

**Prospective Sensemaking and Narratives: The role of collective mental time travel (MTT)
in the prospective sensemaking narratives of a radically uncertain future**

Hassan Naveed, E.Tapinos, Dilshod Makhmadshoev, Laura Fernandez

Hassan Naveed-PhD scholar at the University of Strathclyde

Dr. E.Tapinos-Senior Lecturer at the University of Strathclyde

Dr. Dilshod Makhmadshoev- Senior Lecturer at the University of Strathclyde

Dr. Laura Fernandez-Professor at the Comillas Pontifical University

Abstract

Future can be punctuated with various forms of uncertainties. Some recent studies have conceptualised it as the radical uncertainty, which is characterised by the events that can't be allotted meaningful probabilities. Despite the perennial need to fathom and manage uncertainty, a comprehensive framework illustrating how the sense of radical uncertainty is made especially when the rationality-based probability models are only able to provide a very limited outlook of the future is missing. Harkening to these pressing concerns in the extant literature, this conceptual paper aims to depict the process of sensemaking of the uncertainty. Furthermore, the dimension of the prospective sensemaking is under researched in the literature of sensemaking. Therefore, the emphasis of this paper is to shed light on the prospective sensemaking of uncertainty by showing its linkages with the underexplored dimension of temporality (by discussing the novel concept of the collective mental time travel) and the narratives. This paper proposes a new comprehensive framework that shows that people make sense of a radically uncertain future with narratives and collective mental time travel is used to construct them.

Keywords: Radical Uncertainty, Sensemaking, Prospective sensemaking, Collective mental time travel (MTT), Narratives

Introduction

Sensemaking is defined as a process of attributing meaning to events in the environment by utilising stored knowledge, experience, values, and beliefs to novel situations to fathom them (Weick et al., 2005). It's been argued that sensemaking is unintentional and there are occasions for sensemaking for instance it occurs in the presence of uncertainty (Hayden, Mattimoe and Jack, 2021). Extant studies (Sharma et al., 2021), have identified various forms of uncertainty based on its source (characteristics of the firm, industry and environmental). A consensus on the precise definition of the uncertainty has remained elusive, with arguments hovering around the objective characterisation of the firm's environment (Milliken, 1987) or the subjective perception of the individual manager about the uncertainty in the environment (Michel, 2007). Milliken (1987; p.136), defined it as a "perceived inability to predict something accurately". In the similar vein, it's been defined as the absence of knowledge about the probabilities of the future state of events that may have an impact on the firm (Knight, 1921). This study has focused on this conceptualization of uncertainty and therefore where we had used the term radical uncertainty, we have used it in the sense of the Knightian uncertainty (O'Creevy and Tuckett, 2021). Regardless, under the circumstances of high uncertainty people increase their attempts at sensemaking (Gilpin, 2008). Previous studies on the sensemaking have majorly focused on the retrospective sensemaking (Sandberg and Tsoukas, 2015; Walls, 2017) which is directed at the reconstruction of the past events (Hayden, Mattimoe and Jack, 2021). But the dimension of the prospective sensemaking which focuses on the on the events that may take place in the future (Konlechner et al., 2019), has remained undertheorized (Kaplan and Orlikowski, 2013). In addition, the dimension of time and temporality is central in the literature of sensemaking (Dawson and Skye, 2018). Studies on sensemaking have burgeoned, but the concept development and the theorization of various approaches to time and temporality has just been recently recognised (Brunelle 2016; Dawson and Sykes 2016). Moreover, the new concept of the metal time travel is discussed in the field of competitive sensemaking (Cattani et al., 2014). Mental time travel encompasses both episodic memory (re-examining the past events) and episodic future (imagining the potential future) (Suddendorf and Busby, 2004). But as these dimensions have been majorly studied in silos, it's been prescribed to incorporate both dimensions in the future studies (Suddendorf, 2010), which would make it a collective mental time travel (Merc, Topcu and Hirst, 2016). Complementarity, time sequence of the narratives has also been considered a potent heuristic device for the sensemaking (Patriotta and Gruber 2015). Narrative refers to the ever-evolving descriptions of the ongoing experience which connects "memories of the past, perception of the present and the expectations about the future" (Beach 2021, p.2). Again, extant studies have majorly discussed retrospective sensemaking narratives (Abolafia, 2010). Harkening to these gaps in the extant research, present study proposes a new theoretical framework to the sensemaking literature by exploring linkages between radical uncertainty (O'Creevy and Tuckett, 2021), prospective sensemaking (Rosness et al., 2016;), the new concept of the collective mental time travel (Michaelian and Sutton, 2019) and narratives (Andersen, Ravn, and Thomson, 2020). Essence of this novel theoretical framework lies in understanding how people make sense of uncertainty using prospective narratives and the role of collective mental time travel in the formation of these narratives. Doing so this study has not only extended the theory on sensemaking and narratives but have added a new aspect to them by including the lens of collective mental time travel which is originated from the psychological and the memory studies (Blustein, 2019).

Literature Review

Radical Uncertainty

Ontological unpredictability dubbed as aleatory uncertainty (Holmes and Westergen, 2020; Packard Clark, 2020) not only revitalises Knight's view on uncertainty (Knight, 1921) but also converges with other contemporary research that have construed it as "Unknowns Unknowns" (Burrows and Gnad 2018, p.6). Central idea communicated by all of them is that uncertainty cannot be predicted and thus decision making under it cannot be tied to probabilistic measures (Rindova and Courtney, 2020). This takes attention towards the concept of radical uncertainty which is defines as the equivocal situations in which the uncertainty regarding the ramifications of the actions is so profound that it is both difficult to set up a problem structure to select between alternatives and impossible to represent the future in terms of knowable and exhaustive list of outcomes that can be attached probabilities (Tuckett and Nikolic, 2017). Regardless, the validity of the studies that have pursued the concept of uncertainty objectively (Oriani and Sobrero, 2008; Lee et al., 2008; Tong and Li, 2011) is severely challenged. Such views also herald the need to fill lacuna in the subjective perceptions of uncertainty (perceived uncertainty) that more accurately depicts the concept of uncertainty (Sniazhko, 2019). Radical uncertainty accentuates the notion that future states of the world and the ramifications of the actions are eclipsed by the imperfect knowledge (Kay and King 2020). Researchers promoting the view of radical uncertainty debunks the thoughts of conventional economics for tying the behaviour of people with the standard utility maximising models (Schakleton, 2020). It also departs from the views of game theory and economic behaviour (Neumann and Morganstern, 2007). In the same vein, it rejects the possibility of any probability distribution that is profusely studied in the studies of choices under risk (Friedman and Savagae, 1948). Justification of rejecting such views lies in the context of decision making under radical uncertainty which is indeterminate and equivocal. Therefore, even assigning relative probabilities to various states occurring becomes impossible (Lehner, 2002). And such phenomenon is not only found in economics, rather it pervades in commercial organisations, politics, finance, and government (King, 2016). Let alone the research on uncertainty in economics ignored the fact that economic data and models illustrates the world as it really is (Kay and King 2020). Extant research had also discussed certain situations in which, ex post, it is cumbersome to know whether a specific decision has culminated into a subsequent event or not. Innovation is one instance of such a situation which is an element of radical uncertainty (Tuckett and Nikolic, 2017).

Regardless, studies exploring decision making under such radically uncertain contexts are scarce (Tuckett and Nikolic, 2017). Radical uncertainty has also been ignored into the economic and finance models that has precipitated into financial and economic crisis (Gigerenzer, 2015). Partly, the reason behind such an instance is pursuing uncertainty in an objective way (Li and Chi, 2013). Furthermore, uncertainty is predominantly synched with the probabilistic decision making where qualitative assessments and subjective perceptions decision makers have been largely ignored (Knight, 1921) in the extant literature. It is evident that probabilistic decision making is not the answer. Thus, the question that now prevails is what other strategies of decision making should be pursued in uncertainty. Harkening to such question's authors like (Kay and King 2020, p.81) have recommended exploring reference narratives, secure reference narratives and contextual reasoning to manage uncertainty.

