

Can we use the open future? Preparedness and innovation in times of self-generated uncertainty

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journals.sagepub.com/home/est**Elena Esposito** *Bielefeld University, Bielefeld, Germany and University of Bologna, Bologna, Italy*

Abstract

Is the future simply open or can it be made more or less open? The awareness of the uncontrollable impact of present action on the future has recently raised a debate about the risks of innovation and rational planning. Relying on Luhmann's concept of defuturization, the article confronts the two approaches of future-making and preparedness and proposes to combine them with reference to the management of innovation. This adds a purposeful dimension to the discourse about preparedness, aimed so far only at confronting damaging events: one can also be prepared to seize and exploit novel opportunities.

Keywords

Future-making, innovation, open future, performativity, planning, preparedness, self-generated uncertainty

Introduction

How does thinking about innovation change in times of self-generated uncertainty? We live in a period of widespread anxiety about ecological and social risks related to the repercussions of present actions on the still unknowable future. The resulting uncertainty is particularly elusive because it comes from circumstances that are external but depend on internal processes within society, and in this sense, it is self-generated. As Luhmann

Corresponding author:

Elena Esposito, Faculty of Sociology, Bielefeld University, Universitätsstraße 25, 33615 Bielefeld, Germany.

Email: elena.esposito@uni-bielefeld.de

asked a few decades ago: ‘what happens when a system reinputs its own output as input?’ (Luhmann, 1997b, p. 361). The discourses about Anthropocene and climate change, as well as many discussions on the pandemic or the uncontrollable effects of scientific research, are driven by the realization that many of the most insidious challenges we face depend on social behaviour and its unpredicted – and often unpredictable – consequences. These are certainly innovative outcomes, but not in the sense of innovation praised in modern society. Novelty was supposed to be the goal of projects and plans, not their unintended consequence.

The emphasis on the positive value of innovation is connected to the idea, also typically modern, of an open future: a future that is not predetermined but can be shaped by human actions and decisions.¹ Now, however, there is a growing awareness that the open future, insofar as it is indeterminate, is also unpredictable and uncontrollable – a possible source of opportunities, but also of problems that can take us unprepared. The problem of managing the uncertainty of the future thus acquires new poignancy and new forms, which tend to challenge the established approach to the open future and the positive role of innovation as a factor of growth and progress (Esposito, 2014; Luhmann, 1995). The new is also – and foremost – unknown.

But what exactly is meant by open future? And how do the revisions proposed by recent research intend to handle this openness? With what theoretical and practical consequences? Can one intervene in the open future without closing it off, limiting possible options? The article explores these questions by first reconstructing the context and issues of the original notion of the open future and how the calculus of probabilities provided the tools to manage the resulting uncertainty. The following section discusses recent criticisms of this approach and its alleged rationality, which – they argue – produces new risks that it cannot manage. The article then lays out in separate sections two approaches that respond to this dissatisfaction in different ways, future-making practices and the exploration of preparedness, and exposes them to Niklas Luhmann’s observation that the future is not just open but can be more or less open depending on the way it is ‘futurized’ or ‘defuturized’. The emphasis of the preparedness approach on non-expectable surprises is then discussed as a response to the demand for futurization, but the approach has so far been adopted only to manage negative events such as disasters or threats, not to seize or create positive opportunities. The conclusions propose to extend the notion of preparedness by integrating it with insights from research on organizational innovation, which investigates the ability to deal with a broader future that includes more, more diverse and possibly incompatible possibilities. This proposal offers a mode of dealing with the unpredictability of the open future in an active way that does not limit the contingency of the future.

