

# The resistance to scientific theory in futures and foresight, and what to do about it

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## Abstract

We offer an argumentative explanation of the reasons why the field of futures and foresight has not been successful at becoming part of the social scientific establishment. We contend that the very set of norms, beliefs, and epistemological foundations of futures and foresight are essentially self-sabotaging as they resist the creation of scientific theory on futures and foresight practices and processes in organizations. Drawing from the tradition of management and organization sciences, we describe what scientific theory in the context of organizations is and is not, and how theory development contributes to the incremental progress of scientific fields. We then unpack the crux of the problem, deconstructing the resistance to scientific theory within our field into nine, closely related reasons. We offer solutions to the problem in the form of three sets of recommendations: for authors, journal editors, and practitioners. We conclude by responding to likely misunderstandings in advance.

## KEYWORDS

critical realism, epistemology, foresight, futures studies, management and organization, research, scientific theory

"In order to talk about the nature of the universe and to discuss questions of whether it has a beginning or an end, you have to be clear about what a scientific theory is." (Hawking, 1988: 9).

## 1 | INTRODUCTION

Futures and foresight scholars have often noted, and at times lamented, that the field<sup>1</sup> has not been successful at becoming part of the social scientific establishment (Aligica, 2003; Andersson, 2018; Bell, 1996). Future and foresight specialists struggle to explain what the field is about to academics in other more established disciplines (Cramer, 2020; Ogilvy, 2004).

What is the reason for this? Surprisingly few convincing arguments have been offered in response. In this article, we attempt to offer an argumentative answer to this question. Our answer focuses on what we believe are the most profound ideological barriers within the field. We maintain that the very set of norms, beliefs, and epistemological foundations of futures and foresight are essentially self-sabotaging the field, as they lead to a conscious or subconscious resistance to scientific theory about foresight practices and processes, thus preventing the creation and testing of theory. Weak theoretical foundations prevent the field from becoming a recognized academic discipline of study in the academic establishment.

Indeed, the archetypal academic article in the field of futures and foresight is a manuscript documenting the application of a foresight method, enriched with claims about its usefulness (Piirainen & Gonzales, 2015). For instance, a systematic review of articles on scenario planning, a prominent area of scholarship and practice within the field, showed a clear bias toward conceptual articles and "consulting-type" reports of scenario exercises (Chermack, 2018).

The first author conducted the literature review, wrote the first draft, and revised the draft. The second author advised the first author on the focal issue under examination, added pertinent examples to the draft, and edited the revision.

These articles rarely involve the proposition of scientific theories about futures and foresight interventions, or empirical data to test such theories. The claims about the usefulness of such interventions often made in these articles cannot be generalized as they only constitute anecdotal evidence. Other futures and foresight specialists do not prioritize the verification of such claims through rigorous scientific assessment, as each practitioner uses a different set of methods and is concerned about whether these are effective only in his or her profession. In this way, the futures and foresight literature cannot document generalizable scientific theories on why, how, when, and where futures and foresight capabilities and interventions work. Scholars cannot build on each other's findings, and have to rely on their limited experience. Without a shared consensus on the importance of scientific theorizing, the field stagnates. Without subsequent empirical evidence of the processes we are enacting, the field appears, in the eyes of more established scientific domains, a pseudoscience.

For example, scenario planning proponents claim that scenarios have a number of benefits in organizations, which is only "supportive from an advocacy standpoint" (Hodgkinson & Healey, 2008: 437), but essentially impeding the acceptance of scenario planning as a field of study in the scientific establishment. The same observation can be extended to the whole field of futures and foresight. Chermack noted in 2002 that the "status of theory and theory development in the area of scenario planning [...] and future oriented practices in general is dismal" (p. 25), and in 2017 that "we have not yet defined any set of foundational theories that most would agree underpin the work we do" (p. 2). Considering these two claims fifteen years apart, what still appears dismal is the dishearteningly slow pace of theoretical improvement within our field.

Interestingly, previous works on the evaluation and assessment of futures and foresight practices and processes (van der Duin & van der Martin, 2012; Gardner & Bishop, 2019), on the theoretical development within the field (Mermet et al., 2008; Yeoman & Curry, 2019) and on the reasons why the field is not established or has not had the desired impact on practice (Bell, 2002; Cramer, 2020; Kapoor, 2001; Marien, 2002) have left the conscious or subconscious resistance to scientific theory within the field largely unspoken. This suggests that this problem is an endemic unknown unknown.

Unfortunately, this problem also tremendously hurts practice. Without empirical knowledge of the theoretical mechanisms underlying foresight processes, the specific ways futures and foresight works in organizations are not fully understood. Only conjectures about it are popularized. By contrast, in a preferable hypothetical scenario, practitioners would be able to benefit from scholarly investigations pinpointing why, how, when, and where futures and foresight works, or does not (Fergnani, 2020b; Hodgkinson & Healey, 2008). For example, Gary (2008) noted that, lacking distinct, field-specific theoretical foundations, many of the theories that futures and foresight practitioners subconsciously use are in fact borrowed from others fields of the social sciences—primarily from strategy and management—e.g. environmental scanning affecting organizational strategies (Daft & Weick, 1984; Finkelstein &

Hambrick, 1996; Hambrick, 1981, 1982; Hambrick & Mason, 1984), or transformational leadership affecting followers' behavior (Avolio & Bass, 1991; Bass & Steidlmeier, 1985). Over time, if our field were to develop distinct theoretical foundations, practitioners will surely benefit from them.

Moreover, the problem also affects the choice of newcomer talents to pursue futures and foresight as a profession. Given its non-scientific status, several (potential) students all over the globe are likely prevented from devoting to futures and foresight with adequate resources within universities (Gary, 2008). This invisible brain-drain adds to the notoriously low supply of futures and foresight jobs globally, creating an undesirable combination of disincentives.

In what follows, to unscramble the problem above described, we start with the basics. We first define scientific theory as in the tradition of management and organization sciences. As this field of research is close, in scope, to futures and foresight and has a theoretically refined tradition, we believe it should be embraced in the scientific assessment of futures and foresight practices and processes. Indeed, its conceptualization of theory is shared in the vast majority of the social and behavioral sciences. We then distinguish scientific theory from related entities, which, in our field, are often conflated with it, and we explain how the development of theory contributes to the incremental improvement of academic fields of research. As theoretical development is weak in futures and foresight, we then unpack the causes of the problem. We deconstruct the resistance to scientific theory within our field into nine, closely related reasons. We then provide solutions to the problem in the form of recommendations for authors, journal editors, and practitioners to promote and enhance the development of scientific theory within the field. We finally attempt to respond in advance to some likely misunderstandings of our position, before concluding.

## 2 | ON SCIENTIFIC THEORY

### 2.1 | What is scientific theory? the conceptualization of theory in management and organization sciences

As the main argument of this article is that the field of futures and foresight resists scientific theory due to profound ideological barriers, this section first explains what scientific theory is and is not, before delving into such barriers in the following section.

We have chosen to borrow the conceptualization of scientific theory from the tradition of management and organization sciences. This is because the vast majority of applied futures and foresight work is carried out with groups of individuals. These include commercial, governmental, advocacy, and non-profit organizations and communities alike. It follows that the scholarly investigation of futures and foresight which is of interest to its scholars and practitioners involves answering questions regarding why, how, when, and where futures and foresight practices and processes work within organizations of individuals. This kind of

scientific assessment is very similar to the study of meso (organization) and micro (individual) level social, behavioral, and psychological phenomena, which is what management and organization sciences are concerned with. Moreover, management and organization scholarship has a long lasting and refined tradition of theoretical development, which is lacking in futures and foresight. For these reasons, it would be beneficial for our field to embrace the conceptualization of scientific theory of management and organization sciences.

In this field of study, a scientific theory has a specific, well-defined, and agreed upon conceptualization, common to the behavioral sciences in general. Theory is defined as “a set of interrelated constructs (concepts), definitions, and propositions that present a systematic view of phenomena by specifying relations among variables, with the purpose of explaining and predicting the phenomena” (Kerlinger & Lee, 2000: 11).<sup>2</sup> In this definition, constructs are abstract representations of phenomena in the real world, while variables are constructs translated into measurable terms, i.e. “operationalized”, for the purpose of empirical research (Kerlinger & Lee, 2000).<sup>3</sup>

Indeed, although within the field of management and organizations, different schools of thought ranging from objectivist (positivist, empiricist) to subjectivist (social constructionist, postmodernist, and interpretative) positions have been fervently debating both ontological and epistemological issues with regard to the conduct of scholarship within organizational settings (Vincent & O’Mahoney, 2018), a relatively uniform consensus is present regarding the consideration of theory as an explanation of why phenomena happen (Campbell & Wilmot, 2020; Kerlinger & Lee, 2000; Whetten, 1989). This consensus is shared across the vast majority of the social and behavioral sciences. This emphasis on the understanding of causation over definitions and descriptions is perhaps attributable to the increasing influence of a (critical) realist epistemology among management and organizations scholars (Thompson, 2011; Van de Ven, 2007) and in the social sciences in general (Tsang & Kwan, 1999), which strongly emphasizes the development of theory as understanding and explanation (Vincent & O’Mahoney, 2018), to the point of decoupling it from prediction of outcomes (Tsang & Kwan, 1999).

Critical realism is a philosophy of science developed by Bhaskar (1975, 1979, 1998) which has successfully transcended and conciliated the dichotomy between objective and subjective schools of thought (Fletcher, 2016; Vincent & O’Mahoney, 2018). This is because, according to critical realism, objective reality exists independently of the observer and truth can be discovered within the limits of human intellect (hence *realism*), albeit presumptively and only with cumulated, incremental, scientific research over time (hence *critical*), as single findings (theories) might be fallible and subject to potential bias, but can be increasingly refined or corrected by subsequent testing in future research (Bell, 1996, 1997b; Bhaskar, 1975, 1979; Tsang & Kwan, 1999; Van de Ven, 2007).<sup>4</sup> Theories that rest upon a critical realist perspective in management and organization are indeed called “mid-range theories” for their conciliatory position between generalized abstractions and emergent, subjective phenomena (Thompson, 2011: p. 754).