Sensemaking and Uncertainty

Sensemaking is defined as “the process through which people assign meaning to issues or events that cause the current state of the world to be different from the expected state” (Cristofaro 2021, p.1). It is also deemed as a conversational and narrative process (Maitlis and Christianson, 2014). Shocks triggers the sensemaking processes and the most prevalent sensemaking events that initiates shocks are uncertainty and ambiguity (Dortland, Voordijk and Dewulf, 2014). Decision theory and cognitive theory have provided prescriptions of dealing with uncertainty. But making sense of uncertainty had shown properties of retrospection, identity construction, continuation, extracted cues, and focus on plausibility rather than accuracy caused the researchers to trump theory of sensemaking over the decision theory (Lundberg, 2000; Weick, 1995). Deeming the realm of innovation highly uncertain studies like (Ramiller, 2001) have signified the importance of strategic sensemaking and have left ample room for the future researchers to explore metaphors and their relationship in constructing sensemaking. Even outside the context of innovation, sensemaking is pronounced when individuals are uncertain (Kramer, 2001). Classifying uncertainty as radical discontinuous change, the imperative need to explore human sensemaking in the future research has been highlighted by (Malhotra, 2001) where the logic of pre-determination fails to deliver, and existing knowledge is static rational and without context. Such views seek a departure from information processing to sensemaking or personal construction theory where humans make sense of their experience to anticipate the events of the future (Kelly, in Malhotra 2002). Linking sensemaking with actionable knowledge, high reliability theorists have called for taking attention towards heedful interrelating, improvisation amidst action and diversity in views while tackling uncertainty (Carroll, Jenny Rudolph and Hatakenaka, 2002). Others who have explored the uncertainty due to the social impact of technology have highlighted the lack of emphasis on the intersubjective dialogue and thus sensemaking processes where existing logic models can’t sufficiently address the uncertainty, change and complexity (Stapleton and Murphy, 2002). Similar stance has shown eminence in the literature of organizational literature before which argues that the residents of the social spaces don’t act in rational ways because of ambiguities and complexities which are difficult to illustrate in formally logical terms (Stapleton, 2001).

Extant literature misses the reality of everyday uncertainty and the requirement of reframing business issues or altering the mental models of the managers all of which is required to put future studies at the core of change, learning and organisational thinking (Burt and Heijden, 2003). In addition, there are lack of empirical studies when it comes to future studies (Bell, 2001). Even the domain of decision making has considered lesser exploratory thinking in a changing environment (Hines, 2002). In such changing and unpalatable environment, where single forecast is of meagre importance (Cairns et al., 2004) and the imagination of the multiple future is required, sensemaking has been heralded as a wake-up call for the management (Burt and Heijden, 2003). Literature signifies that situation fraught with uncertainties require the use of sensemaking and process of social construction more than the straightforward calculations which are missing under such situations. Hence, they promote the embeddedness perspective over a hyper rational man taking economic decisions in the light of their costs and benefits independent of others (Doerr, Manev and Rizova, 2004). On the contrary empirical literature focusing on the sensemaking of the technological innovation has deemed organizational innovativeness (Dougherty et al., 2000), and the intersubjective discursive nature of sensemaking (Wright et al., 2000) responsible for sensemaking and the strategies formed by the organizations underexplored. Departing from these views research like (Doerr, Manev and Rizova, 2004) have shifted the focus to social network

positions affecting sensemaking from simply how managers in the realm of technology interpret the situations in their organizations.

Other studies (Sayegh, Anthony and Perrewe, 2004) have rejected the existing rational and structured decision protocols that are profusely debated in the literature of the organizational decision-making theory and have called for more research in the realm of schema-guided sensemaking of uncertainty which is marked with limited time and information. Similarly, others have argued that under the situations of strategic crisis, meaning making process like sensemaking are underdeveloped (Scott and Barrett, 2005) and thus require more research. Literature on entrepreneurs who are exploring new technology, under the situations of uncertainty where ramifications of the decisions is difficult to assess calls for more attention to sensemaking (Ravasi and Turati, 2005). Such research validates the benchmark research on sensemaking which has construed it as an ascription of meaning to a complex reality and an act of interpretation that progressively imposes an order on reality and thus assist in making sense of the external environment where it's hard to fathom cause and effect relationships (Ravasi and Turati 2005).

Prospective sensemaking and Uncertainty

Prospective sensemaking is defined as the “sensemaking processes where the attention and concern of people is primarily directed at events that may occur in the future” (Konlechner et al., 2019, p. 710). Extant literature on sensemaking has majorly focused on retrospective sensemaking as argued by Weick (Sandberg and Tsoukas, 2015; Walls, 2017). Conversely more recent stream of literature has taken attention towards the undertheorized concept of prospective sensemaking using which sense of the future can be made (Bolander and Sandberg, 2013; Kaplan and Orlikowski, 2013; Konlechner et al., 2019; Rosness et al., 2016; Stigliani and Ravasi, 2012; Tapinos and Pyper, 2018). Even the ISI Web of science has only shown three publications with the key term prospective sensemaking, whereas it only appeared in 12 publications in the topic field (Rosness et al., 2016). Future oriented sensemaking is undertheorized because of which there is an increasing trend of contemporary studies towards understanding the unfolding of the future works in the organizations using prospective sensemaking (Brown, Colville and Pye, 2015; Sandberg and Tsoukas, 2015). Validating the fact that sensemaking can be prospective instead of just retrospective, (Ramirez and Ravetz, 2010) have asked for more research in the field of feral futures in which a shift from the extended rationality (probabilities) to the meta-rationality (sensemaking, conversation, plausibility) is required. Recent studies have also interpreted Weickian approach of sensemaking to be extended beyond present and have linked prospective sensemaking with the exploration and interpretation of an imagined future (Dortland, Voordijk and Dewulf, 2014). Validating the similar views studies like (Sonenshein, 2010) have deemed Weickian sensemaking to be both retrospective and prospective. Conversely, certain proponents of this forward oriented prospective sensemaking have later moved away from it by considering this process to be a future perfect thinking that is actually a retrospective understanding of the imagined event (Gioia et al., 2002, in Maitlis and Christainson, 2014). But more recent studies have returned to idea of exploring prospective sensemaking to consider the missing temporal orientation of the sensemaking (past, present and future) to create the elaborated models of sensemaking (Kaplan and Orlikowski, 2013; Maitlis and Christainson, 2014). Moreover, literature argues that where retrospective sensemaking is triggered or magnified by uncertainty, prospective sensemaking can occur spontaneously as part of everyday work (Rosness et al., 2016). Similar views have been validated by (Sandberg and Tsoukas, 2015), who have challenged the preferential treatment of disruptive episode at the expense of everyday sensemaking entangled in routine activities and thus have prescribed future research to shift towards immanent sensemaking.