The management of the open future

The concepts people use to refer to time (the temporal semantics) change with the evolution of society, and in the current understanding, they date back to the transition to modernity – specifically to the second half of the eighteenth century (Esposito et al., 2023). Describing this transition, Reinhard Koselleck (1985/2004b, pp. 259–260) developed the influential thesis of a growing difference between experience and expectation,

between the present past (*gegenwärtige Vergangenheit*) and the presentified future (*vergegenwärtigte Zukunft*). What can be expected for the future becomes increasingly independent of past experience. History is no longer 'magistra vitae' – from it one can only learn 'that nations and governments have never learned anything from history' (Hegel, 1975, as cited in Koselleck, 1985/2004a, pp. 37–38).

This separation between past and future, Niklas Luhmann (1980) argues, is related to the fact that they are now expressed in the form of horizons of the present, not of collections of past and future events – which makes them enormously more diverse and articulate, but also much more complex to manage.² Each present has its own horizon of past and its own horizon of future, which like all horizons move with the perspective of the observer and are therefore different in each present. Time as a whole always appears different. In the past and future of each present, moreover, there are countless other presents with their specific pasts and futures: past presents for which our present was in the future, but also future presents for which our current present will be in the past – 'and one can already know now that the remembered present will not be the same as the current actual present' (Luhmann, 1993, p. 40).

The reflexivity of temporal horizons produces the specific form of uncertainty that characterizes the orientation to the future of modern society (Luhmann, 1992, 1993). The future becomes unpredictable in an essential way: no one can know it in advance, not even an omniscient deity, because in the present moment the future does not yet exist and will only be produced in the course of time, as a result also of actions and decisions made today. The future becomes *open* in the sense that it is not determined (Hölscher, 1999, p. 42): although it has its own structures that heavily constrain what can be realized, the future can still be shaped – it becomes a space of opportunities and possibilities.³ But precisely because of this, the open future is also unknowable in a much more radical way than in any previous society. The future is built in the present, even if we cannot know how it will come about. It depends on what agents do today, and they have to decide facing this self-generated uncertainty. Decisions 'have to be made according to the actual state of the system and take into account that further decisions will be required which are not foreseeable from the present point in time' (Luhmann, 1997b, p. 362). Nothing we have learned from the past and can know in the present provides us with certain indications of what to expect for the future. The unpredictability of the future becomes predictable. How is it possible, under these conditions, to build expectations and act on the future? How is it possible to have an orientation?

Dealing with uncertainty through probability calculus

The calculus of probabilities provided the tools for the management of the open future in modern society: projecting future events and calculating their probability/improbability, in order to make decisions in a way that is not arbitrary and is recognized as rational by all observers (Daston, 1988). Although probability calculus cannot tell us today whether a future event will come about, it provides an orientation by measuring (e.g. at 37 per cent or 71 per cent) the present ignorance/knowledge of the observers about that event on the basis of the available information. It does not tell us what will happen, but how much the observers know (and do not know) about it. The uncertainty remains, but the

probability-oriented decision-maker can claim that he or she calculated correctly and behaved rationally – although things can always turn out differently, and one knows it. And one knows that he or she will be able to claim this also in retrospect, even if the prediction is disappointed: it was the prediction that was wrong, not the decision, which was as rational as possible (Esposito, 2007). In this perspective, the approach to decisions and the possibility of acting in a controlled way on the future do not contradict its openness. As Koselleck (1985/2004ato, p. 39) states: ‘Since the future of modern history opens itself as the unknown, it becomes plannable’.

Planning the open future

Indeed, probabilistic calculus is the basis of the planning practices that guided the experience of the future of what has been called ‘organized modernity’ (Wagner, 1994), which aspired to control (Reckwitz, 2016) or discipline uncertainty. In economics, the theory of rational expectations assumes that expectations can legitimately be based on probabilities calculated taking into account all relevant Information (Beckert & Bronk, 2018, p. 8). With careful planning and modelling, it was believed, the radical uncertainty of the future could be transformed into what in Knight’s (1921, chapter 2) terms was considered a measurable risk, controllable and possibly insurable. This resulted in the efficient market hypothesis (Fama, 1970) and the structured finance models that have guided financial markets since the 1970s, promising to ‘neutralize’ risk with complex investment diversification and hedging techniques (Esposito, 2011, p. 135).⁴ Similar statistically based procedures also allowed in other areas to ‘de-problematize’ the future by creating a sense of ‘statistical certainty’ (Wenzel et al., 2020, p. 1446) – the most evident example being the actuarial practices underlying insurance (Ewald, 2020). Although the future remains uncertain, probabilistic techniques promise to control its negative aspects and enable rational action.