Theories are important as they allow us to understand phenomena in a way that is more profound, unimaginable without scholarly investigation (Bartunek, 2020; Campbell & Wilmot, 2020). Theories allow us to understand and explain primarily *why* (Whetten, 1989) but also the boundary conditions of how, when, and where phenomena happen (Bacharach, 1989). Theories should be parsimonious, logical, coherent and, most importantly, falsifiable (Shapira, 2011). They should be robust under the test against competing explanations (Campbell & Wilmot, 2020).

Theories about management and organization phenomena can be developed with both deductive and inductive as well as quantitative and qualitative research approaches ranging from statistical regression to action research, comparative case studies, and historical analysis, among several other methods (Vincent & O’Mahoney, 2018).

In a deductive approach, which is most commonly used, the development of theory starts with *propositions*, i.e. declarative statements formally postulating an expected, plausible relation between some abstract constructs (concepts) that represent phenomena occurring in the real world (Van de Ven, 2007). When the truthfulness of propositions is to be tested in empirical research, propositions are called *hypotheses*, i.e. declarative statements that specify the relationships between the measurable variables or events that are actually observable (Van de Ven, 2007). A basic hypothesis is formulated along the lines of “A affects B”. More refined hypotheses include conditions to this causal mechanism, i. e. “A affects B via C” -what is called *mediation*-, or “A effects B, but more/less so when C occurs” -what is called *moderation*- (Baron & Kenny, 1986). Moderation and mediation are the *boundary conditions* of a theory (Van de Ven, 2007: 112), i.e. those restrictive circumstances that specify where, when, how, and to whom theories apply.

In futures and foresight, a basic proposition/hypothesis could be, for instance: “scenario planning increases firm performance”.<sup>5</sup> This is a causal relationship connecting the construct/event “scenario planning” with the construct/variable “firm performance”. Thus, more refined propositions/hypotheses could be “scenario planning increases firm performance via an increase in organizational learning”<sup>6</sup> (mediation), and “scenario planning increases firm performance, and this positive relationship is stronger when management buy-in is high than when it is low”<sup>7</sup> (moderation).

Hypotheses are then tested with rigorous scientific methods, which often, but not necessarily, consist of statistical analyses. Hypotheses then become theory if verified by empirical data, and explained with a convincing and logical conceptual argument (Kerlinger & Lee, 2000; Sutton & Staw, 1995). A theory is therefore largely verbal in nature, i.e. an explanation of the reason(s) why what is expected to happen, as formulated in hypotheses, is actually borne out (Sutton & Staw, 1995).

However, theory can also be developed inductively by letting causal patterns emerge from data without a priori propositions/hypotheses, as in the tradition of grounded theory (see Charmaz, 2014; Glaser, 1992; Strauss & Corbin, 1998). In grounded theory, the researcher commits to the observation of phenomena in the real world

without proposing/hypothesizing relations between events nor explanations beforehand. The researcher then collects data in the form of responses to structured or semi-structured interviews, or other forms of written data, e.g. historical records, then finally analyzes the data in search for common patterns until the causal chain of events and phenomena becomes clear. This chain of events and phenomena is the basis of a theory (Charmaz, 2014; Glaser, 1992; Strauss & Corbin, 1998). A topic that lends itself well to this research approach within futures and foresight is the exploration of how futures and foresight specialists successfully convince organizational managers of the importance of firm-level futures and foresight capabilities and interventions.

Finally, a more recent development within the field of management and organization has been the merging of deductive and inductive approaches in what is called “abductive reasoning” (Bamberger, 2020). Abduction fruitfully blends induction and deduction by iteratively generating hypotheses based on surprising findings emerged from the exploration of data and by checking the validity of such hypotheses via the analysis of further data (Timmermans & Tavory, 2012). This reasoning process aligns well with critical realism’s tentative nature of empirical findings.

## 2.2 | What scientific theory is not

In management and organization sciences, as well as the behavioral sciences in general, scientific theories are differentiated from:

- *Epistemologies*. Epistemologies are lenses through which knowledge is to be acquired, providing normative guidelines as to how scholarly work is to be done (Ackroyd & Fleetwood, 2000). An epistemological statement is: “the future is not predictable so scenarios should be used to imagine alternative futures”. This statement is epistemological and not theoretical as it does not include causal explanations.
- *Ontologies*. Ontology is the philosophical study of the essence of things. Different ontologies have different conceptions on what exists or does not, and of the properties of the things that exist (Ackroyd & Fleetwood, 2000). Ontologies affect epistemologies as only the things that are considered existent can be studied. An ontological statement is: “The future does not exist, but images of the futures exist” from which the epistemology claiming that images of the futures are to be studied originates. This, however, differs from theory, as ontology is not concerned with causal explanations.
- *Descriptions*. Descriptions describe rather than explain. They answer *what/which* rather than *why* questions (Bacharach, 1989). Indeed, they are not elaborated in the form of causal explanations. For instance, a descriptive but not explanatory statement is: “scenario planning is a participatory process”. A theory, on the other hand, would explain why participatory scenario planning approaches are more effective than desk-based scenario planning approaches to bring about outcomes such as, for instance, organizational learning.<sup>8</sup>
- *References*. The bibliography provided at the end of an academic article, or the citation of it, is by itself not theoretical as it does not provide a causal explanation that connects constructs/variables (Sutton & Staw, 1995; Weick, 1995). For instance, references to scenario planning articles and books, either within the text, in a table format, or at the end of an article published in a journal within the field do not constitute theory by themselves. They can, however, serve authors to support their arguments on the effectiveness of scenario planning interventions, arguments that, if formulated in the form of hypotheses, tested, and then explained with a sound conceptual rationale, can become a theory.
- *Data*. For the same reason as above, data provided in the form of tables and graphs is, per se, not a theory (Sutton & Staw, 1995; Weick, 1995). For instance, a table reporting descriptive statistics about the subjects involved in a futures and foresight intervention do not constitute a theory. It only showcases the properties of the object being studied. On the contrary, a theory would explain, for instance, why certain groups of individuals are more positively affected than other groups of individuals by the same futures and foresight intervention.
- *Hypotheses*. Hypotheses are expected relations to be verified. They are not theory as they do not present the conceptual arguments verbally explaining the causation behind such relations (Sutton & Staw, 1995; Weick, 1995). See examples of hypotheses in section 2.1 above.
- *Variables*. A variable is a measurable construct for empirical research (Kerlinger & Lee, 2000). A variable or a list of variables are the building blocks of theory, but not theory, as the relationship(s) between them is not specified nor explained (Sutton & Staw, 1995; Weick, 1995). For instance, the variation in the degree of organizational-level foresight preparedness and individual-level creativity are variables. They alone do not constitute a theory. A theory would hypothesize, test, and explain why these two variables are associated.
- *Conceptual frameworks*. Conceptual frameworks give a structure to and help us organize thought (Shapira, 2011). These differ from theories (Gary, 2008) as they generally do not have to include causal explanations.<sup>9</sup> Examples of conceptual frameworks in futures and foresight are integral futures, which helps us categorize thoughts in four different quadrants (Slaughter, 1998, 2008); or the future landscape (Inayatullah, 2008; Tibbs, 2000), which portrays four different levels of pertinence of a foresight intervention in an organization. A theory, on the other hand, would explain which framework works best in which context to enhance outcomes such as, for instance, individual creativity. Conceptual frameworks are directly dependent on epistemologies, as the latter guide how phenomena are to be studied, and thus direct and inspire the former.
- *Models/diagrams*. A model or diagram displays a partial representation of a phenomenon in a real world without the explanation underlying why such display is truthful in general (Shapira, 2011; Van de Ven, 2007). Indeed, box and arrows may portray the observed causal pattern of a theory, but

without verbal explanation, do not constitute theory (Sutton & Staw, 1995; Whetten, 1989). Therefore, a theory is also not a model or diagram. For instance, a diagram that graphically displays a foresight intervention process is only an account of a particular methodology utilized by a practitioner in one context. A theory would explain why such intervention or its underlying firm-level capability is useful to bring about outcomes across a sample of organizations. Additionally, albeit both graphical in nature, models or diagrams differ from conceptual frameworks as the former display one phenomenon, while the latter can apply to different contexts.

- *Speculations/viewpoints/opinions/perspectives.* Perhaps most importantly, in scientific terms, a claim that has not been verified does not constitute a theory (Kerlinger & Lee, 2000). One could argue: “scenario planning enhances the competitive advantage of an organization”, but until this claim is tested and the rationale behind it is explained, it is only a hypothesis. Indeed, it is possible that the majority of published case studies documented in the futures and foresight literature are successful cases whose claims are not theoretically generalizable, and that unsuccessful cases had not been selected a priori (Hodgkinson & Wright, 2002), thus impeding our theoretical understanding of how futures and foresight actually affects firms’ competitive advantage. For example, Mintzberg (2013) speculated that Wack’s (1985a;1985b) seminal articles on scenario planning practices at Royal Dutch Shell were published in Harvard Business Review because they reported an unusually successful story. This is a problem of selection bias, wherein only certain cases are selected rather than a more representative sample of the whole population of case studies.

Therefore, a research attempting to build scientific theory is different from the speculations provided by many futures & foresight articles. Such research would rigorously assess several case studies documenting the same futures and foresight intervention, or different levels of the same futures and foresight firm-level capability across contexts and attempt to verify whether they can in fact enhance competitive advantage and, if so, explain why.

In sum, the above entities are different from scientific theory either because their level of analysis is different (epistemologies or ontologies) or because they are not sufficient to prove and convey the causation mechanisms behind phenomena (descriptions, references, data, hypotheses, variables, frameworks, models/diagrams, speculations).

However, these entities are closely knit with theory and cannot exist apart from it. Epistemologies and ontologies drive the typology of theory. A critical realist ontology, as the one espoused in this article and in the majority of the social and behavioral sciences, assumes the existence of a world independent of the observer. This shapes an epistemology of discovery of the generalizable mechanisms which determine the functioning of such a world, i.e. *why* questions. By contrast, an ontology that considers the world in perpetual change would shape an epistemology

focused on how such a world unfolds (Cloutier & Langley, 2020; Langley & Tsoukas, 2016; Van de Ven, 2007). This is a *how* rather than *why* question.

Descriptions, references, data, hypotheses, variables, frameworks, models/diagrams, and speculations are also fundamental for theories. Indeed, they are theories in the making, the building blocks without which theories could not be constructed and tested (Campbell & Wilmot, 2020).