Collective Mental Time Travel (MTT)

Mental time travel refers to the simulations in which individuals use episodic memory (re-examining the past events) and can create an episodic future (imagining the potential futures and projecting themselves into the possible future scenarios (Suddendorf and Busby, 2004). Episodic memory is differentiated from semantic memory by other studies which have attributed the later to knowing something explicitly (Tulving, 2002). In addition, episodic memory is differentiated from implicit memories like expertise, habits, habituation, and conditioning (Levine, 2004). Mental time travel is contingent on both episodic memory and episodic future. Despite this duality, most of the studies have just focused on the episodic memory and thus validating more research on the other dimension of mental time travel which is episodic future (Suddendorf and Busby, 2004). Conversely, there is a perceived fundamental asymmetry between the past and the present because there is a direction when it comes to the causal arrow of the time. Thus, rather than studying episodic memory and episodic future dubbed as episodic foresight systems in silos, protagonist of such arguments has shown an inclination of studying them together because both constructs share a lot of characteristics (Suddendorf, 2010). Such views are validated by (Cuhls, 2017) who have attributed the stimulation of future thinking to mental travel and have shown no hesitance in combing the time travel. Furthermore, research like (Schacter, Addis and Buckner, 2007, 2008) have heralded the overwhelming evidence for a considerable overlap between remembering the past and imagining the future together even at the cognitive, neural, and phenomenological levels. Drawing convergence with such views some studies have discussed auto-noetic consciousness (Droege, 2017), in which individuals become aware of their prolonged existence across subjective time (Markowitsch and Staniloiu, 2010) from past to the present and into the future (Zaman and Russell, 2021). Therefore, there is call for considering episodic memory as a starting point (Blustein, 2017) along with the duty to incorporate the future generations (Mulgan, 2008).

By challenging the isolated view of individual's mental time travel (Perrin and Michaelian, 2017), study by (Michaelian and Sutton, 2019) has attempted to fill such gaps by studying collective time travel because literature regarding the individual's duty to imagine the future does not exist. Expounding the pivotal component of the mental time travel (MTT) namely meta representations which depict the joint relationship between the present reality and the alternative representations of reality, essence of collective time travel gets revitalised again (Redshaw, 2014). Even the studies that have focused on the episodic memory have shown inclination towards its adaptive function of using past records to make decisions for the present and the future (Tulving, 2005). This stance has been partially validated by (Sayegh, Anthony and Perrewe, 2004), through linking the narrative schema and past experiences of the decision makers with their action under the uncertain situations that are characterized with lack of information. On the contrary, paying heed to the neglected concept of the future thinking authors like (Spuznar, 2010) have discussed its cognitive ability to pre-experience the future events mentally and working in the present to regulate them. Psychology and neuroscience are level pegging with the argument of synching episodic system with both past and future events (Suddendorf, 2010). In the same vein, studies focusing just on the episodic memory when it comes to exploring mental time travel ignores the fact that contemplating future lies at the core of anticipating the ramification of the individuals' behaviour (Atance, 2015). Other precedents (Seligman et al., 2013, 2016) that have accentuated this lacuna of ignoring episodic future calls more research on the overlooked dimension of the MTT (future-oriented thinking) because of the extant studies' predisposition towards memory processes and the causal potency of the past events. Baumeister and Masicampo (2010), have strengthened the similar views by stating

that episodic memory is developed more for the future simulations rather than merely replaying the past.

Hence there is ample empirical evidence in the extant literature of ignoring the dimension of the future oriented thinking and not studying the episodic memory in conjunction with the episodic future dubbed as collective time travel. Where such gaps were highlighted by the above-mentioned studies, others have linked conscious thoughts regarding the future with prospection (Gilbert and Wilson, 2006). Mind wandering in the future had culminated into a better performance on protracting the gratification that is tied with maximizing benefits (Smallwood, Ruby and Singer, 2013). Such wandering in the future is predominantly tied with making predictions in the future. Contemporary studies have called for a change in emphasis from merely predicting a single future to anticipating multiple future and thus have coined the term pragmatic prospection in which multiple possibilities and contingencies are considered from which only few will be realized (Baumeister and Landau, 2018). These studies have thus linked pragmatic prospection with planning in which past, present and future are integrated to construct a future action which is a significant and a categorical characteristic of the human mental life (Baumeister et al., 2020). This suggest that for future research a shift from mental aspect of the mental time travel (MTT) to the temporal aspect of the MTT is prescribed. Such prescriptions call for recursive representations (Redshaw, Bulley and Suddendorf, 2019) of the MTT with a specific forward-looking or backward-looking temporal orientation (Redshaw and Suddendorf, 2020). Zhang and Hudson (2018), have validated these arguments who have construed that the research on the temporal aspect of the mental time travel is still in infancy.

Moreover, studies that have discussed temporal reasoning (before and after relationships) and temporal updating (spatial location), have paid only a trivial attention to the use of vocabulary and spatial metaphors that give voice to the abstract idea of the time (Ordas, 2020). Such studies have ignored the pivotal role that narratives can play in becoming the language of this process of mental time travel as they connect event memories into a recoverable whole that is organized causally and temporally around the goals of the subjects (Keven, 2016). To further such thoughts and galvanize future research, a new concept of narrative time was introduced, in which time was treated as chronotype, foreshadowing and sideshadowing to contest the linear chronology of time (Pedersen, 2009). Others have taken attention towards undertheorized projective narratives and their use in sensemaking and entrepreneurial agency that illustrates the process of continuous framing and reframing of past events and future aspirations an entrepreneurial journey unravels over the period (Garud, Schildt and Lant, 2014).

Under the thread of the mental time travel, it is process, primacy of prospection in it and narratives as a linguistic tool to articulate the process of mental time travel is discussed. This warrants some discussion on the literature of prospective sensemaking and narratives simultaneously, in the light of the dimension of time and temporality.

Narratives

Narratives are described as the “dynamic, ever-evolving chronicle of your ongoing experience, linking memory of the past, perception of the present, and expectations about the future” (Beach 2021, p.2). Early theories have just defined the concept of narratives (Bruner, 1990). More recent theorists have built on this concept and have considered narratives vital for the mental organisations by focusing on both expression of inner states of the individuals and their tendency to fathom inner states of others (Tomasello et al., 2005). Where (Gazzaniga, 2000) have just focused on the inner speech in which human mind build narratives of experience. Other studies have attributed effectiveness of such narratives to the conscious processing (Baumeister and

Masiacampo 2010) missed by the former. Such findings became the linchpin for the studies like (Tucket and Nikolic, 2017) to introduce conviction narratives anchored in the kernel of consciousness and communication. But this research has not incorporated other relevant features of narratives. Studies like (Barthes, 1977), validate this argument by discussing the propensity of individuals to string the episodes together into a narrative a trait that is universal and automatic (Wyer, Adaval, and Colcombe, 2002). Let alone conscious rehearsal of distinct events play a significant role in forming causal links between them. (Wegner, Quillian, and Houston, 1996). Moreover, experiences are allowed by narratives to be ordered in time (Mar, 2004), so that they can become chunks that are manageable (Miller, 1956). In the same vein, narratives are known to synch goals with plans (Miller, Galanter and Pribram, 1960 that imitate or disclose consequences (Brooks, 1992). Hence there are copious other attributes of narratives that go beyond what has been discussed in research like (Tucket and Nikolic, 2017).

