriented sensemaking (see Obstfeld, 2012; Pitsis, Clegg, Marosszeky, & Rura-Polley, 2003; Stigliani & Ravasi, 2012). To date, however, we lack sufficient research on the ‘distinctiveness of a truly prospective form of sensemaking’ (Maitlis & Christianson, 2014, p. 97). Further research on anticipatory practices may contribute to a better understanding of the micro-foundations of such prospective sensemaking, and

may contribute to reconciling prospective sensemaking with foundational concepts of retrospective sensemaking. Our insights suggest that research on the actual procedures, activities, sources of data, analytical operations, techniques and technologies in use would contribute to our understanding of future-making in organizations.

Finally, work on *innovation* in organization and management studies implicitly addresses issues related to anticipation, often with a focus on the types of organizations, organizational capacities and the kinds of people who seem to be able to create and shape future developments (Christensen, 1997; Cohen & Levinthal, 1990). In such accounts of organizational approaches to innovation, rather little is nevertheless said about the underlying logics and practices involved in the making of future states of affairs. But as March’s (1991, p. 71) foundational work suggests, innovation and related organizational processes always involve ‘the exploration of new possibilities and the exploitation of old certainties’, and our conceptualization of the crafting of anticipatory governance through multiple forms of knowledge resources is one starting point for studies of innovation. If organization theories of innovation engaged more directly with anticipation, we would have a better sense of the kinds of future states of affairs that the organizations involved envision, and a vocabulary for conceptualizations of the tools, techniques and activities that such organizations rely on when seeking to do anticipation. Also, broader accounts of technological change, grand societal challenges and increased sustainability may be enriched by a focus on the making and performativity of anticipatory governance. By bringing questions about anticipation to the fore, we may gain a better understanding of innovation as shaped by knowledge production and future orientations, and a better understanding of anticipation as a fundamental organizational and social phenomenon.

In this section, we have highlighted how the production of knowledge for purposes of anticipatory governance is an essential, but largely implicit, concern in organization theory. Our



conceptualization orders a messy and rich repertoire of anticipatory actions as a way to recognize regularities and patterns (cf. Swedberg, 2016). The typology of templates is intended as a heuristic and generative source of conceptual and empirical exploration in studies of organizational attempts to account for and shape the future, because only in this way can we begin to understand how templates shape the governance of organizational life.

## Conclusion

It is a basic predicament of organizational life to have to face the unknown. Investment banks rely on complex metrics and indices to steer their investments; state agencies build their policies on statistical projections into plausible futures; and high-tech corporations gear their innovation strategies towards estimations of future market demands. Potential futures are an integral dimension of organizational governance, and organizations facing complex, uncertain and globalizing environments have to deal with balancing the past, the present, and the future.

Our article offers a conceptualization of the production of knowledge for purposes of anticipatory governance. We consider the focus on resources, assemblages and templates of anticipatory governance to be a valuable starting point for studies of how organizations attempt to see, know and govern future affairs. With this article, we hope to set an agenda for organization and management studies focused on the relevance of anticipatory governance for organization theory. We have also sought to highlight the performative role of templates for anticipatory governance, and to indicate how these come to shape our lives, our organizations and our societies. Finally, we have suggested that conceptualizations of anticipatory governance need to look more closely into the epistemologies at play in anticipatory activities, as well as the varying temporalities involved. Understanding the foundations of anticipatory governance activities is important because they are part and parcel of what may be used as a 'model for' the world, in

Geertz's sense (1973). That is, anticipatory activities do not capture a future 'out there', but have 'looping effects' (Nelson et al., 2008) and work as a performative force that 'produce(s) a different world' (Loxley, 2007, p. 2). By focusing on the practices and tools that organizations put to use in attempts to see, know and govern imminent issues and uncertainties, we pave the way for discussions about varieties of anticipatory governance in organizational settings.

Our conceptualization considers knowledge to be of ever-increasing importance in contemporary society, and points to technological transformations that enable new forms of processing and the use of complex kinds of data and other resources. Anticipatory governance involves the assembly of a variety of resources, such as narratives, numbers and digital traces, and the reliance on different social, technological and organizational techniques to assemble templates for action. The resources and templates involved in knowledge production are centrally involved in the production of anticipation and deserve careful scrutiny. Yet, they often slip under the radar. Ultimately, these conceptual insights may help us grasp how and by what resources and practices organizations engage in anticipatory governance and to articulate the *kinds of* governance and politics that result from these developments. As the technological foundations of anticipatory governance change, for instance via digital and data-driven approaches, we need to consider a variety of new shapes taken by knowledge creation. For instance, with the emergence of algorithmic operations and new forms of visualization, we need to ask how the future becomes 'algorithmically recognizable' (Gillespie, 2017), and how data-driven approaches to anticipation makes us see, know and govern in new ways (Flyverbom, 2019). This is of utmost importance for an understanding of how futures may become differentially accessible to different people and organizations.

By conceptualizing the very foundations for anticipatory governance, we posit anticipation as a performative organizing force, shaped by contemporary technological transformations.

We believe that a conceptual vocabulary that posits anticipatory governance as a central research topic in organization and management studies will pave the way for compelling new discussions about the knowledge foundations, epistemological logics and templates for action that shape attempts to govern future affairs in organizational settings. It may help us see how certain anticipatory practices open windows to some versions of the future, yet also put up blinders to other possibilities.

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(all in all some 100 days of participant observation), and interviews with some fifty people (staff and participants) in six think tanks based in the United States and Europe; one international institution; one European institution; three transnational corporations; and two state agencies, as well as shorter periods of observation in several other organizations. See <https://www.socant.su.se/english/global-foresight>

2. The notion of prospective sensemaking refers to the process ‘whereby an organization ascertains its tendency to yield certain results through comparing its current modus operandi with the anticipated challenges of the future’ (Weick, 1995, cited in Tsoukas & Shepherd, 2004, p. 9).
3. <https://www.iftf.org/future-now/article-detail/iftfs-magician-in-residence/> (accessed 3 March 2021).

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