A shared understanding of what theory is and of the importance of theoretical development in the field of futures and foresight is fundamental as it would allow us to incrementally accumulate explicative knowledge on what we do as futures and foresight researchers and practitioners, a process that is explained in the next subsection.

### 2.3 | How theory development contributes to the incremental progress of scientific fields

Consensus on what theory is and is not allows scientific fields to develop over time at a steady rhythm, a consensus that is lacking in our field and that is urgently necessary to advance it. Once this consensus is present, the incremental progress of an academic discipline through theory development can be divided in four stages (Figure 1).

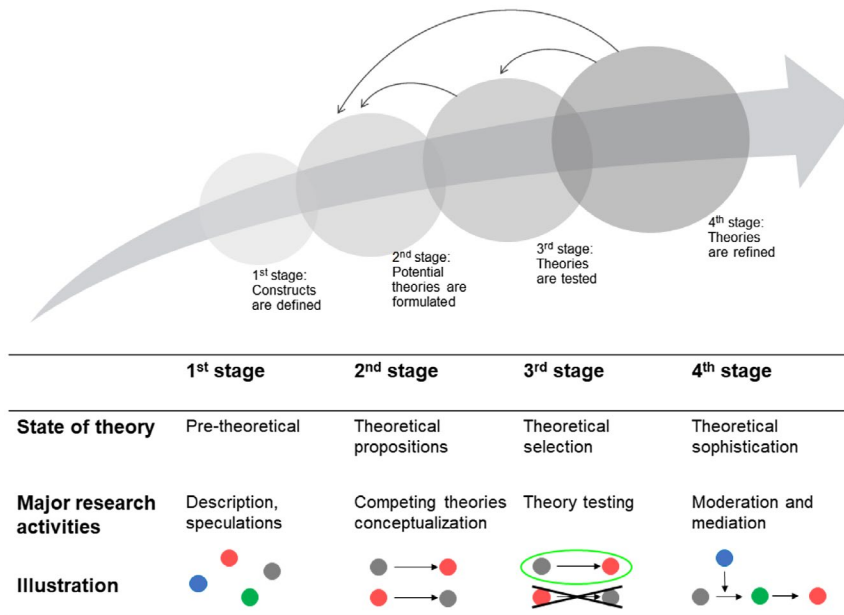
Description is the first stage. Description is fundamental as it allows us to delimit the scope of further scholarly analysis, i.e. it helps us determine *what* is to be studied, its subcomponents and properties. Descriptions allow us to define all the constructs that we want to measure, e.g. *scenario planning*, *foresight capability*, *firm performance*, *organizational learning*, *creativity*, and so on.

Formulating potential theories in the form of propositions is the second stage. It allows us to link the constructs conceptually with tentative causal relations. For example, we can argue: “scenario planning increases organizational learning”, or “foresight capability increases firm performance”, etc. These propositions rest upon the agreement on what constructs are in the first place.

Testing theories is the third stage. This involves the usage of scientific research methods to confirm whether the formulated propositions (now hypotheses) are in fact correct. Here, plausible but incorrect theories are winnowed out as they do not find verification in empirical tests, and only those theories that find empirical evidence are selected. Theoretical pluralism is indeed desirable in the process of theoretical development of a field of study as it spurs debate between scholars. This in turn incentivizes scholars to attempt to replicate empirical studies in order to discover which theory better represents reality, to refine theories, or to find a middle ground between competing theories.

This leads to the fourth and last stage: increasing the sophistication of theories. This involves the formulation and testing of moderated and mediated theories. For instance, once the effect of scenario planning on firm performance is explained with a basic theory, we could then argue: “the impact of scenario planning on firm





**FIGURE 1** Scientific fields' theoretical development process in four stages. The figure is adapted from (Hernandez, 2019; Kuhn, 1963; Van de Ven, 2007). This figure rests upon a critical realist perspective, maintaining that scholarly advancement occurs via incremental, self-correcting development of scientific theories. This may require testing, replicating, and triangulating existing and competing theories to achieve a more refined understanding of observed phenomena. The interdependent and iterative nature of the four stages is represented by the overlapping circles and backward arrows in the figure

performance is mediated by organizational learning” (mediation), or “the positive impact of scenario planning on firm performance is moderated by firm size” (moderation), etc.

It is important to note that the four stages represented in Figure 1 are a simplification of a theoretical development process. In reality, these stages can be more iterative than sequential, particularly stages 2 to 4. Indeed, throughout the process of theoretical development, new findings may be uncovered that question theories previously considered robust, reinitiating the whole process. Additionally, different theories within the same field of research might be at different stages. In sum, consensus in all theories might never be achieved, but reaching the fourth stage may likely lead to a desirable consensus on some foundational theories.

For the scholarly development and practice of futures and foresight, reaching this final stage of theoretical development is necessary in order to achieve at least a set of foundational theories underpinning futures and foresight work. Such foundations may involve, for instance, understanding which futures and foresight method is best suited to achieve specific outcomes, in which contexts futures and foresight works best, and under which circumstances, among many other research questions. To reach such foundational understanding, our field will need to go through theoretical contentions,<sup>10</sup> which are common to other established disciplines in the social sciences.

Unfortunately, this process of theoretical definition, contention and refinement is not present in our field as its theoretical development is currently stagnating at the first stage (Iden et al., 2017). Vast majority of our arguments are indeed descriptions or speculations, with only a handful of articles attempting to propose or test scientific theory. To confirm whether futures and foresight is actually useful as it has been claimed, and build the foundations that would make our field trustworthy in the eyes of other scientific disciplines, we need to progress along these four stages. This progress will involve enhanced meso-level theorizing, such as theories on the effects of scenario planning and other futures and foresight methods on firm-level

outcomes; but also enhanced micro-level theorizing, such as theories on the effects of individuals' futures and foresight capabilities on cognitive and behavioral outcomes. The more we can back up our claims on whether futures and foresight works with tested theories, the more it will be favorably received in the sciences, taught in educational institutions, and applied in practice.

### 3 | THE RESISTANCE TO SCIENTIFIC THEORY IN FUTURES AND FORESIGHT

Unfortunately, several issues have prevented futures and foresight to advance along the four stages described above in a timely manner to guarantee the impact of the field in the scholarly and practitioners' communities. A set of conscious or subconscious norms, beliefs and epistemological stances have been substantially preventing the field of futures and foresight from understanding and creating scientific theories in the first place. Let us deconstruct the problem in more detail. Nine related reasons are salient:

1. *Different use of the term “theory”.* In our field, the term “theory” is often used interchangeably to refer to epistemologies and ontologies (Pirainen & Gonzales, 2015) and, we contend, also conceptual frameworks. For instance, Hideg (2007) calls “critical futures studies” a theory, although this is an epistemology emphasizing the necessity to question, problematize, undefine, and deepen the future (Inayatullah, 1998). Poli (2011) conflates theory, epistemology, and ontology in what he calls “theoretical underpinning” of the field (p. 67). In a survey on the most important theories in futures studies, Minkinen (2020) includes “philosophies of science and epistemologies” (p. 15) within the definition of theory. The term “theoretical contribution” is also used in Karlsen et al. (2010) with reference to an ontological argument. Inayatullah discusses Dator's epistemological position on studying the future and calls it “broader theorizing of the

future" (2013: 1), and refers to CLA as a theory with reference to its epistemology rather than to its explanatory power: "Causal layered analysis [...]. As a theory it seeks to integrate empiricist, interpretive, critical, and action learning modes of knowing (Inayatullah, 2004: 8).

"Theory" is also often used to refer to conceptual frameworks of the field, i.e. futures and foresight methodologies. Poli (2011), for instance, cites Inayatullah's (2008) seminal methodological article *Six Pillars*, and claims that this, among other references, "may eventually become the theoretical framework for the field" (p. 68). A (scientific) theoretical framework can only emerge from propositions/hypotheses, of which *Six Pillars* has none. Ahlqvist and Uotila (2020) proffer a conceptual framework consisting of a categorization of weak signals activities, calling it a "relational theory of futures knowledge". In honesty, we are not immune to this use of the term "theory". In Fergnani and Jackson (2019), the first author refers to Dator's four futures (2009) as a theoretical rather than conceptual framework.

In sum, the field has been using the term "theory" to refer to epistemologies, ontologies, and conceptual frameworks, as well as general "conceptual arguments", rather than to the actual technical definition of scientific theory as above (Gary, 2008). Indeed, the recent scholarly debate between Spaniol and Rowland (Rowland & Spaniol, 2019; Spaniol & Rowland, 2019) and Chermack (2019) regarding whether scenario planning theory and definition should be conflated originates from the lack of a shared consensus on what theory is. If the definition of theory were agreed upon, there would be no need for such a debate as the two cannot be conflated in a scientific article.

These confluations are not wrong. Rather, they seem to be the norm of the field. Our position is that this norm, however, is preventing the field from understanding and thus creating scientific theory about futures and foresight practices and processes. As a consequence, the understanding of the mechanisms by which scientific theory contributes to the incremental development of fields of research as explained above has also been limited. This prevents the lack of dialogue between scholars. Indeed, Dator (2008) maintains that all too often, previous works in the field have not been cited, and that futures and foresight scholars have thus been repeating derivative claims, without taking into account that these have been raised elsewhere several times.

2. *Lack of training in theory building and theory testing (social science research methods)*. Futures and foresight researchers and practitioners come from diverse backgrounds, and the only point they seem to agree on with regards to educational credentials is that it is not strictly necessary to be academically trained to become futures and foresight experts (Cramer, 2020). As there is a common, arguably detrimental belief in the power of self-made professionalization, experts in our field are not always rigorously academically trained in futures and foresight, and if they are, they might not be trained in scientific theory building nor theory testing practices (social science research methods), but only in futures and foresight methods. Indeed, unlike other disciplines in the social sciences, only a handful of PhD programs in futures and foresight are offered globally, and the majority of available tertiary qualifications are master's degree

or postgraduate diplomas.<sup>11</sup> This prevents the development of a solid community of trained researchers. Thus, the lack of awareness of the explicative nature of scientific theory and the use of the term "theory" to indicate epistemologies, ontologies, descriptions, or speculative claims are perpetuated.