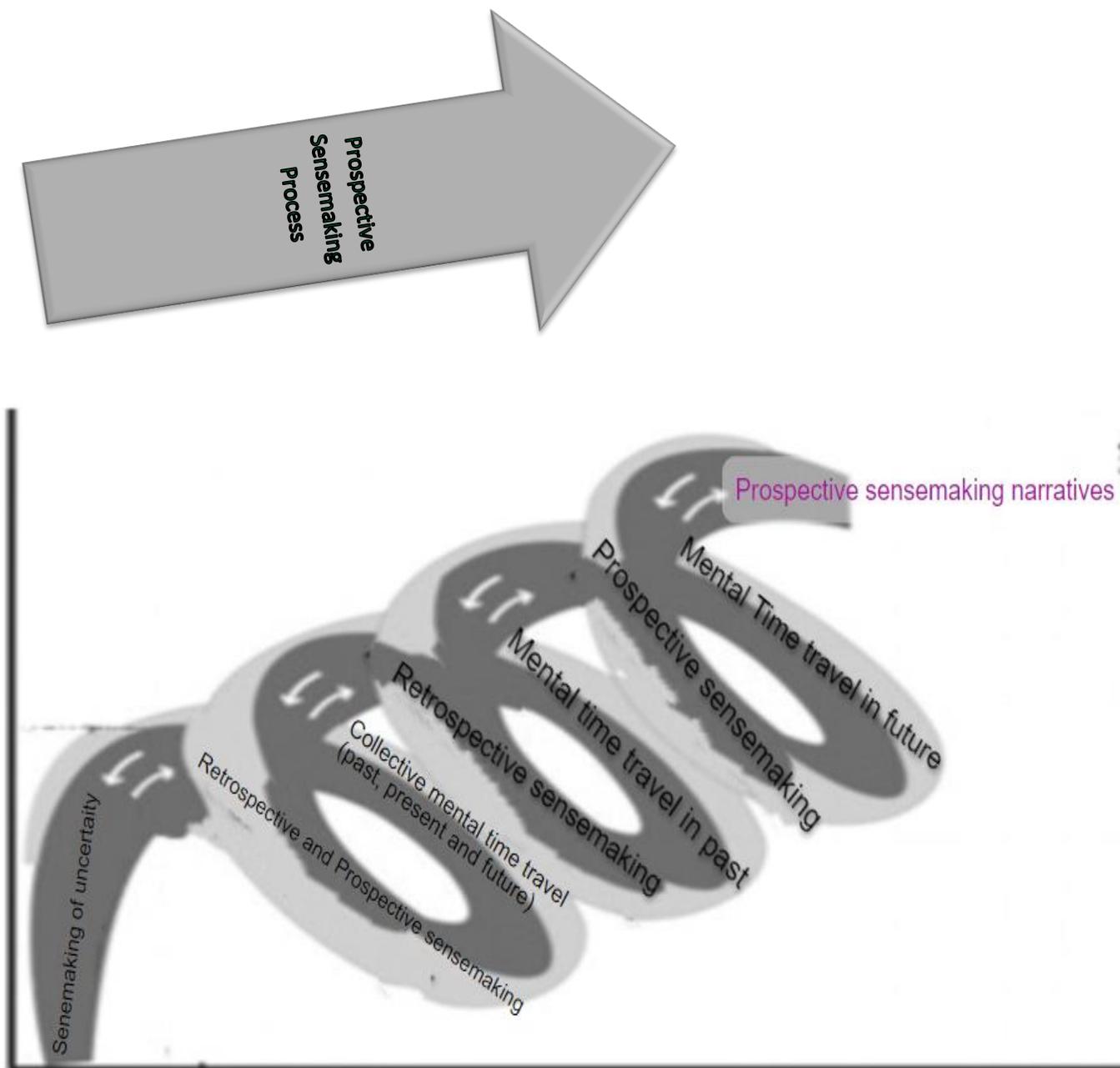
Integrated View: Prospective sensemaking, Collective Mental time travel and Narratives

Predominantly researches that have studied time with narratives accentuate a linear movement across time. Identical dominance, but now with the linear view of temporality is evidenced in the literature of sensemaking where past is utilised to make sense of the present (Whittle et al., 2016). Such findings draw convergence with the studies of (Weick, 1995) who has given past the centre stage for triggering the sensemaking processes amidst the unforeseen events in which people try to determine the plausibility of such unusual circumstances. This objective view of linear clock times (Gabriel, 2000) has been challenged by more recent research (Brunelle 2017; Reinecke and Ansari, 2015) who have deemed such views myopic because they are devoid of multiple perspective of time and temporality. These contradictory studies side with the views of (Boje, 2008, 2011) who has highlighted the significance of antenarrative and thus the future oriented prospective sensemaking of the future. Protagonist of Antenarratives challenges the studies promoting Aristotelian, backward glance of Weickian or Reicoeurian view (Sarpong, Eyres and Batsakis, 2018). Essence of this critique lies in promoting strategies while connecting past, present and future in a linear way (retrospective sensemaking). Therefore, such studies ignore the unfinalized prospective narratives that are forward looking in which time is indeterminate and non-linear, especially when individuals are making future scenarios of the ongoing and the emerging uncertainties (Dawson and Sykes, 2019). Despite its growing importance, prospective sense making is less examined and is an undertheorized construct of the sense making. Let alone transition from individual to collective sensemaking, after incorporating the related material and conversational practices requires an integrated theoretical framework which is missing in the extant literature (Stigliani and Ravasi, 2012). Therefore, there is ample validation for the argument that more research is required on multiple conceptions of time (Gersick, 1994), temporal fluidity (Reinecke and Ansari, 2015) and temporal flows that are non-linear (Hernes, 2017). Pursuing more research in the field of fluid stories can offer alternative scenarios that can assist competing meanings and give enough room for the equivocal narratives that can widen the pathways for the future possibilities (Sillince, Jarzabkowski and Shaw, 2012). In addition, by highlighting the function of prospective sensemaking in envisioning the desirable futures, extant research has asked for more research to see how various projects unfold over the period (Selsky and Parker, 2010). In the same vein multiple sensemaking has also been discussed in which past, present and future and continuously interweaving and thus are in endless flux (Reissner and Pagan, 2013). Other literature has accentuated the role that the temporal component plays in the processes of the decision-making constituting prospective thinking which is unexplored in the extant literature (Lombardi et al.,

2017). Such views have been validated by (Konlechner et al., 2019) as well who have deemed the construct of the prospective sensemaking in the change processes undertheorized.

Therefore, based upon the gaps identified in the extant literature the following conceptual framework has been proposed:

Figure1: Proposed Conceptual framework

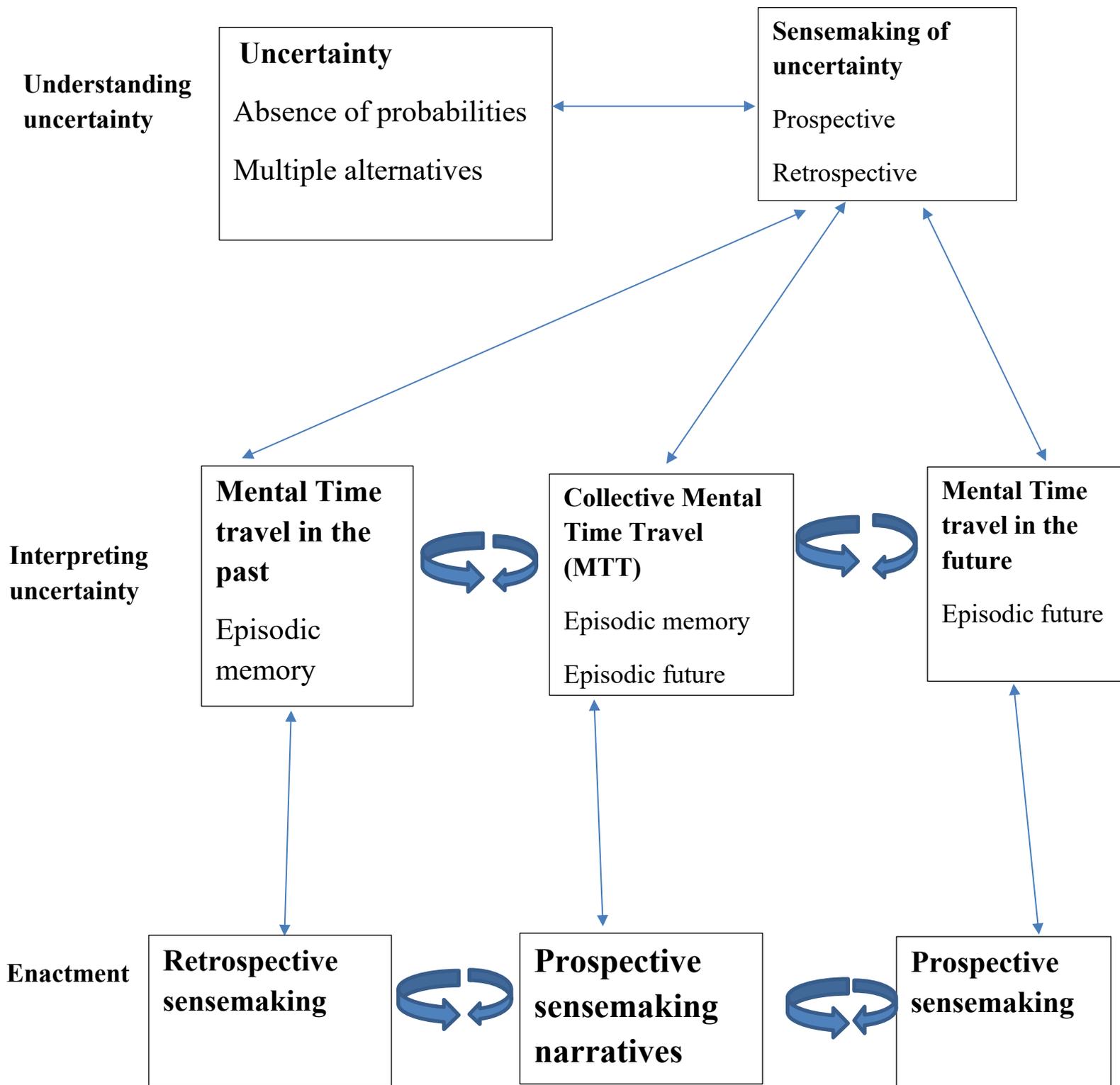


Explanation of the linkages in the conceptual framework:

This paper has drawn on copious concepts, literature streams and theories to arrive at the conceptual framework proposed. To advance the research on sensemaking theory (domain theory) new perspectives have been drawn from various method theories like prospective sensemaking, collective mental time travel (MTT) and narratives (Jaakkola, 2020). Under the situations of the radical uncertainty future eludes quantification (Johnson, Bilovich and Tucklett, 2020) and thus it's not possible to calculate probabilities (Tuckett and Nikolic, 2017). Such situations seek a departure from extended rationality to meta-rationality (Ramirez and Ravetz, 2010) that signifies heightened attempts at the sensemaking (Gilpin, 2008). Extant literature has majorly focused on retrospective sensemaking, ignoring the dimension of temporality and thus prospective sensemaking in which sensemaking can be even directed at the future (Kaplan and Orlikowski, 2013). Furthermore, the dimension of immanent sensemaking is scarcely researched using which people tackle everyday uncertainties (Sandberg and Tsoukas, 2015). This accentuates the importance of time and temporality in the overall process of sensemaking. Therefore, the framework proposed has included the important lens of collective mental travel (MTT) alongside the dimension of various sort of sensemaking. Underline argument is that people connect past, present and the future (Zaman and Russell, 2021) to make sense of uncertainty. Literature on mental time travel (Michaelian and Sutton, 2019), has majorly explored time travel in the past (episodic memory) and has neglected the dimension of time travel in the future (episodic future). To incorporate this lacuna in research the proposed framework has incorporated the theoretical lens of collective mental time travel (MTT) to explore both episodic future and episodic memory. Framework reflects that the prospective sensemaking culminates into the narratives. It is proposed that the prospective narratives broaden the decision-making theory by understanding the situations of radical uncertainty in which traditional models of decision making failed to hold (Tuckett and Nikolic, 2017). Individuals string the episodes together into a narrative a trait that is universal and automatic (Wyer, Adaval, and Colcombe, 2002). Moreover, experiences are allowed by narratives to be ordered in time (Mar, 2004), so that they can become chunks that are manageable. As the framework depicts that people move back and forth in time while making sense of the radical uncertainty, narratives help them in generating multiple and flexible relationships between the past, present and the future. In addition, Strategic narratives are a vehicle of prospective sensemaking, still their efficacy in shaping the beliefs about the future is underexplored (Rindova and Martins, 2021).

Figure 2 is an illustration of this explanation showing interlinkages in between the constructs prosed in the conceptual framework, which is depicted in figure 1, hence transforming it into the theoretical framework.

Figure 2: Elaborated Theoretical Framework



Discussion and concluding remarks

Firstly, this research has introduced a new theoretical framework which depicts the process of prospective sensemaking and its culmination into narratives of the future amidst uncertainty. Therefore, by exploring the dynamics of the prospective sensemaking, this study aims to advance the theory on sensemaking which was predominantly concentrated on just retrospective sensemaking in the extant research (Cunliffe and Coupland, 2012; Plowman et al., 2007; Rosness et al., 2016; Sandberg and Tsoukas, 2015; Stigliani and Ravasi, 2012). Doing so it contributes to the post-Weickian thought (Kaplan and Orlikowski, 2013) and thus pays attention to the theory of prospective sensemaking which has been undertheorized in the extant research (Konlechner et al., 2019; Sandberg and Tsoukas, 2014). It has been argued that the emergence of the tendency to think prospectively about the future ramifications or behaviours while tackling the current actions is an essential precedent to strategic decision making (Lombardi et al., 2017). Despite its relevance, future sensemaking has been scarcely explored and the recent studies have shown a growing trend of utilising prospective sense making to better fathom the unfolding of the future work in the organizations (Reid, 2021). Hence, present study has become a part of this growing trend by delving deeper into the dynamics of prospective sensemaking. Secondly, the dimension of time and temporality has been deemed significant under the conditions of uncertainty (Wood, Baker and Fisher, 2021), yet it has been underexplored (Dawson and Sykes, 2019). Therefore, this research has also accentuated the use of collective mental time travel in the formation of the prospective sensemaking narratives. Doing so, it contributes to the literature on the mental time travel which has previously focused majorly on the episodic memory. By discussing both episodic memory and episodic futures this research fills this underlying gap in the extant literature pertaining to the collective mental time travel (Michaelian and Sutton, 2019). Theoretical comprehension of the time related to managerial sensemaking is not complete and thus require further understanding (Lundgren-Henriksson and Tidström, 2021). Henceforward, by including the notion of the collective time travel, this study enhances the understanding on the temporal orientation of the sensemaking processes which improves the understanding of the underlying concept (Konlechner et al., 2019). Thirdly, this study has prescribed a departure from the academic illusion of considering individuals as the desiccated calculating machines, and the use of mathematics and Bayesian probabilities which are only suited to a predictable environment (Ramirez and Ravetz, 2011). Thereupon, the new and alternative theoretical model that this study has proposed works under the situations of uncertainty in which the predictions have been deemed unreasonable (Gorling and Rehn, 2008) and challenge to the vanities of the exiting epistemological edifices is required (Ramirez and Ravetz, 2011). Therefore, this study has explored the narratives and perceptions of managers to make sense of an uncertain future, especially when the traditional probabilistic measures provide only a very limited outlook of the future. Because under the situation of the high uncertainty, narratives are used to underwrite and stabilize the premises of decisions and thus are used to make sense of the world (Gilpin, 2008). Formation of the social reality has been divided between the paradigmatic reasoning (or logico-scientific) and interpretive narrative reasoning (Jarva, 2014). This reflected a divide on quantitative/qualitative tirade in the field of future and the organizational sciences (Li, 2014). Current study has tried to understand future in terms of the organizational narrative sensemaking. This research is majorly concentrated on the future oriented interpretive sensemaking, therefore it's important to intervene and become a constituent of the organization's narrative sensemaking (Brassett and Reilly, 2015). Uncertain futures make it immanent for the people to form robust narratives that are potent enough to stand the test of time (Steen et al., 2016). On that account, this study has delved deeper into the field of

narratives in the situations of uncertainty and thus has also contributed to the literature on the organizational narrative sensemaking processes (Li, 2014).