The neutralization of uncertainty and its risks

In recent years, this model is increasingly being challenged. The experience of the 2008 financial crisis, for example, showed how dangerous it is to de-problematize uncertainty with statistical tools (e.g. MacKenzie, 2006; Mandelbrot & Hudson, 2004). The promise of risk neutralization had led to the idea that it was riskier to forego the gains allowed by financial transactions than to venture to speculate. But in the financial crisis, the unknowability of the future returned to be a problem even and precisely when it was addressed with statistical tools and computerized automation, leading to new forms of ‘model risk’ (Derman, 1996). It became clear that statistical tools do not give access to the future, they merely provide guidelines that enable to make decisions even knowing that one does not know how things will turn out. This kind of rationality proved to be insufficient: however many different future scenarios the models may include, they cannot account for the future that results from using the models (Esposito, 2011, p. 150).

The ‘misplaced sense of certainty’ (Kornberger, 2013, p. 107) produced by planning can also be considered one of the causes of inefficiencies and delays in dealing with pressing problems such as climate change (Augustine et al., 2019; Wenzel et al., 2020),

transformations related to the spread of online practices (Whyte et al., 2022), medical emergencies such as growing antibiotic resistance (Ewald, 2001) and in general a variety of challenges that depend on the uncontrollable consequences of dynamics set in motion by human behaviour. Dealing with this kind of events, the discrepancy between the assessment before and after the event resurfaces (Ewald, 2001, p. 287), that the probabilistic approach had neutralized. The underlying rationality of informed planning was expected to protect against possible post-decisional regrets. Even if things turn out differently than expected, the probabilistic planner could still argue that she made the most rational choice, given the available information, and not change her assessment retrospectively. Now, instead, the difference between before and after re-emerges in the present as ‘anticipation of a subsequent reassessment’ (Luhmann, 1992, p. 143, our translation). One already knows in the present that in the future one may regret one’s decision, but one must decide anyway. By what criteria?

This complex situation has given rise to two distinct approaches, which share the basic anxiety but adopt significantly different strategies: on the one hand, future-making practices (which we will deal with in the next section), and on the other hand, the exploration of preparedness (which will be the object of the following section).

Future-making

Reacting to these experiences, researchers in the field of organization theory have been increasingly challenging the assumptions of rationalistic planning, revisiting the relationship between organizations and uncertainty. In a ‘rediscovery of the future’ (Wenzel et al., 2020, p. 1442), they refer to the experience of new forms of self-generated uncertainty, which not only are not neutralized by planning but of which planning itself may be one of the causes. As Wenzel (2022, p. 848) writes, people are becoming ‘increasingly dissatisfied with the results that extant procedures and techniques for managing the future generated’. Several authors claim that the future returns to being a problem because of the performative component of predictions (Merton, 1936).⁵ Predictions do not address an already determined future that allows one to see in advance (‘pre-vision’), but the future that will be generated resulting from present decisions and actions, which are also influenced by the available predictions. The present expectations about the future act on the future they are supposed to anticipate (Beckert, 2016, p. 237, 2021, p. 6; MacKenzie et al., 2007), setting in motion a circularity that produces further uncontrollable uncertainty – all the more dangerous, the more one assumes to be protected from future-related surprises (Beunza & Stark, 2012; Esposito, 2013).