3. *Misunderstanding of what scientific assessment is*. The assessment of the effectiveness of futures and foresight using scientific methods, that is, the rigorous measurement of the effect of futures and foresight interventions and capabilities as independent variables on organizational and individual level outcomes as dependent variables, is largely misunderstood. This is because futures and foresight is a majorly practitioners-driven field (Yeoman & Curry, 2019). Thus, the idea of evaluation and assessment is associated with determining its efficiency, effectiveness, and appropriateness in meeting objectives in an organization (Meissner, 2013; Sokolova & Makarova, 2013). This might or might not be carried out rigorously, and differs from scientific assessment with the aim of creating theory. Indeed, although the two kinds of assessment can go together, the former is relatively less concerned with generalizing theoretical mechanisms and making them available to the extended scholarly community, and relatively more concerned with the success of specific (futures and foresight) projects (Wanzer, 2020). This, however, impedes the incremental theoretical progress of the field as a whole.

4. *Conflation of predictions about the future with theoretical predictions*. Futures studies emerged in the 1940's as a science of the future, a *futureology*, dominated by models, forecasts and simulations, whose underlying epistemology was the technocratic and mechanistic necessity to control the complexity of the world order, in part derived by the insecurity of rapid modernization (Andersson, 2018). This epistemology was akin to positivism, at that time the current dominant epistemology in the sciences. However, since the 1970s, futures studies has moved away from prediction and control of the future, and started to embrace a pluralist viewpoint taking into account multiple potential futures, worldviews, and dissent, more akin to the broader, concurrent movement of the social sciences into post-positivism (Andersson, 2018; Gidley, 2016; Seefried, 2014; Voros, 2007). Futures studies morphed into a social movement aimed at emancipating the futures of humanity from planners, meant to bring the future back to the people, and to internationalize and decolonize it from prediction, which was considered belligerent and imperialist (Andersson, 2012, 2018). Therefore, to the extent that futures studies ideological positions permeate the whole field of futures and foresight, the word "prediction" has acquired very negative connotations in the field. Given that one of the aims of scientific theory is to (statistically) "predict" phenomena, the field of futures and foresight resist the creation of scientific theory due to these negative connotations.

However, one has to distinguish predicting the future and predicting the *outcomes* of futures and foresight interventions and capabilities with scientific theory (Chermack, 2007). The former deals with phenomena in the social environment characterized by high levels of complexity, and is often concerned with the long-term future. The latter is circumscribed to fairly measurable meso and micro

level social, behavioral, and psychological phenomena in organizations, and does not imply claims of truthfulness in the long-term future. Unfortunately, the two kinds of prediction are often conflated within our field.

It may be helpful to consider that much of management and organization research has overcome this confusion. For instance, there are extensive studies on leadership that may position a leadership training program as the intervention and predict the outcomes of this intervention in the form of e.g. emotional intelligence, motivation, etc. In no ways are these studies claiming to predict the future. The mistaken belief that the social sciences predict the future has arguably prevented our field to embrace fruitful applications of the scientific method.

5. *Disinterest in doing science.* Since the rejection of prediction, over the past few decades futures studies emerged as a movement rather than as a field of study/discipline, keen to improve the conditions of humankind and bring peace (Andersson, 2018; Bell, 1996, 1997a). Andersson defines the creation of the *World Futures Studies Federation* as “a gigantic exercise of world future creation” (p. 191). Proponents of futures and foresight have been arguing for the development of a social capacity to envision the future (e.g. see Slaughter, 1996 and the special issue of *Foresight*: edited by Floyd & Slaughter, 2014), a stance that has acquired new vigor with the large scale effort made by UNESCO to enhance the capacity of individuals to think about the future effectively (a capacity called futures literacy) and teach fundamental futures and foresight techniques (called “anticipatory system and processes” in futures literacy language) to communities around the globe (Miller, 2018).

In view of this, and insofar as futures studies ideological positions permeate the whole field of futures and foresight, futures and foresight researchers and practitioners are often less interested in doing science, and more interested in engaging in field projects to “change the world”. This partly explains why the field of futures and foresight is practitioners-driven, and why publications are dominated by methods, with a substantial underrepresentation of theory (Yeoman & Curry, 2019).

This laudable pursuit, however, has been self-sabotaging the futures and foresight field because one of the fastest and most direct ways it can “change the world” is by being accepted by the scientific establishment. By neglecting theory building and testing, our agency in affecting the scientific, and thus corporate and governmental establishments, and thus our clout to improve the future of humankind as a whole has been limited.

6. *Misplaced conscious/subconscious social constructionist worldviews.* One of the most widely held beliefs in our field is that there is a multitude of futures to be explored (Bell, 1997a; Bishop, 2017; Gidley, 2016), largely depending on different worldviews (Gidley, 2016; Inayatullah, 1990). It follows that the way the future is imagined is not considered generalizable. This belief is akin to a social constructionist epistemology, which sees reality through a multifaceted lens, largely dependent on the observer (Charmaz, 2014) and, to the extreme, completely relative (Bell, 1997b). Indeed, the social constructionist notion that reality does not exist independently

of the way it is symbolized in its social environment, i.e. “constructed”, implicitly permeates the vast majority of the conceptual as well as methodological futures and foresight literature (Fuller & Loogma, 2009). Drawing from social constructionism, prominent futures and foresight scholars maintain that the futures are also socially constructed (Fuller & Loogma, 2009).

This belief, with variable degrees of conscious realization, tends to favor futures and foresight field work over the scientific assessment of its theoretical mechanisms, as these are assumed to be too dependent on the way they are socially constructed to be assessed reliably. The search for truth is thus considered moot.

However, one has to distinguish between subjectivist and objectivist philosophies of science. That different images of the futures are present and that they depend on different worldviews rests upon a subjectivist philosophy of science, i.e. social constructionism. That the outcomes of futures and foresight interventions and capabilities can be studied across contexts in larger samples of individuals or organizations rests upon an objectivist philosophy of science, i.e. critical realism. The two can coexist, and the former does not have to be extended to the latter. Indeed, as mentioned above, critical realism conciliates subjectivist and objectivist positions. It subsumes the social constructionist claim that an objective reality does not exist by itself as it maintains that reality is objective while its observations can be tentative and subjective, hence different social constructions of it are observable. Critical realism thus distinguishes ontology and epistemology, as illustrated in section 2.2, while these two entities are conflated in social constructivism.<sup>12</sup>

7. *Misplaced conscious/subconscious post normal worldviews.* Post normal science (Funtowicz & Ravetz, 1993; Ravetz, 1999; Ravetz & Funtowicz, 1999) is a current of thought that has made significant inroads in the field. It posits that “facts are uncertain, values in dispute, stakes high, and decisions urgent” (Ravetz, 1999: 649), and thus, that the scientific approach cannot be used anymore to solve today’s wicked problems. However, albeit justified, this credo is misplaced when it comes to creating scientific theory about futures and foresight practices and processes. This is because one has to distinguish between highly complex phenomena in the social environment, and specifically in policy making, where post-normal science applies most fruitfully (Funtowicz & Ravetz, 1993; Ravetz, 1999; Ravetz & Funtowicz, 1999); and the examination of meso and micro level phenomena in organizations, which can be measured with scientific methods to fair degrees of validity and reliability. Indeed, the way human beings respond psychologically, behaviorally, and socially to futures and foresight interventions, or how they develop futures and foresight capabilities, have many fewer degrees of freedom in such contexts, and valid theories about these phenomena can be generated over time, starting from presumptive propositions and then developed and refined in subsequent research. Moreover, where different contexts would really appear to drive different theoretical mechanisms to the extent that they impede theoretical generalization, one can also resort to the scientific method in the form of meta-analysis (see Schmidt & Hunter, 2001), to discover common theoretical mechanisms at higher levels of abstraction.



8. *Enjoyment of being outliers.* Due to the common belief that futures and foresight is an interdisciplinary field of study and that any formal degree in a traditional subject can even be an obstacle to the development of the kind of mindset that specialists need to succeed, futures and foresight practitioners value diversity, and are generally against rigid boundaries, rules, and standards (Cramer, 2020). The consequence of this is that being outliers or misfits is celebrated, and that anyone doing “mainstream” research is suspicious (Cramer, 2020). Thus, futures and foresight scholars are disincentivized to engage in mainstream scientific research, as this rows against the ideology of the field. Unfortunately, this also works in reverse, and usually more strongly. Aligica (2003) noted that the very approach that undergirds futures studies is suspicious to mainstream social sciences. Insofar as this approach permeates the whole field of futures and foresight, this situation prevents dialogue between futures and foresight scholars and scientists.

9. *Cult of personalities.* Historically, many seminal figures who contributed to the development of the field of futures and foresight have been operating in/for the highest echelons of government. This, over time, has contributed to a cult of personalities wherein futures and foresight experts are considered gurus whose practice is seldom questioned. Notable examples are Herman Kahn, whose strategizing technique has been named, self-explanatorily, “genius forecasting” (Glenn, 2009), or Andrew Marshall, whose career at the pentagon spanned forty years and ten presidential elections, and whose nickname, “Yoda”, exemplifies the level of worship that these figures attract (Whitlock, 2013). Although the situation has been changing and many professionals have been increasingly sharing their expertise, a palpable and enduring consequence of this cult is that the role of a detached scientific observer is alien to an ideal of professional success that subscribes, with varying levels of conscious realization among practitioners, to the concealment of futures and foresight mechanisms, thus accruing the resistance to the development of scientific theory within the field.

With the above list, we aim by no means to be exhaustive. Indeed, one could consider a myriad of other distinctive factors contributing to the resistance to scientific theory within the field. Among these, perhaps the most detrimental are structural and exogenous forces in academia. For instance, as our field is underrepresented in universities, tenure professorships are rare. This incentive structure discourages academics from pursuing scientific research on futures and foresight. Another example is the difficulties that the field faces in its academic development, unlike many other theoretically sufficient disciplines such as mathematics and chemistry, because it requires constant application in and connection with practice, often with the necessity to conduct demanding longitudinal studies in order to prove causation.

Additionally, as futures and foresight is primarily a practitioners-driven field (Yeoman & Curry, 2019), it might resist engagement with academic publications, and thus, with scientific theory, for reasons already noted by management and organization authors. These might include the perception that academic publications

excessively focus on methods and analysis rather than practical implications (Gelade, 2006), academic articles’ incomprehensible academic jargon (Tourish, 2020), the lack of interaction between practitioners and researchers (Vosburgh, 2017) and a general distrust in the content of academic publications due to concerns over credibility and applicability (Giluk & Rynes-Weller, 2012).