References

- Abolafia, M.Y., 2010. Narrative construction as sensemaking: How a central bank thinks. *Organization studies*, 31(3), pp.349-367.
- Adejumo, G., Duimering, P.R. and Zhong, Z., 2008. A balance theory approach to group problem solving. *Social Networks*, 30(1), pp.83-99.
- Alaa Alaabed, F. and Mirakhor, A., 2017. Accelerating risk sharing finance via FinTech: nextGen Islamic finance. In *the 1st International Colloquium on Islamic banking and Finance* (pp. 1-10).
- Ale, B.J., Hartford, D.N. and Slater, D.H., 2020. Dragons, black swans and decisions. *Environmental research*, 183, p.109127.
- Andersen, D., Ravn, S. and Thomson, R., 2020. Narrative sense-making and prospective social action: methodological challenges and new directions. *International Journal of Social Research Methodology*, 23(4), pp.367-375.
- Atance, C.M., 2015. Young children's thinking about the future. *Child Development Perspectives*, 9(3), pp.178-182
- Barthes, R., 1977. Image, Music, Text. New York: Hill and Wang. *English Translation by Stephen Heath*
- Baumeister, R.F. and Landau, M.J., 2018. Finding the meaning of meaning: Emerging insights on four grand questions. *Review of General Psychology*, 22(1), pp.1-10.
- Baumeister, R.F. and Masicampo, E.J., 2010. Conscious thought is for facilitating social and cultural interactions: How mental simulations serve the animal–culture interface. *Psychological review*, 117(3), p.945
- Baumeister, R.F. and Masicampo, E.J., 2010. Conscious thought is for facilitating social and cultural interactions: How mental simulations serve the animal–culture interface. *Psychological review*, 117(3), p.945.
- Baumeister, R.F., Hofmann, W., Summerville, A., Reiss, P.T. and Vohs, K.D., 2020. Everyday thoughts in time: Experience sampling studies of mental time travel. *Personality and Social Psychology Bulletin*, 46(12), pp.1631-1648.
- Beach, L.R., 2021. Scenarios as narratives. *Futures & Foresight Science*, 3(1).
- Bell, W., 2002. A community of futurists and the state of the futures field. *Futures*, 34(3-4), pp.235-247.
- Blustein, J., 2019. Bridging the gap between the social science and the social ontology of collective memory. *Memory Studies*, p.1750698019876081.
- Boje, D.M. ed., 2011. *Storytelling and the future of organizations: An antenarrative handbook* (Vol. 11). Routledge.
- Boje, D.M., 2008. *Storytelling organizations*. Sage.
- Bolander, P. and Sandberg, J., 2013. How employee selection decisions are made in practice. *Organization Studies*, 34(3), pp.285-311
- Brassett, J. and O'Reilly, J., 2015. Styling the future. A philosophical approach to design and scenarios. *Futures*, 74, pp.37-48.
- Brooks, P., 1992. *Reading for the plot: Design and intention in narrative*. Harvard University Press

- Brown, A.D., Colville, I. and Pye, A., 2015. Making sense of sensemaking in organization studies. *Organization studies*, 36(2), pp.265-277
- Brunelle, P., 2017. Time in organization studies: An overview of the literature on the state of theory, research and practice.
- Bruner, J., 1990. *Acts of meaning*. Harvard university press.
- Burrows, M.J. and Gnad, O., 2018. Between ‘muddling through’ and ‘grand design’: Regaining political initiative—The role of strategic foresight. *Futures*, 97, pp.6-17.
- Burt, G. and van der Heijden, K., 2003. First steps: towards purposeful activities in scenario thinking and future studies. *Futures*, 35(10), pp.1011-1026.
- Cairns, G., Wright, G., Bradfield, R., Van Der Heijden, K. and Burt, G., 2004. Exploring e-government futures through the application of scenario planning. *Technological Forecasting and Social Change*, 71(3), pp.217-238
- Carroll, J.S., Rudolph, J.W. and Hatakenaka, S., 2002. Learning from experience in high-hazard organizations. *Research in organizational behavior*, 24, pp.87-137.
- Collins, J.A. and Fauser, B.C., 2005. Balancing the strengths of systematic and narrative reviews.
- Colville, I.D. and Murphy, A.J., 2006. Leadership as the enabler of strategizing and organizing. *Long Range Planning*, 39(6), pp.663-677.
- Cristofaro, M., 2021. Organizational sensemaking: A systematic review and a co-evolutionary model. *European Management Journal*.
- Cuhls, K.E., 2017. Mental time travel in foresight processes—Cases and applications. *Futures*, 86, pp.118-135.
- Cunliffe, A. and Coupland, C., 2012. From hero to villain to hero: Making experience sensible through embodied narrative sensemaking. *Human Relations*, 65(1), pp.63-88.
- Dawson, P. and Sykes, C., 2016. *Organizational Change and Temporality: bending the arrow of time*. Routledge.
- Dawson, P. and Sykes, C., 2019. Concepts of time and temporality in the storytelling and sensemaking literatures: A review and critique. *International Journal of Management Reviews*, 21(1), pp.97-114.
- Dortland, M.V.R., Voordijk, H. and Dewulf, G., 2014. Making sense of future uncertainties using real options and scenario planning. *Futures*, 55, pp.15-31.
- Dougherty, D., Borrelli, L., Munir, K. and O’Sullivan, A., 2000. Systems of organizational sensemaking for sustained product innovation. *Journal of Engineering and technology management*, 17(3-4), pp.321-355.
- Droege, P., 2017. Memory and consciousness. In *The Routledge Handbook of Philosophy of Memory* (pp. 103-112). Routledge.
- Edginton, B., 2010. Architecture as Therapy: A case Study in the Phenomenology of Design. *Journal of Design History*, 23(1), pp.83-97.
- Friedman, M. and Savage, L.J., 1948. The utility analysis of choices involving risk. *Journal of political Economy*, 56(4), pp.279-304.
- Gabriel, Y., 2000. *Storytelling in organizations: Facts, fictions, and fantasies: Facts, fictions, and fantasies*. OUP Oxford

- Garud, R., Schildt, H.A. and Lant, T.K., 2014. Entrepreneurial storytelling, future expectations, and the paradox of legitimacy. *Organization Science*, 25(5), pp.1479-1492.
- Gazzaniga, M.S., 2000. Cerebral specialization and interhemispheric communication: does the corpus callosum enable the human condition?. *Brain*, 123(7), pp.1293-1326
- Gersick, C.J., 1994. Pacing strategic change: The case of a new venture. *Academy of management journal*, 37(1), pp.9-45
- Gilbert, D.T. and Wilson, T.D., 2007. Propection: Experiencing the future. *Science*, 317(5843), pp.1351-1354.
- Gilpin, D.R., 2008. Narrating the organizational self: Reframing the role of the news release. *Public Relations Review*, 34(1), pp.9-18.
- Görling, S. and Rehn, A., 2008. Accidental ventures—A materialist reading of opportunity and entrepreneurial potential. *Scandinavian Journal of Management*, 24(2), pp.94-102.
- Greenhalgh, T., Robert, G., Macfarlane, F., Bate, P., Kyriakidou, O. and Peacock, R., 2005. Storylines of research in diffusion of innovation: a meta-narrative approach to systematic review. *Social science & medicine*, 61(2), pp.417-430.
- Hayden, M.T., Mattimoe, R. and Jack, L., 2021. Sensemaking and the influencing factors on farmer decision-making. *Journal of Rural Studies*, 84, pp.31-44.
- Hayward, R.M. and Tuckey, M.R., 2013. *Emotional boundary management: A new adaptive approach to emotion regulation at work*. Emerald Group Publishing Limited.
- Hernes, T., 2017. Process as the becoming of temporal trajectory. In *The Sage handbook of process organization studies* (pp. 601-607). SAGE Publications.
- Hines, A., 2002. A practitioner's view of the future of futures studies. *Futures*, 34(3-4), pp.337-347.
- Holmes, T. and Westgren, R., 2020. Carving the Nature of Uncertainty at its Joints. *Academy of Management Review*, 45(4), pp.869-872.
- Jaakkola, E., 2020. Designing conceptual articles: four approaches. *AMS review*, 10(1), pp.18-26.
- Jarva, V., 2014. Introduction to narrative for futures studies. *Journal of Futures Studies*, 18(3), pp.5-26.
- Johnson, S.G., Bilovich, A. and Tuckett, D., 2020. Conviction narrative theory: A theory of choice under radical uncertainty.
- Kaplan, S. and Orlikowski, W.J., 2013. Temporal work in strategy making. *Organization science*, 24(4), pp.965-995.
- Keven, N., 2016. Events, narratives, and memory. *Synthese*, 193(8), pp.2497-2517.
- King, M. and Kay, J., 2020. *Radical uncertainty: Decision-making for an unknowable future*. Hachette UK.
- King, M., 2016. *The end of alchemy: Money, banking, and the future of the global economy*. WW Norton & Company.
- Knight, F.H., 1921. Risk, uncertainty and profit. 1933 reprint. *LSE, London*.
- Konlechner, S., Latzke, M., Güttel, W.H. and Höfferer, E., 2019. Prospective sensemaking, frames and planned change interventions: A comparison of change trajectories in two hospital units. *Human Relations*, 72(4), pp.706-732.