The researchers who identify with this trend tend to adopt an *interventionist* approach, referring to ‘future-making practices’ (Comi & Whyte, 2018; Flyverbom & Garsten, 2021; Heimstädt & Reischauer, 2018; Thompson & Byrne, 2022; Whyte et al., 2022) by which ‘actors produce and enact’ (Wenzel et al., 2020, p. 1442) or ‘proactively shape’ (Beckert, 2021, p. 3) the future. This interventionist attitude has a tradition in managing the indeterminacy of the future, frequently expressed in the formula: ‘The best way to predict the future is to build it’⁶: already in the 1970s, the sociologist Bettina Huber (1974, pp. 29–39) proposed a shift from prognosticating to creating the future. Today, the proposed future-making practices programmatically move from an orientation

towards the future guided by the calculation of *probabilities* to the active production of *possibilities* that intervene in the course of things (Amoore, 2013). In this type of approach, performativity turns from a problem into a resource: future-making practices are ‘performative by their very nature’ (Flyverbom & Garsten, 2021, p. 1) because they address the future explicitly as the result of present actions.

This attitude aims to maintain and recognize the problematic nature of the open future and to handle it more adequately. The premise is the well-known need for many organizations, primarily in business, to seize and exploit new opportunities, overcoming and sometimes disrupting the forms established in the present (Schumpeter, 1942/1976, pp. 83–84). It is a matter, in Shackle’s (1979, p. 8) terms, of positively exploiting ‘the void of time-to-come’, which since it does not yet exist cannot offer resistance, and shaping it by one’s choices.⁷ But if probabilistic calculus does not help, what tools can be used to handle such improbable possibilities, which for Knight are notoriously the source of profit?

Imagined futures

In numerous publications, Jens Beckert (2016, 2021; Beckert & Bronk, 2018) suggests orienting to future states that cannot be calculated but can be imagined, constructing fictional scenarios and inventive narratives. Such ‘imagined futures’ guide agents’ behaviour and decisions, generating creative actions that change the conditions of the future. The active use of imagination thus generates possibilities that would not otherwise exist, and those who have produced them will be ready to exploit and develop them. Such interventions in the future, however, are by no means arbitrary. The tools for engaging in the creative use of the open future are techniques such as business plans, discounted cash-flow models, strategic planning, technological projections or economic forecasting (Beckert, 2021; Beckert & Bronk, 2018, p. 13).

Several other authors adopt a similar approach. Thompson and Byrne (2022), for example, question the concrete way in which such ‘instruments of imagination’ are implemented in the concrete creation of imagined futures, and study to this purpose the multiplicity of situated practices that constitute ‘the discursive, embodied and material dimensions of future-making’. Investigating how organizations ‘shape and orchestrate futures’, Flyverbom and Garsten (2021) identify four different templates that performatively guide the temporal orientation of organizations: indicative snapshots, prognostic correlations, projected transformations and phantasmagoric fictions. Comi and White (2018), in turn, explore the use of visual artifacts such as drawings, models and sketches to give form to the uncertainty of the future and to prefigure a realizable course of action.

These examples could be multiplied, but by now the position should be clear: it is about imagining future possibilities that are not necessarily probable and actively contributing to their realization. It is an approach that complexifies the temporal perspective of organizations by taking into account the dynamics of the relationships between different, mutually influencing futures and can serve to broaden the perspective to unexpected and possibly surprising events. But is this sufficient to confront the radical uncertainty of time-to-come and its circular self-generated nature?