Rather, our aim with the above list is to single out the set of most profound ideological barriers, distinct to our field, that require to be addressed with more urgency to achieve its solid establishment. We discuss how to address these barriers in the next section.

## 4 | WHAT TO DO ABOUT IT

A close analysis of the nine arguments as above shows that the resistance to scientific theory in our field rests upon misunderstandings and misplaced beliefs. Barriers that, once acknowledged, can be removed. Indeed, being more concerned with theoretical development does not impoverish our epistemological or ontological refinement of thought. Being more cognizant of theory building and theory testing practices does not impoverish our adeptness at futures and foresight methods. Being able to distinguish different kinds of assessment does not impoverish our ability to evaluate the success of specific futures and foresight projects. Predicting theoretical outcomes of futures and foresight interventions and capabilities does not mean predicting the future. Being interested in doing science does not diminish our ability to change the world. Social constructionist epistemological positions on the subjectivism of worldviews about different futures do not have to be extended to objective observations of futures and foresight practices and processes across contexts. Post-normal epistemological positions on the study of complex systems should not be abandoned. Rather they should be accompanied by critical realist positions on the study of scientific theories about futures and foresight practices and processes. Being outliers is not necessarily beneficial to us. Worshipping personalities can be decoupled from the ideal to be objective observers of the outcomes of futures and foresight.

However, once these realizations are reached, how to proceed to solve the problem? We offer three sets of recommendations: recommendations for authors, recommendations for journal editors, and recommendations for practitioners.

### 4.1 | Recommendations for authors

To enhance the theoretical development of the field, we recommend authors to familiarize themselves with theory building and theory testing practices. This also involves an enhanced appreciation of social sciences research methods.

For deductive theory building practices, authors are encouraged to read extensively on prior literature in their specific topic(s) of interests. To facilitate this process, authors can use software to visualize citations’ webs between scientific articles.<sup>13</sup> Authors

are also encouraged to observe the world of practice with the eye of the theory builder, that is, with the intent to build theory and then use it to solve knowledge related problems in the practice of futures and foresight. Extensive literature reviews and close pragmatic observation of practice allow authors to identify the topic of interest, the phenomenon of interest, and the constructs of interest, and to formally propose causal relationships between these constructs. Authors are encouraged to pinpoint what is the expected cause of a phenomenon (the construct that will be measured with the independent variable), and its subsequent effect (the construct that will be measured with dependent variable). Authors are then encouraged to carefully evaluate whether such proposed relationships are important, easy to understand, parsimonious, generalizable, and potentially impactful for practice (Campbell & Wilmot, 2020). The practice of theory building can be considered a meticulous craft to arrive at plausible conjectures whose verification would solve conundrums in practical work, and to justify these conjectures persuasively with solid logical arguments (Van de Ven, 2007). The theories generated by such conjectures should be interesting in their counterintuitive plausibility (Davis, 1971), and, if well-formulated, extremely useful.

We encourage authors to put forward such conjectures in the form of propositions. For excellent examples of how to include propositions in futures and foresight research articles, see Hodgkinson and Healey (2008), Hodgkinson and Wright (2002), and O'Keefe and Wright (2009).

When possible, we encourage authors to test such propositions (hypotheses) with a rigorous research design, such as field experiments, laboratory experiments, cross-sectional studies, and longitudinal studies. A comprehensive reading list on such methods is provided in the Appendix.

However, we acknowledge that the vast majority of futures and foresight articles are, and will likely continue to be, case studies. This norm lends itself well to an inductive research approach. When documenting such studies, we encourage case writers to implement a more rigorous research process than what has been the norm in the field, using case studies to develop theory inductively. A case study should not just include a description of a futures and foresight consulting project. Ideally, it would need research questions, a methods section, gathering of data and an analysis that makes a contribution to the field and further theorizing. Articles might include "implications for practice" and "implications for theory and further research" as standard headings within the conclusion section. Under these headings, a case study can serve as the basis to put forward propositions as suggested above. If a case study uncovers some theoretically relevant causal mechanisms, authors are encouraged to specify the scope of such mechanisms with a level of detail that would aid subsequent theory testing.

There are several methods for researchers to build theory based on in-depth case studies. For example, one is the aforementioned grounded theory, which allows the researcher to let theoretical explanation emerge from the data without a priori propositions/hypotheses (see Charmaz, 2014; Glaser, 1992; Strauss & Corbin, 1998). Comparative

case study analysis can also be used to enhance the explanatory power and generalizability of findings (Fitzgerald & Dopson, 2009).

Finally, futures and foresight researchers might consider using meta-analytic qualitative methods to synthesize the findings of several case studies (Hoon, 2013). A comprehensive reading list on theory building and theory testing practices is provided in the Appendix.

## 4.2 | Recommendations for journal editors

To enhance the theoretical development of the field, we recommend journal editors to specifically encourage theory building and theory testing from potential contributions. This can be achieved by writing in journals statements that theory proposition papers and empirical papers are welcomed, by specifically designating journal sections as "Theoretical Development" or "Scientific Research", by giving priority to theory driven contributors, by calling for special issues specifically targeted at theoretical development, and by seeking reviewers from sister disciplines who are specialists in theory building and theory testing (social science research methods) practices, along with reviewers within the field. This does not have to clash with the exigencies of current case studies and futures-oriented research. The two will enhance each other. An additional solution would be appointing "Theory Development Associate Editors" with the role of providing guidance to potential and current contributors on theory proposition and testing. Some basic resources can also be shared online on journals' webpages, such as free access theory building and theory testing instructional articles and videos.

Additionally, as the field grows and the number of journal submissions will expand, it may be advisable to establish separate journals for different publication purposes, such as futures and foresight case studies, theory building, theory testing and informed opinions. This will enhance the incentives within the futures and foresight community to pursue research in each and every one of those directions, and clarify the distinction between them among existing and potential contributors.

## 4.3 | Recommendations for practitioners

We understand that theoretical development might not seem of primary interest to practitioners. However, practitioners can still do something within their interest that would significantly enhance, over time, the theoretical development of the field: partner with scholars who are interested in building and testing theory. Indeed, Rowland and Spaniol (2020) suggest that it would be beneficial to implement a "facilitator-observer" pattern of collaboration, where one party (the practitioner) facilitates the futures and foresight intervention, while the other (the scholar) observes it with the intent of gaining a deeper understanding of the mechanism behind it. Indeed, although we see this only as a partial solution to the more deeply ingrained said barriers within the field to create scientific

theory, we agree with Rowland and Spaniol that this arrangement would improve the field's state of theoretical development.

In this same vein, Anderson (2007) suggested several additional modes of fruitful interaction between practitioners and scholars, including scholars' sabbaticals in industry, practitioners-scholars research consortia, and mixed editorial boards. In this way, practitioners could gain first-hand deep understanding of why, how, when, and where the foresight processes they facilitate work at best, and thus enhance their professional excellence in a way that would be impossible without communication with the scholarly sphere. Additionally, practitioners can also keep abreast of the theoretical development in the field by regularly reading academic journals to know which theory(s) suits their practice at best to achieve desired results. Indeed, when developed well, theory should help and guide practice without confining the practitioner. As psychologist Kurt Lewin famously quipped: "There is nothing more practical than a good theory" (1952: 169).

## 5 | RESPONSE TO POTENTIAL MISUNDERSTANDINGS

We acknowledge that for many scholars and practitioners active in the field, what we propose may require a shift in mental models. Specifically, this shift entails turning from seeing the futures as the object of study to seeing futures and foresight practices and processes as the object of study. We believe that this shift is largely justified by the reasons above discussed, particularly because what is argued in this article does not entail an abandonment of the previous mental model, but only an extension of it with the addition of a new one. We further contend that the advantages of this addition are self-explanatory. Indeed, it would be difficult to argue that the few contributions in futures and foresight that have advanced scientific theory within the field have not been beneficial. Contributions such as those by Rohrbeck and Kum (2018) on the effects of futures and foresight capabilities on firm profit and market capitalization, by Phadnis et al., (2015) on the effects of scenario planning interventions on decision making styles, and by Chen and Hsu, (2020) on the effect of futures and foresight courses on students' optimism towards the future of the external environment, among others, have been undoubtedly fundamental to bring about an enhanced legitimization of the field in the eyes of the establishment, without in any way detracting from its own root.

However, to better clarify our position, we feel the need to respond in advance to likely misunderstandings that may arise. In what follows, we foresee five major potential (related) misunderstandings. For each, we provide a defense and clarification.

### 5.1 | Misunderstanding 1) If we do what you suggested, we will be colonizing the future

*Response:* Andersson (2018) suggested that the recent professionalization of futures and foresight specialists is bringing about an

undesirable phenomenon whereby the future is once again (after the post-WWII period) in the hands of a restricted elite of technocrats, which was what the futures studies mandate was originally created to fight against between the 1950's and 1970's. Without close inspection, some readers might misinterpret our attempt to enhance the scientific foundations of futures and foresight and argue that our endeavor will contribute to the problem mentioned by Andersson, because only few can attend to scholarly pursuits. However, this interpretation would be erroneous. One has to distinguish between doing futures and foresight work to enhance the wellbeing of a society as a whole from uncovering futures and foresight theoretical mechanisms to solve organizational problems and thus legitimize the field. These two pursuits are distinct in goals while not detracting from each other. In fact, they complement each other and should coexist. If we know more about why, how, when, and where futures and foresight works, we will be able to enhance its teaching and applications. Teaching futures and foresight methods, applying them in practice, and enabling individuals to be "owners of their own futures", and thus improving a society via futures and foresight, can draw benefits from the enhancement of futures and foresight theoretical underpinnings. The former is certainly a responsibility of practitioners rather than scholars, the latter is of scholars rather than practitioners. It is thanks to the dialogue between the two, and only if and when theoretical foundations are present, that practitioners will be able to make a stronger case about the importance of futures and foresight vis-a-vis a wide spectrum of communities.

### 5.2 | Misunderstanding 2) Futures and foresight is art as much as science. You suggest to sway the pendulum too much on the scientific side

*Response:* We do not aim to make futures and foresight practices and processes more scientific, nor we argue that the field is more science than art. Indeed, we do not discuss the extent to which these practices and processes are or should be scientific. That debate is beyond the scope of this article. What we argue is to make futures and foresight *theoretical development* more scientific. Being more scientific about the theoretical development of futures and foresight does not impoverish the intuitive and artistic component of its practice, which is certainly important, nor depends or is dependent upon the extent to which this practice is scientific. The two issues are mutually exclusive and should be treated separately.