- Korte, R.F. and Chermack, T.J., 2007. Changing organizational culture with scenario planning. *Futures*, 39(6), pp.645-656.
- Kramer, R.M., 2001. 1. Organizational paranoia: Origins and dynamics. *Research in organizational behavior*, 23, pp.1-42
- Lehner, J.M., 2002. Metaphors, stories, models: A unified account of decisions. *Philosophy of Management*, 2(1), pp.35-46.
- Li, Z., 2014. Narrative rhetorics in scenario work: sensemaking and translation. *Journal of Futures Studies*, 18(3), pp.77-94.
- Lombardi, E., Di Dio, C., Castelli, I., Massaro, D. and Marchetti, A., 2017. Prospective thinking and decision making in primary school age children. *Heliyon*, 3(6), p.e00323.
- Lundberg, C.G., 2000. Made sense and remembered sense: Sensemaking through abduction. *Journal of Economic Psychology*, 21(6), pp.691-709.
- Lundgren-Henriksson, E.L. and Tidström, A., 2021. Temporal distancing and integrating: Exploring cooperation tensions through managerial sensemaking dynamics. *Scandinavian Journal of Management*, 37(3), p.101168.
- Maitlis, S. and Christianson, M., 2014. Sensemaking in organizations: Taking stock and moving forward. *Academy of Management Annals*, 8(1), pp.57-125.
- Malhotra, Y., 2001. Expert systems for knowledge management: crossing the chasm between information processing and sense making. *Expert Systems with Applications*, 20(1), pp.7-16.
- Mar, R.A., 2004. The neuropsychology of narrative: Story comprehension, story production and their interrelation. *Neuropsychologia*, 42(10), pp.1414-1434.
- Mar, R.A., 2004. The neuropsychology of narrative: Story comprehension, story production and their interrelation. *Neuropsychologia*, 42(10), pp.1414-1434.
- Markowitsch, H.J. and Staniloiu, A., 2011. Memory, auto-noetic consciousness, and the self. *Consciousness and cognition*, 20(1), pp.16-39.
- Martin-Ordas, G., 2020. It is about time: Conceptual and experimental evaluation of the temporal cognitive mechanisms in mental time travel. *Wiley Interdisciplinary Reviews: Cognitive Science*, 11(6), p.e1530.
- Merck, C., Topcu, M.N. and Hirst, W., 2016. Collective mental time travel: Creating a shared future through our shared past. *Memory Studies*, 9(3), pp.284-294.
- Michaelian, K. and Sutton, J., 2019. Collective mental time travel: remembering the past and imagining the future together. *Synthese*, 196(12), pp.4933-4960.
- Michaelian, K. and Sutton, J., 2019. Collective mental time travel: remembering the past and imagining the future together. *Synthese*, 196(12), pp.4933-4960.
- Michel, A.A., 2007. A distributed cognition perspective on newcomers' change processes: The management of cognitive uncertainty in two investment banks. *Administrative Science Quarterly*, 52(4), pp.507-557.
- Miller, G.A., 1956. The magical number seven, plus or minus two: Some limits on our capacity for processing information. *Psychological review*, 63(2), p.81.
- Miller, G.A., Galanter, E. and Pribram, K.H., 1960. Plans and the Structure of Behavior.
- Milliken, F.J., 1987. Three types of perceived uncertainty about the environment: State, effect, and response uncertainty. *Academy of Management review*, 12(1), pp.133-143.

- Mische, A., 2014. Measuring futures in action: Projective grammars in the Rio+ 20 debates. *Theory and Society*, 43(3-4), pp.437-464.
- Mulgan, T., 2008. Future people: A moderate consequentialist account of our obligations to future generations. *OUP Catalogue*.
- Oriani, R. and Sobrero, M., 2008. Uncertainty and the market valuation of R&D within a real options logic. *Strategic Management Journal*, 29(4), pp.343-361.
- Packard, M.D. and Clark, B.B., 2020. Mitigating versus Managing Epistemic and Aleatory Uncertainty. *Academy of Management Review*, 45(4), pp.872-876.
- Palmié, M., Wincent, J., Parida, V. and Caglar, U., 2020. The evolution of the financial technology ecosystem: An introduction and agenda for future research on disruptive innovations in ecosystems. *Technological Forecasting and Social Change*, 151, p.119779.
- Patriotta, G. and Gruber, D.A., 2015. Newsmaking and sensemaking: Navigating temporal transitions between planned and unexpected events. *Organization Science*, 26(6), pp.1574-1592.
- Pedersen, A.R., 2009. Moving away from chronological time: Introducing the shadows of time and chronotopes as new understandings of narrative time'. *Organization*, 16(3), pp.389-406.
- Perrin, D. and Michaelian, K., 2017. Memory as mental time travel. *The Routledge handbook of philosophy of memory*, pp.228-239
- Petersen, B., Pedersen, T. and Lyles, M.A., 2008. Closing knowledge gaps in foreign markets. *Journal of international business studies*, 39(7), pp.1097-1113.
- Plowman, D.A., Solansky, S., Beck, T.E., Baker, L., Kulkarni, M. and Travis, D.V., 2007. The role of leadership in emergent, self-organization. *The leadership quarterly*, 18(4), pp.341-356.
- Ramiller, N.C., 2001. The 'textual attitude' and new technology. *Information and Organization*, 11(2), pp.129-156.
- Ramírez, R. and Ravetz, J., 2011. Feral futures: Zen and aesthetics. *Futures*, 43(4), pp.478-487.
- Ravasi, D. and Turati, C., 2005. Exploring entrepreneurial learning: A comparative study of technology development projects. *Journal of Business Venturing*, 20(1), pp.137-164.
- Redshaw, J., 2014. Does metarepresentation make human mental time travel unique?. *Wiley Interdisciplinary Reviews: Cognitive Science*, 5(5), pp.519-531.
- Redshaw, J., Bulley, A. and Suddendorf, T., 2019. Thinking about thinking about time. *Behavioral and Brain Sciences*, 42.
- Reid, D.B., 2021. US principals' sensemaking of the future roles and responsibilities of school principals. *Educational Management Administration & Leadership*, 49(2), pp.251-267.
- Reinecke, J. and Ansari, S., 2015. When times collide: Temporal brokerage at the intersection of markets and developments. *Academy of Management Journal*, 58(2), pp.618-648.
- Reissner, S. and Pagan, V., 2013. *Storytelling in management practice: Dynamics and implications*. Routledge.
- Rindova, V. and Courtney, H., 2020. To shape or adapt: Knowledge problems, epistemologies, and strategic postures under Knightian uncertainty. *Academy of Management Review*, 45(4), pp.787-807.
- Rindova, V.P. and Martins, L.L., 2021. Futurescapes: Imagination and temporal reorganization in the design of strategic narratives. *Strategic Organization*, p.1476127021989787.