The future as a new beginning

According to Shackle (1979, p. 7), whose theory is the reference of future-making-oriented approaches, the real challenge is not to imagine improbable possibilities in a controlled way, but to be able to confront the authentic ‘other’ that constitutes the beginning of the construction of an alternative reality. The role of imagination, according to Shackle, is to lead to choices originating a history that makes a difference – ‘takings-place’ which would not exist even as possibilities without that decision. Producing ‘possible contents for time to come’ (1979, p. 9), imagination generates innovative possibilities that can be inconceivable in the present, and as such cannot even be imagined. This is the main challenge of performativity: imagination can lead to events that are triggered by present action, but which are often very different from what the agents imagined – especially if other actors also make their own futures. The forms of counter-performativity (MacKenzie, 2006) are much more varied, different and unpredictable than those of performativity (Esposito, 2013). Embedded in the complexity of the world, of the plurality of actors and of the relationships between them, imagined futures often produce future states that could not be imagined in the past present. Imagination produces surprises that are often surprising even to those who initiated them. Future-making theory, which opens the perspective to the creative role of surprises, does not exhaust the complexity of Knight’s radical uncertainty: in addition to unexpected future events, one should also take into account those that are authentically unexpectable.

Preparedness: Dealing with non-expectable surprises

Future-making practices deal with the uncertainty of the future, but they only address the challenge of future surprises as ‘known unknowns’: future events whose probability cannot be calculated but can be imagined and possibly actively influenced in the present. However, they are of no use in answering our basic question: how can one manage the ‘unknown unknowns’ (Nielsen & Sørensen, 2017; Wynne, 1992) produced by present interventions in the future? How can one manage the unknown effects of one’s decisions in a genuinely open future?

It would involve having techniques that do not deal solely with the expectation of surprises, but with surprises that are non-expectable, because they depend on facts and circumstances that do not yet exist and cannot be imagined in the present – and therefore neither can they be predicted. For example, some unusual weather events can be expected to occur, even if they undermine the established procedures and are thus perceived as surprises – expectable surprises like floods or overflows that overtake current levees, which can be detected by examining the blind spots of current practices. The threat of climate change or new technologies that have never been tried before, however, is that they produce effects so novel that they could not even be conceived in advance, like the decrease in the number of insects, sex-changing lizards or increased volcanic activity – non-expectable surprises of which we only became aware in retrospect. How can we equip ourselves to deal with them? This is the subject of another vibrant debate that has recently emerged, centred on the notion of *preparedness* as governing of unpredictable outcomes (Anderson, 2010; Anderson et al., 2019; Collier,

2008; Collier & Lakoff, 2021; Keck & Sakdapolrak, 2013; Lakoff, 2015, 2017; Revet, 2020; Revet & Langumier, 2015).⁸

Readiness

The notion of preparedness, broadly defined as ‘the ability to effectively anticipate and act promptly in the face of an imminent threat’ (Bifulco et al., 2021, p. 8), differs from other concepts that describe alternative forms of anticipating the future⁹ precisely because of the focus on the unimaginability of the future. Preparedness is more than just *readiness* (Collier & Lakoff, 2021, p. 4; Lakoff, 2017, Chapter 1) – the organizational condition that enables rapid and efficient response to emergencies. Readiness is based on protocols to be activated and resources available when events occur (such as natural disasters, medical alerts, terrorist attacks or others) that are unforeseen but can be imagined in advance. Earthquakes are still unpredictable, but one can equip oneself with earthquake-resistant buildings and evacuation plans for the eventuality of their occurrence. One will then be better ready to face them. But we know, for example, that the results of scientific and technological research can produce consequences that no one would have imagined and that are only discovered after the fact; think of the adverse effects of X-rays or recently on speculation about the still unimaginable uses of ChatGPT (Roose, 2023). Much of the concern about climate change turns on such unpredictable effects, to which one cannot be ready. One knows that threats may arise, but one does not know what they will be or what form they will take, and one does not know what procedures and resources will be adequate to handle them. Can one be equipped to face this kind of self-generated uncertainty? Reflection on preparedness addresses precisely whether it is possible to ‘detect the unanticipated’ (Lakoff, 2017, p. 51) and develop methods for ‘thinking about the unthinkable’ (Lakoff, 2017, p. 23).