### 5.3 | Misunderstanding 3) You house futures and foresight in the management and organizational sciences, while in reality it is a transdisciplinary field

*Response:* We do not aim to house the field nor constrain it within the domain of management and organization. Indeed, this article does not discuss the practices and processes of futures and foresight work, which are certainly transdisciplinary and ought to remain

so. Instead, we argue that the study of these practices and processes and their outcomes may benefit from the practice of theorizing as in management and organization. This is because the study of futures and foresight practices and processes is carried out in contexts that are extremely similar to those examined by management and organization scholars, i.e. groups of individuals such as firms and communities.

#### 5.4 | Misunderstanding 4) You suggest dragging the field of futures and foresight to the sciences. Rather, we should drag the sciences to futures and foresight

*Response:* Ogilvy (2004) suggested that the humanities and social sciences are slowly “moving toward a widespread recognition of the need for normative scenarios” (p. 29). Ogilvy concluded that we should, therefore, promote a scientific paradigm shift to drag the sciences to play our (futures) game (p. 27). We wholeheartedly agree with Ogilvy that several streams of scholarship are increasingly conducting inquiry in an interested and human-centered rather than detached manner, with the primary objective of having a positive impact on individuals rather than creating abstract conceptualizations. We also agree that this is a trait that futures and foresight should not lose, and that the general conduct of inquiry should deem desirable. However, once again it has to be underlined that scientific theories uncovering the social, psychological and behavioral explanations on why, how, where and when futures and foresight works are distinguished from foresight practices and processes, which we do not aim to make more scientific, but rather to study in a scientific manner. The former can only reinforce the impact of the latter. Additionally, in the true spirit of futures and foresight, we do not know how long it will take for the scientific enterprise to be fully human-centered, and in many domains of the hard sciences, such as medicine, objective inquiry is undoubtedly an equally desirable trait to go hand in hand with a human-centered approach. Rather than waiting or trying to create a future where all the sciences will discard objectivism, we should be aware that, as Keynes (1924: 80) famously quipped: “in the long run we are all dead”.

#### 5.5 | Misunderstanding 5) If we focus on scientific theory, we will be stuck in “Paralysis by Analysis”

*Response:* We do not suggest swinging the pendulum entirely to the theoretical direction. Indeed, even within management and organization sciences, the preeminence of the pursuit of theory has been harshly criticized. Prioritizing theory risks creating a body of overly abstract and pedantic scholarship that privileges the activities in which a few powerful scholars excel, but detached to the exigencies of practice (Anderson et al., 2001; Campbell & Wilmot, 2020; Hambrick, 2007; Tourish, 2020). For example, management theory has led to the creation of an overly rigid set of concepts taught in

MBA degrees and approved by an accrediting body - the Associate to Advance Collegiate Schools of Business (AACSB) - that every manager “must” know. These concepts are not necessarily connected to practice (Mintzberg, 2004, 2013) and because of the accreditation process, they are difficult to change. This is the opposite problem of the field of futures and foresight: an overly rigid set of “best practices” that cannot be easily adapted to a changing world and are isolated from practice, learning, and experience (Warren, 2012). We certainly ought not to recreate this problem in our field. On the other hand, futures and foresight scholarship is, at the moment, overly dominated by practice (Yeoman & Curry, 2019), with little or no emphasis on theory, which leads not only to an incomplete understanding of phenomena, but also to the lack of legitimation of the field.

What we suggest is to achieve an ideal state of healthy compromise and equilibrium between the two worlds by enhancing the awareness of scientific theory in both researchers and practitioners within the field. Echoing previous arguments on the desirable state of academics-practitioners tension, such agreement should be built upon a shared objective (Romme et al., 2015): that to build pragmatic, problem driven science, both relevant in practice and methodologically rigorous, generalizable but also applicable to specific cases (Anderson et al., 2001; Tranfield & Starkley, 1998), and cognizant of the daily problems where (futures and foresight) practitioners are absorbed rather than overly rationalistic (Sandberg & Tsoukas, 2011). In other words, a “theory-sensitive but practice led” discipline (Tranfield & Starkley, 1998: 349). As a practitioner-driven field and with close contacts with the exigencies of practice, futures and foresight is in an advantageous position for the achievement of this goal.

## 6 | CONCLUSION

Demarcating what constitutes science has been a problem afflicting the inquiry of knowledge for centuries, and that will likely continue to be unresolved (Resnik, 2000). Although scholars cannot completely agree on what can be considered established science, if we want to make futures and foresight more widespread and accepted globally, we ought to be pragmatic. We ought to take into account that the scientific establishment is in great part accustomed to developing explanatory theories. Futures and foresight researchers and practitioners seem to agree that the expansion of the influence of the field in academic settings is desirable (Bell, 2002; Gary & von der Gracht, 2015; Marien, 2002) yet the link between the resistance of the field to scientific theory and its weak academic presence has not been drawn. With this article, we have attempted to uncover this link to encourage readers who are active within the field, or who wish to be in the future, to be more cognizant of the importance of scientific theory development.

Indeed, while this might at first be considered trivial by many specialists in our field, a close observation of our society as a system of interrelated parts would reveal the contrary: every day, decisions on whether to include subjects in schools and universities curricula

are made. Chemistry is included. Alchemy is not included. This is because alchemy is not considered science. Futures and foresight suffers from a role that is akin to alchemy in the eyes of scientists. If we work toward the establishment of futures and foresight as a “chemistry”, educational institutions will consider teaching futures and foresight. More teachers, researchers, and professors of futures and foresight will be hired. In turn, more research will be carried out. Our understanding of why, how, where, and when futures and foresight works will be clearer. The demand for futures and foresight experts will increase in corporate, governmental, and non-profit domains. In such a position and with more resources in our hands, we will also be more successful in the pursuit of humanitarian goals, such as expanding the capacity to think about the futures in unprivileged communities, as our reach will be extended. Futures and foresight is still considered a pseudoscience. But the advantage of scientific theory development is that it can transform a pseudoscience into a science over time (Resnik, 2000). The choice remains to us of whether we want to do so.

Finally, in this article we decided to focus on what we believe are the most profound causes behind the lack of legitimation of futures and foresight as a field of study in academia. We acknowledge that this article does not discuss other factors that are likely contributing to the problem under examination, such as structural academic incentives. We do hope that this article will spur further debates on such factors. Additionally, this article is also limited in that, as a solution to that problem, it proposes that the field of futures and foresight familiarizes with mainstream social science research by taking after the example of management and organization. This is both epistemologically and thematically limited. In hoping not to have hurt academic sensitivities by curtailing the scope of this contribution, we look forward to further research that would make up to our limited coverage.

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#### ENDNOTES

- <sup>1</sup> We acknowledge that diversity is present between various practices of and approaches to the investigation of the futures, a diversity that is often mirrored by the two distinct while overlapping traditions of futures studies and (strategic/corporate) foresight (Fergnani, 2020a). However, in this article, we subsume the two traditions to a larger scholarly domain, i.e. “futures and foresight”. We further refer to this domain as a unitary “field”. The rationale behind this decision is that the fundamental premises of these traditions, e.g. the preeminence to explore alternative futures over prediction, the necessity to use the outputs of futuring practices fruitfully in the present, etc. are increasingly recognized to be coinciding; and even more relevantly, that the problems discussed in this article are undoubtedly common among these traditions.
- <sup>2</sup> Although many similar definitions of scientific theory have been provided within the field of management and organization (e.g. Bacharach, 1989: 498; Van de Ven, 2007: 112), Kerlinger and Lee's is perhaps one of the most widely cited.
- <sup>3</sup> For example, the construct of individual creativity indicates the conceptual abstraction of individuals' creative trait, whereas the variable

of individual creativity indicates the variance that different individuals exhibit in response to an instrument meant to assess their creativity, such a creativity survey.

- <sup>4</sup> In critical realism, the tentative nature of scientific findings in empirical research occurs because this philosophy of science distinguishes between three ontological layers: the *real*, the *actual*, and the *empirical* (Bhaskar, 1975). The real indicates unobserved natural laws. The actual indicates the consequent chain of events that take shape in nature. The empirical indicates what is actually known about such events. Thus, theoretical claims can be tentative insofar as different empirical observations are closer to the actual and the real. The level of understanding can be different between different layers. This multi-layered ontology successfully transcends reductionism, as it considers sociological phenomena at least partially independent from biological forces, driving research that pursues understanding of different causes of phenomena at different levels of reality, i.e. social, psychological, biological (Healey & Hodgkinson, 2014).
- <sup>5</sup> This proposition/hypothesis is not yet a theory because it has not been verified and explained, although the related hypothesis that foresight practices commensurate to the external business environment increase firms' profit and market capitalization has been successfully verified by Rohrbeck and Kum (2018).
- <sup>6</sup> This is currently an untested proposition/hypothesis, although the mediating role of organizational learning between foresight and firms' innovative attitude has been successfully verified by Yoon et al. (2018).
- <sup>7</sup> This is currently an untested proposition/hypothesis.
- <sup>8</sup> This distinction applies to descriptions of phenomena at a specific point in time, or of the properties of phenomena independent of time. However, descriptions can also narrate the processual emergence, unfolding, and termination of events over time. Such descriptions can be considered theoretical as they explain the causal chain of events behind what is observed (Cloutier & Langley, 2020; Cornelissen, 2017). In management and organization scholarship, this kind of theorization is called “process theory”, and is distinct from the more widespread “variance theory” (Cloutier & Langley, 2020; Van de Ven, 2007) which is the focus of the current article.
- <sup>9</sup> An exception to this are conceptual frameworks that showcase a typology of different constructs while at the same time explaining the causal relations between them (Cornelissen, 2017). An example of this in futures and foresight is Causal Layered Analysis (CLA) (Inayatullah, 1998) which can be considered theoretical as it is a conceptual framework that deliberately advances causal explanations.
- <sup>10</sup> With references to footnote 4, in a critical realism philosophy of science theoretical pluralism is possible because different observations at the empirical layer of reality occur. Thus, different levels of understanding of the actual and real layers of reality can occur at the same time.
- <sup>11</sup> University Futures and Foresight Degrees and Programs, Rossdawson.com: <https://rossdawson.com/futurist/university-foresight-programs/>
- <sup>12</sup> With reference to footnote 4 and 10, in critical realism objective reality is at the *real* level of ontology, while its observations and measurement of such observations are at the *actual* and the *empirical* level of ontology.
- <sup>13</sup> See CitNetExplorer (<https://www.citnetexplorer.nl/>), and Connected Papers (<https://www.connectedpapers.com/>).