- Rosenberg, A. and McIntyre, L., 2019. *Philosophy of science: A contemporary introduction*. Routledge.
- Rosness, R., Evjemo, T.E., Haavik, T. and Wærø, I., 2016. Prospective sensemaking in the operating theatre. *Cognition, Technology & Work*, 18(1), pp.53-69.
- Sandberg, J. and Tsoukas, H., 2015. Making sense of the sensemaking perspective: Its constituents, limitations, and opportunities for further development. *Journal of Organizational Behavior*, 36(S1), pp.S6-S32.
- Sarpong, D., Eyres, E. and Batsakis, G., 2019. Narrating the future: A distentive capability approach to strategic foresight. *Technological Forecasting and Social Change*, 140, pp.105-114.
- Sayegh, L., Anthony, W.P. and Perrewé, P.L., 2004. Managerial decision-making under crisis: The role of emotion in an intuitive decision process. *Human Resource Management Review*, 14(2), pp.179-199.
- Schacter, D.L., Addis, D.R. and Buckner, R.L., 2007. Remembering the past to imagine the future: the prospective brain. *Nature reviews neuroscience*, 8(9), pp.657-661.
- Schacter, D.L., Addis, D.R. and Buckner, R.L., 2008. Episodic simulation of future events: concepts, data, and applications.
- Scott, S.V. and Barrett, M.I., 2005. Strategic risk positioning as sensemaking in crisis: the adoption of electronic trading at the London international financial futures and options exchange. *The journal of strategic information systems*, 14(1), pp.45-68.
- Seligman, M.E., Railton, P., Baumeister, R.F. and Sripada, C., 2013. Navigating into the future or driven by the past. *Perspectives on psychological science*, 8(2), pp.119-141.
- Seligman, M.E., Railton, P., Baumeister, R.F. and Sripada, C., 2016. *Homo prospectus*. Oxford University Press
- Selsky, J.W. and Parker, B., 2010. Platforms for cross-sector social partnerships: Prospective sensemaking devices for social benefit. *Journal of business ethics*, 94(1), pp.21-37.
- Sharma, P., Leung, T.Y., Kingshott, R.P., Davcik, N.S. and Cardinali, S., 2020. Managing uncertainty during a global pandemic: An international business perspective. *Journal of business research*, 116, pp.188-192.
- Sharma, P., Leung, T.Y., Kingshott, R.P., Davcik, N.S. and Cardinali, S., 2020. Managing uncertainty during a global pandemic: An international business perspective. *Journal of business research*, 116, pp.188-192.
- Sillince, J., Jarzabkowski, P. and Shaw, D., 2012. Shaping strategic action through the rhetorical construction and exploitation of ambiguity. *Organization science*, 23(3), pp.630-650.
- Smallwood, J., Ruby, F.J. and Singer, T., 2013. Letting go of the present: mind-wandering is associated with reduced delay discounting. *Consciousness and cognition*, 22(1), pp.1-7.
- Smith-Doerr, L., Manev, I.M. and Rizova, P., 2004. The meaning of success: network position and the social construction of project outcomes in an R&D lab. *Journal of Engineering and Technology Management*, 21(1-2), pp.51-81.
- Sniazhko, S., 2019. Uncertainty in decision-making: A review of the international business literature. *Cogent Business & Management*, 6(1), p.1650692

- Sonenshein, S., 2010. We're changing—Or are we? Untangling the role of progressive, regressive, and stability narratives during strategic change implementation. *Academy of Management Journal*, 53(3), pp.477-512.
- Stapleton, L., 2001. From information systems in social settings to information systems as social settings. In *Proceedings of the 7th IFAC symposium on automation based on human skill: Joint design of technology and organisation*.
- Stigliani, I. and Ravasi, D., 2012. Organizing thoughts and connecting brains: Material practices and the transition from individual to group-level prospective sensemaking. *Academy of Management journal*, 55(5), pp.1232-1259.
- Suddendorf, T. and Busby, J., 2005. Making decisions with the future in mind: Developmental and comparative identification of mental time travel. *Learning and Motivation*, 36(2), pp.110-125.
- Suddendorf, T., 2010. Episodic memory versus episodic foresight: Similarities and differences. *Wiley Interdisciplinary Reviews: Cognitive Science*, 1(1), pp.99-107.
- Szpunar, K.K., 2010. Episodic future thought: An emerging concept. *Perspectives on Psychological Science*, 5(2), pp.142-162.
- Tapinos, E. and Pyper, N., 2018. Forward looking analysis: Investigating how individuals 'do' foresight and make sense of the future. *Technological Forecasting and Social Change*, 126, pp.292-302.
- Tomasello, M., Carpenter, M., Call, J., Behne, T. and Moll, H., 2005. Understanding and sharing intentions: The origins of cultural cognition. *Behavioral and brain sciences*, 28(5), pp.675-691.
- Tong, T.W. and Li, Y., 2011. Real options and investment mode: Evidence from corporate venture capital and acquisition. *Organization Science*, 22(3), pp.659-674.
- Tuckett, D. and Nikolic, M., 2017. The role of conviction and narrative in decision-making under radical uncertainty. *Theory & Psychology*, 27(4), pp.501-523.
- Tulving, E., 2002. Episodic memory: From mind to brain. *Annual review of psychology*, 53(1), pp.1-25.
- Tulving, E., 2005. Episodic memory and autonoesis: uniquely human?.
- van der Steen, M., Chin-A-Fat, N., Vink, M. and van Twist, M., 2016. Puzzling, powering, and perpetuating: Long-term decision-making by the Dutch Delta Committee. *Futures*, 76, pp.7-17.
- Walls, J.H., 2017. Sensemaking and school failure: lessons from two cases. *Journal of Organizational Theory in Education*, 2(1), pp.1-26.
- Wegner, D.M., Quillian, F. and Houston, C.E., 1996. Memories out of order: Thought suppression and the disturbance of sequence memory. *Journal of Personality and Social Psychology*, 71(4), p.680
- Weick, K.E., 1995. *Sensemaking in organizations* (Vol. 3). Sage.
- Weick, K.E., Sutcliffe, K.M. and Obstfeld, D., 2005. Organizing and the process of sensemaking. *Organization science*, 16(4), pp.409-421.
- Whittle, A., Mueller, F., Gilchrist, A. and Lenney, P., 2016. Sensemaking, sense-censoring and strategic inaction: The discursive enactment of power and politics in a multinational corporation. *Organization Studies*, 37(9), pp.1323-1351.
- Wood, M.S., Bakker, R.M. and Fisher, G., 2021. Back to the future: A time-calibrated theory of entrepreneurial action. *Academy of management review*, 46(1), pp.147-171
- Wright, A., 2005. The role of scenarios as prospective sensemaking devices. *Management Decision*, 43(1), pp.86-101.

- Wyer Jr, R.S., Adaval, R. and Colcombe, S.J., 2002. Narrative-based representations of social knowledge: Their construction and use in comprehension, memory, and judgment
- Zaman, A. and Russell, C., 2021. Does autothetic consciousness in episodic memory rely on recall from a first-person perspective?. *Journal of Cognitive Psychology*, pp.1-15
- Zhang, M. and Hudson, J.A., 2018. The development of temporal concepts: linguistic factors and cognitive processes. *Frontiers in psychology*, 9, p.2451