Enacting scenarios

The performative element underlying future-making is also taken into account in this approach, which analyses ‘enactment-based knowledge produced by “acting out” uncertain future threats’ (Collier, 2008, p. 225) and proposes ‘scenario-based exercises’ (Lakoff, 2017). But the way these future scenarios are used is significantly different than in future-making: they are not used to project one or more states to come that one tries to realize, but to ‘foster a sense of urgency’ and exercise ‘an agile response capability’ (Lakoff, 2017, p. 24). The scenarios used in stress tests (Stark, 2020), for example, do not serve to neutralize the surprise of the improbable events staged by preparing those involved to handle them, but rather to prepare them to confront the surprise as such – which presumably will be different from the unexpected event hypothesized in the scenario. The purpose of the futures imagined in the scenario is only to prepare for different surprises that are not imagined in the present. Thus, one does not prepare for one or several specific surprises, one prepares for being surprised, which is why scenario building needs to be accompanied by other tools aimed at non-specifically perceiving unexpected events before they become unmanageable, leaving them as undetermined as

possible: e.g. ‘sentinels’ (Keck, 2015; Lakoff, 2015) and ‘Early Warning Systems’ (Bifulco et al., 2021).

Whereas imagined futures are used ‘as if’ they were the future present (Beckert, 2021, p. 7), preparedness practices address possibilities that were not known and not imagined at first and may also be incompatible with each other and with present information. Being aware that present actions and decisions will produce a future that may exceed our present imagination, in the logic of preparedness one acts in a controlled way and tries to adjust to the consequences. The goal is not to bring about an imagined future (or a range of imagined futures) but to generate opportunities to learn in future presents.¹⁰

Futurization and defuturization

The two approaches of future making and preparedness address from different perspectives the same problem— the issue that almost half a century ago led Niklas Luhmann to argue that ‘the future cannot begin’ (Luhmann, 1976). In his enlightening and anticipatory essay, Luhmann had already criticized simplistic interpretations of the open future. In modern society, he claimed, the future is not a unitary reference but is divided into two mutually conditioning dimensions. The *present future* is the image (or the images) of the future that one can have or imagine today – based on the available information. But the *future present*, the real future given that will become actual at a later time as yet undetermined, is different from the present future because it results from a multiplicity of factors that did not previously exist and could not be considered as information. The complexity of the temporal perspective of modern society lies in the combination of both dimensions.¹¹

The open future, Luhmann argues, is not simply an indeterminate future in which ‘everything is possible in the long run’ (Luhmann, 1976, p. 284), but ‘a present future that leaves room for several mutually incompatible future presents’ (Luhmann, 1976, p. 278). The future, then, is not just open but can be more or less open. The openness increases when a greater number of radically diverse future presents are admitted (‘futurization’), and it decreases if the number of diverse futures becomes smaller (‘defuturization’) (Luhmann, 1976, p. 279). In a society that is becoming increasingly complex and includes more and more diverse possibilities, the challenge for decision-making is to be able to defuturize their future as little as possible.

From the perspective of social systems theory, the recent debate about the rediscovery of the indeterminate future can be read as a reaction to the increasing social complexity and a criticism of the defuturization achieved by probabilistic planning. Luhmann himself labelled statistical techniques as ‘techniques for defuturization’ (1976, p. 279). Without completely closing down the future by identifying it with a single future present, statistical procedures provide predictions that consider a limited number of scenarios that can be constructed in the future, assessing the probability of various options and promising to provide a rational basis for decisions. But this orientation refers only to one side of the future, on the basis of the information available at the time of the decision: to the present future. The open future also includes the future present, which is often different from the present future one considers when deciding. It does not come about in probabilistic percentages at 37 per cent or 71 per cent, but as 0 or as 1, and cannot be known

and calculated in advance. Indeed, the future present is the more different from the present future the more widespread planning is, since planning introduces additional complexity to the production of the future. Only the future present is truly future, in the sense that in the present (including the present future) it does not yet exist, since it also depends on decisions and actions that have not yet been realized. This is the future that cannot begin.