#### REFERENCES

- Ackroyd, S., & Fleetwood, S. (2000). Realism in contemporary organisation and management Studies. In S. Ackroyd, & S. Fleetwood (Eds.),



- Realist Perspectives on Management and Organisations* (pp. 3–25). Routledge.
- Ahlqvist, T., & Uotila, T. (2020). Contextualising weak signals: Towards a relational theory of futures knowledge. *Futures*, 119, 102543. <https://doi.org/10.1016/j.futures.2020.102543>
- Aligica, P. D. (2003). Prediction, explanation and the epistemology of futures studies. *Futures*, 35, 1027–1040.
- Anderson, N. (2007). The practitioner–researcher divide revisited: Strategic-level bridges and the roles of IWO psychologists. *Journal of Occupational and Organizational Psychology*, 80, 175–183.
- Anderson, N., Herriott, P., & Hodgkinson, G. P. (2001). The practitioner–researcher divide in Industrial, Work and Organizational (IWO) psychology: Where are we now, and where do we go from here? *Journal of Occupational and Organizational Psychology*, 74, 391–411. <https://doi.org/10.1348/096317901167451>
- Andersson, J. (2012). The Great Future Debate and the Struggle for the World. *American Historical Review*, 5(117), 1411–1430.
- Andersson, J. (2018). *The Future of the World: Futurology, Futurists, and the struggle for the post-Cold War Imagination*. Oxford University Press.
- Avolio, B. J., & Bass, B. M. (1991). *The full range of leadership development: Basic and advanced manuals*. Bass, Avolio & Associates.
- Bacharach, S. B. (1989). Organizational theories: Some criteria for evaluation. *Academy of Management Review*, 14(4), 496–515.
- Bamberger, P. (2020). Response to Dennis Tourish, “The Triumph of Nonsense in Management Studies”. *Academy of Management Learning and Education*, 19(2), 240–242.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173–1182.
- Bartunek, J. M. (2020). Theory (What Is It Good For?). *Academy of Management Learning and Education*, 19(2), 223–226.
- Bass, B. M., & Steidlmeier, P. (1985). *Leadership and performance beyond expectations*. Free Press.
- Bell, D. (1996). The sociology of the future and the future of sociology. *Sociological Perspectives*, 39(1), 39–57.
- Bell, D. (1997a). The purposes of Futures Studies. In D. Bell (Ed.), *Foundations of Futures Studies*, Vol. 1 (pp. 73–114). Transaction Publishers.
- Bell, D. (1997b). An Epistemology for Futures Studies: From Positivism to Critical Realism. In D. Bell (Ed.), *Foundations of Futures Studies*, Vol. 1 (pp. 191–238). Transaction Publishers.
- Bell, D. (2002). A community of futurists and the state of the futures field. *Futures*, 34, 235–347.
- Bhaskar, R. (1975/2008). *A Realist Theory of Science*. Verso.
- Bhaskar, R. (1979). *The possibility of naturalism: A philosophical critique of the contemporary human sciences*. Humanities Press.
- Bhaskar, R. (1998). Philosophy and scientific realism. In M. Archer, R. Bhaskar, A. Collier, T. Lawson, & A. Norrie (Eds.), *Critical realism: Essential readings* (pp. 16–47). Routledge.
- Bishop, P. (2017). Baseline Analysis: The Epistemology of Scenario Support. *World Futures Review*, 9(2), 38–92.
- Campbell, J. P., & Wilmot, M. P. (2020). The Functioning of Theory in Industrial, Work, and Organizational Psychology (IWOP). In D. S. Ones, N. Anderson, C. Viswesvaran, & H. K. Sinangil (Eds.), *The SAGE Handbook of Industrial, Work and Organizational Psychology*. Sage Publications.
- Charmaz, K. (2014). *Constructing Grounded Theory*, 2nd ed. Sage Publications.
- Chen, K., & Hsu, L. (2020). Visioning the Future: Evaluating Learning Outcomes and Impacts of Futures-Oriented Education. *Journal of Futures Studies*, 24(4), 103–116.
- Chermack, T. J. (2002). The mandate for theory in scenario planning. *Futures Research Quarterly*, Summer Issue: 25–28.
- Chermack, T. J. (2007). Disciplined imagination: Building scenarios and building theories. *Futures*, 39(1), 1–15.
- Chermack, T. J. (2018). An analysis and categorization of scenario planning scholarship from 1995–2016. *Journal of Futures Studies*, 22(4), 45–60.
- Chermack, T. J. (2019). Response to Spaniol and Rowland: “Defining Scenario”. *Futures & Foresight Science*, 1(2), e13. <https://doi.org/10.1002/ffo2.13>
- Cloutier, C., & Langley, A. (2020). What Makes a Process Theoretical Contribution? *Organization Theory*, 1, 1–32. <https://doi.org/10.1177/2631787720902473>
- Cornelissen, J. P. (2017). Developing propositions, a process model, or a typology? Addressing the challenges of writing theory without a boilerplate. *Academy of Management Review*, 42, 1–9.
- Cramer, T. L. (2020). *Becoming Futurists: Reluctant professionals searching for common ground*. Unpublished Thesis, Maastricht University. <https://doi.org/10.26481/dis.20200520tc>
- Daft, R. L., & Weick, K. E. (1984). Toward a model of organizations as interpretation systems. *Academy of Management Review*, 9(2), 284–295.
- Dator, J. (2008). Futures, volume one and two: Then and now. *Futures*, 40, 493–496. <https://doi.org/10.1016/j.futures.2008.07.025>
- Dator, J. (2009). Alternative futures at the Manoa School. *Journal of Futures Studies*, 14(2), 1–18.
- Davis, M. S. (1971). That’s interesting! Towards a phenomenology of sociology and a sociology of phenomenology. *Philosophy of Social Sciences*, 1, 309–344.
- Fergnani, A. (2020a). Futures Studies, Foresight, Futurism, Futurology, Futures Thinking...What Name??? *Medium Predict*. <https://medium.com/predict/futures-studiesforesight-futurism-futurology-futures-thinking-what-name-3b3863ceab8c>
- Fergnani, A. (2020b). Corporate foresight: A new frontier for strategy and management. *Academy of Management Perspectives*. <https://doi.org/10.5465/amp.2018.0178>
- Fergnani, A., & Jackson, M. (2019). Extracting scenario archetypes: A quantitative text analysis of documents about the future. *Futures & Foresight Science*, 1(2), e17. <https://doi.org/10.1002/ffo2.17>
- Finkelstein, S., & Hambrick, D. C. (1996). *Strategic leadership: Top executives and their effects on organizations*. South-Western.
- Fitzgerald, L., & Dopson, S. (2009). Comparative Case Study Designs: Their Utility and Development in Organizational Research. In D. Buchanan, & A. Bryman (Eds.), *The SAGE Handbook of Organizational Research Methods* (pp. 465–483). Sage Publications.
- Fletcher, A. J. (2016). Applying critical realism in qualitative research: Methodology meets method. *International Journal of Social Research Methodology*, 20(2), 181–194.
- Floyd, J., & Slaughter, R. A. (2014). Descent Pathways. *Foresight*, 16(6), 485–495.
- Fuller, T., & Loogma, K. (2009). Constructing futures: A social constructionist perspective on foresight methodology. *Futures*, 41, 71–79.
- Funtowicz, S., & Ravetz, J. R. (1993). Science for the post-normal age. *Futures*, 25(7), 739–755.
- Gardner, A. L., & Bishop, P. (2019). Expanding Foresight Evaluation Capacity. *World Futures Review*, 11(4), 287–291.
- Gary, J. E. (2008). *Advancing the PhD in Futures Studies through Middle Range Theory*. Presented at the XX conference of the World Futures Studies Federation “Transitions: Encouraging Emerging Worlds”, Trollhatten, Sweden.
- Gary, J. E., & von der Gracht, H. A. (2015). The future of foresight professionals: Results from a global Delphi study. *Futures*, 71, 132–145.
- Gelade, G. A. (2006). But what does it mean in practice? The Journal of Occupational and Organizational Psychology from a practitioner perspective. *Journal of Occupational and Organizational Psychology*, 79, 153–160.
- Gidley, J. M. (2016). Understanding the Breadth of Futures Studies through a Dialogue with Climate Change. *World Future Review*, 8(1), 24–38. <https://doi.org/10.1177/1946756715627369>
- Giluk, T. L., & Rynes-Weller, S. L. (2012). Research Findings Practitioners resist: Lessons for Management Academics from Evidence-Based