The performative aspects of predictions, from which the recent debate starts in its critique of probabilistic planning, derive from the intertwining of present future and future present. In any here-and-now, one decides and acts by orienting oneself to the available information, i.e. to the present future, and these decisions produce information that cannot be taken into account today but can change future conditions (the future present) even in very unlikely ways – up to the extreme case of ‘black swans’ (Taleb, 2007). Statistical programming cannot account for the possibilities generated by its own predictions (Mandelbrot & Hudson, 2004). Hence the recent dissatisfaction with the de-problematicization of the uncertainty of the future produced by the use of statistical procedures: it is not true that by managing the uncertainty of the present future with probabilistic planning one protects oneself from possible future damage, and it is not even certain that one can seize and exploit all opportunities.

But is it possible, Luhmann (1976, p. 279) asked, to make use of the future without beginning it and without reducing it to strings of anticipated presents? The appeal of future making practices is that they should enable shaping the future through the creative function of imagination. What advantages might be gained by confronting also the unimaginable? Combining future-making practices and the preparedness approach can enable to open up the future by admitting future presents that are as diverse as possible from each other and from the present future. Can it serve to futurize it? In the next section, we try to answer this question by returning to the issue with which we opened this article: How does the way to think about innovation change in times of self-generated uncertainty?

Preparedness and innovation

The debate on preparedness, focused on confronting disasters and coping with damage, would seem to have little to offer to those who want to use the future looking for positive opportunities to exploit. But the openness of the future, as risk theory argues, concerns not only possible future damage but also possible opportunities – for those willing to take them (Luhmann, 1993, pp. 18–19). Both, damage and opportunities, would not exist if the actors did not decide to take the risk – that is, to enact the open future. And in both cases, they can be very different from what the actors expected and imagined.

In this view, the preparedness approach, aimed at detecting unanticipated and unthinkable threats, can also be adopted in a positive sense to explore the ability to seize and exploit unpredictable opportunities – and then becomes much more akin to the current debate on future-making. From this perspective, the debate about the management of the uncertainty of the future can find enlightening insights in the research on organizational innovation, which investigates the possibility of using the openness of the future in a positive sense without constraining it to present planning and interests. The

underlying question then becomes whether one can find connections between the qualities that promote successful response to crisis and the ability to acknowledge was what not recognized as a resource (Stark, 2014, p. 62): ‘metrics that measure preparedness could look very similar to metrics for innovation’ (Kelly & Stark, 2002, p. 1525).

Kelly and Stark (2002) draw a parallel between the organizational factors that explain preparedness for crisis and those that generate innovation. In both cases, it is not a matter of predicting the future or acting on it, but of being ‘prepared for uncertainty’ (p. 1523) – adopting the attitude of the one who does not know exactly what she is looking for but recognizes it when she finds it (Beunza & Stark, 2003, p. 139; Stark 2009, pp. 174–175).¹² Connecting the issue of preparedness to that of innovation has a relevant advantage: while it is still not clear what it means to be prepared for uncertainty, we ‘already understand pretty well’ (Kelly & Stark, 2002, p. 1525) the characteristics underlying the innovativeness of organizations and can take them as a reference in analysing how organizations manage the future.

Increasing the diversity of the future

As in the debate on the rediscovery of the future in organizations, research on organizational innovation also identifies concrete practices, but instead of imagining possible futures, the purpose is to increase the diversity of still unimaginable futures. Desires, goals and evaluation criteria must then remain ambiguous, leaving room for ‘multiple, indeed rival performance principles’ (Stark, 2014, p. 67, emphasis added) – just as required by the futurization of a present future that, as we saw above, ‘leaves room for several mutually incompatible future presents’ (Luhmann, 1976, p. 278).

This means, for instance, that models are not used as examples of what one imagines or hopes might happen but as ‘regulatory devices’ to increase the ability to learn. In finance, for example, Stark (2014, p. 66) describes how traders confronted with risky and unpredictable futures use models to try to take into account what other traders might be observing and ask themselves ‘what am I missing?’ The goal is not to predict the future or act on it, but to carry out ‘reflexive modeling’ that helps to observe one’s own attitude and to make it more complex in face of unpredictable events. Or it also means that a preparedness-oriented organization (like an innovation-oriented organization) aspires to achieve ‘generative redundancy’ – which means not having more means (people or tools) available, but being able to consider more possibilities and more different from each other: ‘diversity of ties and means, lateral ties that cut across official vertical structures, organizations that can tolerate more than one way of doing things’ (Beunza & Stark, 2003, p. 153).

Conclusions

Dealing with the indeterminacy of the future is an enigmatic, complex and inherently paradoxical undertaking. The endeavour brings together the need for sufficient guidance to make decisions and set programs (Luhmann, 2018, pp. 109–10) and the need for sufficient flexibility to allow for innovative exploration and responses to unpredictable events, which is described in social systems theory as futurization of the open future.

This would require an active management of the unpredictability of the open future, without limiting its contingency. The recent debate on the rediscovery of the future can be read as a critique of the current ‘defuturization’ through probabilistic models, which de-problematize the uncertainty of the future by creating an illusion of certainty and are no more adequate to face the increasing complexity of the future.

The two approaches of future-making and preparedness address this issue from different perspectives. We propose to combine them referring to the management of innovation. This adds a purposeful dimension to the discourse about preparedness, aimed so far only at confronting damaging events: one can also be prepared to seize and exploit novel opportunities.

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ORCID iD

Elena Esposito  <https://orcid.org/0000-0002-3075-292X>

Notes

1. See below, section 2.
2. From the perspective of sociological systems theory, this transformation is related to society’s evolutionary shift to functional differentiation, which vastly increases the number and variety of references to be managed in communication and leads to a ‘temporalization’ of social complexity (Luhmann, 1980, 1997a, p. 743).
3. Risk sociology analyses the social consequences of this awareness – both possible harms and opportunities: Beck (1992) and Luhmann (1993).
4. Possible discrepancies in market behaviour were attributed to problems of information asymmetries or to the errors in human information processing highlighted by behavioural economics (Kahneman et al., 1982).
5. See also Wenzel et al. (2020, p. 1442), who observe a “‘rediscovery’ of the future’ in the sense of the ‘renaissance of the future as a prevalent and unknowable temporal category in organizational life(.) (. . .) produced through a pluralization of the ways in which actors engage with the future’.
6. This sentence has been attributed to various visionary figures, such as Abraham Lincoln, Peter Drucker, Alan Kay and recently the founder of Wikipedia, Jimmy Wales.

7. 'The most important planning resource which is supplied by the future is its being unknown': Luhmann 1997b, p. 368.
8. The concept of preparedness was originally developed in the context of mobilization for a nuclear attack during the Cold War and then extended to other potential emergencies (Lakoff, 2021, p. 30).
9. Pellizzoni (2020) discusses and compares prevention, deterrence, precaution, pre-emption and preparedness.
10. According to Luhmann, forecasts can only be provisional and their value lies 'only in the rapidity with which they can be corrected and in knowing what is important in this context, (...) in the rapid and specific adjustment to a reality that turns out differently than one had expected' (1992, pp. 140–141, our translation).
11. 'Under conditions of overwhelming complexity, (...) society will above all need forms and procedures of temporal integration that combine our present future with our future presents' (Luhmann, 1976, p. 280).
12. On a similar line, Comi and Whyte (2018, p. 1076) analyse how the use of visual artifacts – drawings, models and sketches – makes practitioners 'aware of uncertainties of which they did not know'.

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Author biography

Elena Esposito is Professor of Sociology at Bielefeld University and the University of Bologna. Her current research on algorithmic prediction is supported by an Advanced Grant from the European Research Council. Her latest book is *Artificial Communication. How Algorithms Produce Social Intelligence* (MIT Press, 2022).