- Medicine. In D. M. Rousseau (Ed.), *The Oxford Handbook of Evidence-Based Management*. Oxford University Press.
- Glaser, B. G. (1992). *Emergence vs Forcing: Basics of Grounded Theory Analysis*. The Sociology Press.
- Glenn, G. C. (2009). Genius forecasting, intuition, and vision. In J. C. Glenn, & T. J. Gordon (Eds.), *Futures Research Methodology (Version 3.0)*. The Millennium Project.
- Hambrick, D. C. (1981). Specialization of environmental scanning activities among upper level executives. *Journal of Management Studies*, 18(3), 299–320.
- Hambrick, D. C. (1982). Environmental scanning and organizational strategy. *Strategic Management Journal*, 3(2), 159–174.
- Hambrick, D. C. (2007). The Field of Management's Devotion to Theory: Too Much of a Good Thing? *Academy of Management Journal*, 50(6), 1346–1352.
- Hambrick, D. C., & Mason, P. A. (1984). Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review*, 9(2), 193–205.
- Hawking, S. (1988). *A brief history of time: From the big bang to black holes*. Bantam.
- Healey, M. P., & Hodgkinson, G. P. (2014). Rethinking the philosophical and theoretical foundations of organizational neuroscience: A critical realist alternative. *Human Relations*, 67(7), 765–792.
- Hernandez, E. (2019, August). *The Next 50 Years of STR Scholarship: Looking Back to See Forward*. Presented at the 2019 Academy of Management Annual Meeting, Boston, MA.
- Hideg, E. (2007). Theory and practice in the field of Foresight. *Foresight*, 9(6), 36–46.
- Hodgkinson, G. P., & Healey, M. P. (2008). Toward a (Pragmatic) Science of Strategic Intervention: Design Propositions for Scenario Planning. *Organization Studies*, 29(03), 435–457.
- Hodgkinson, G. P., & Wright, G. (2002). Confronting Strategic Inertia in a Top Management Team: Learning from Failure. *Organization Studies*, 23(6), 949–977.
- Hoon, C. (2013). Meta-Synthesis of Qualitative Case Studies: An Approach to Theory Building. *Organizational Research Methods*, 16(4), 522–556.
- Iden, J., Methlie, L. B., & Christensen, G. E. (2017). The nature of foresight research: A Systematic review. *Technological Forecasting and Social Change*, 116, 87–97.
- Inayatullah, S. (1990). Deconstructing and reconstructing the future: Predictive, cultural and critical epistemologies. *Futures*, 22(2), 115–141.
- Inayatullah, S. (1998). Causal layered analysis: Post-structuralism as method. *Futures*, 30(8), 815–829.
- Inayatullah, S. (2004). *Causal Layered Analysis (CLA) Reader. Theory and Case Studies of an Integrative and Transformative Methodology*. Tamkang University Press.
- Inayatullah, S. (2008). Six Pillars: Futures Thinking for Transforming. *Foresight*, 10(1), 4–21.
- Inayatullah, S. (2013). Learnings from Futures Studies: Learnings from Dator. *Journal of Futures Studies*, 18(2), 1–10.
- Kapoor, R. (2001). Future as fantasy: Forgetting the flaws. *Futures*, 33, 161–170.
- Karlsen, J. E., Øverland, E. F., & Karlsen, H. (2010). Sociological contributions to futures' theory building. *Foresight*, 12(3), 59–72. <https://doi.org/10.1108/14636681011049884>
- Kerlinger, F. N., & Lee, H. B. (2000). *Foundations of behavioral research*, 4th ed. Harcourt College.
- Keynes, J. M. (1924). *A Tract On Monetary Reform*. MacMillan & Co. <https://delong.typepad.com/keynes-1923-a-tract-on-monetary-reform.pdf>
- Kuhn, T. S. (1963). The essential tension: Tradition and innovation in scientific research. In C. W. Taylor, & F. Barron (Eds.), *Scientific creativity: Its recognition and development* (pp. 341–354). Wiley and Sons.
- Langley, A., & Tsoukas, H. (2016). *The Sage handbook of process organization studies*. Sage Publications.
- Lewin, K. (1952). *Field theory in social science: Selected theoretical papers by Kurt Lewin*. Tavistock.
- Marien, M. (2002). Futures studies in the 21st Century: A reality-based view. *Futures*, 34, 261–281.
- Meissner, D. (2013). Results and Impact of National Foresight Studies. In D. Meissner, L. Gokhberg, & A. Sokolov (Eds.), *Science, Technology and Innovation Policy for the Future* (pp. 31–42). Springer.
- Mermet, L., Fuller, T., & van der Helm, R. (2008). Re-examining and re-viewing theoretical underpinnings of the Futures field: A pressing and long-term challenge. *Futures*, 42, 67–70.
- Miller, R. (2018). *Transforming the future: Anticipation in the 21st century*. Routledge. <https://www.taylorfrancis.com/books/e/9781351048002>
- Minkinen, M. (2020). Theories in Futures Studies: Examining the Theory Base of Futures Field in light of Survey Results. *World Futures Review*, 12(1), 12–25.
- Mintzberg, H. (2004). *Managers, not MBAs: A hard look at the soft practice of managing and management development*. Berrett-Koehler Publishers.
- Mintzberg, H. (2013). *The rise and fall of strategic planning*. Free Press.
- O'Keefe, M., & Wright, G. (2009). Non-receptive organizational contexts and scenario planning interventions: A demonstration of inertia in the strategic decision-making of a CEO, despite strong pressure for a change. *Futures*, 42, 26–41.
- Ogilvy, J. (2004). *Futures studies and the human sciences: The case for normative scenarios*. Transaction Publisher. <https://www.foresightfordevelopment.org/sobipro/55/1131-futures-studies-and-the-human-sciences-the-case-for-normative-scenarios>
- Phadnis, S., Caplice, C., Shelffi, Y., & Singh, M. (2015). Effects of Scenario Planning on Field Experts' Judgement of Long-range Investment Decisions. *Strategic Management Journal*, 36(9), 1401–1411.
- Piirainen, K. A., & Gonzales, R. A. (2015). Theory of and within foresight – “What does a theory of foresight even mean?”. *Technological Forecasting and Social Change*, 96, 191–201.
- Poli, R. (2011). Step Toward an Explicit Ontology of the Future. *Journal of Futures Studies*, 16(1), 67–78.
- Ravetz, J. R. (1999). What is Post-Normal Science. *Futures*, 3, 647–653.
- Ravetz, J. R., & Funtowicz, S. (1999). Post-Normal Science—an insight now maturing. *Futures*, 31, 641–646.
- Resnik, D. B. (2000). A Pragmatic Approach to The Demarcation problem. *Studies in History and Philosophy of Science*, 31(2), 249–267.
- Rohrbeck, R., & Kum, M. E. (2018). Corporate foresight and its impact on firm performance: A longitudinal analysis. *Technological Forecasting and Social Change*, 129, 105–116.
- Romme, A. G. L., Avenier, M., Denyer, D., Hodgkinson, G. P., Pandza, K., Starkey, K., & Worren, N. (2015). Towards Common Ground and Trading Zones in Management Research and Practice. *British Journal of Management*, 26, 544–559.
- Rowland, N. J., & Spaniol, M. J. (2019). Public understanding of futures & foresight science: A reply to Chermack's response. *Futures & Foresight Science*, 1(2), e15.
- Rowland, N. J., & Spaniol, M. J. (2020). On Inquiry in Futures & Foresight Science. *Futures & Foresight Science*, e37.
- Sandberg, J., & Tsoukas, H. (2011). Grasping the logic of practice: Theorizing through practical rationality. *Academy of Management Review*, 36(2), 338–360.
- Schmidt, F. L., & Hunter, J. E. (2001). Meta-analysis. In N. Anderson, D. Ones, H. K. Sinangil, & C. Viswesvaran (Eds.), *Handbook of industrial, work and organizational psychology* (pp. 51–70). Sage Publications.
- Seefried, E. (2014). Steering the future. The emergence of “Western” futures research and its production of expertise, 1950s to early 1970s. *European Journal of Futures Research*, 15, 29.

- Shapira, Z. (2011). "I've Got a Theory Paper – Do You?": Conceptual, Empirical, and Theoretical Contributions to Knowledge in the Organizational Sciences. *Organization Science*, 22(5), 1312–1321.
- Slaughter, R. (1996). Futures studies: From individual to social capacity. *Futures*, 28(8), 751–762.
- Slaughter, R. A. (1998). Transcending flatland: Implications of Ken Wilber's meta-narrative for futures studies. *Futures*, 30(6), 519–533.
- Slaughter, R. A. (2008). What difference does 'integral' make? *Futures*, 4(2), 120–137. <https://doi.org/10.1016/j.futures.2007.11.015>
- Sokolova, A., & Makarova, E. (2013). Integrated Framework for Evaluation of National Foresight Studies. In D. Meissner, L. Gokhberg, & A. Sokolov (Eds.), *Science, Technology and Innovation Policy for the Future* (pp. 11–30). Springer.
- Spaniol, M. J., & Rowland, N. J. (2019). Defining scenario. *Futures & Foresight Science*, 1(1), e3.
- Strauss, A. L., & Corbin, J. (1998). *Basics of Qualitative Research: Grounded Theory Procedures and Techniques*. Sage Publications.
- Sutton, R. I., & Staw, B. M. (1995). What Theory is not. *Administrative Science Quarterly*, 40(3), 371–384.
- Thompson, M. (2011). Ontological shift or ontological drift? Reality claims, epistemological frameworks, and theory generation in organization studies. *Academy of Management Review*, 36(4), 754–773.
- Tibbs, H. (2000). *Making the Future Visible: Psychology, Scenarios, and Strategy*. <https://pdfs.semanticscholar.org/c282/411b5b1d0da49d666a8087ea8f24215e2bb6.pdf>
- Timmermans, S., & Tavory, I. (2012). Theory Construction in Qualitative Research: From Grounded Theory to Abductive Analysis. *Sociological Theory*, 30(3), 167–186.
- Tourish, D. (2020). The triumph of nonsense in management studies. *Academy of Management Learning & Education*, 19(1), 99–109.
- Tranfield, D., & Starkley, K. (1998). The Nature, Social Organization and Promotion of Management Research: Towards Policy. *British Journal of Management*, 9, 34–353.
- Tsang, E. W. K., & Kwan, K. (1999). Replication and theory development in organizational science: A critical realist perspective. *Academy of Management Review*, 24(4), 759–780.
- Van de Ven, A. (2007). *Engaged Scholarship: A Guide for Organizational and Social Research*. Oxford University Press.
- van der Duin, P., & Van Der Martin, S. (2012). Looking Back on Looking Forward. *Futures*, 44(5), 415–514.
- Vincent, S., & O'Mahoney, J. (2018). Critical Realism and Qualitative Research: An Introductory Overview. In C. Cassell, A. L. Cunliffe, & G. Grandy (Eds.), *The SAGE Handbook of Qualitative Business and Management Research Methods: History and Traditions*. Sage Publications.
- Voros, J. (2007). On the philosophical foundations of futures research. In P. van der Duin (Ed.), *Knowing Tomorrow?: How Science Deals with the Future* (pp. 69–90). Eburon Academic Publishers.
- Vosburgh, R. M. (2017). Closing the academic-practitioner gap: Research must answer the "SO WHAT" question. *Human Resource Management Review*, In Press.
- Wack, P. (1985a). Scenarios: Uncharted waters ahead. *Harvard Business Review*, 63(5), 73–89.
- Wack, P. (1985b). Scenarios: Shooting the rapids. *Harvard Business Review*, 63(6), 139–150.
- Wanzer, D. L. (2020). What Is Evaluation? Perspectives of How Evaluation Differs (or Not) From Research. *American Journal of Evaluation*.
- Warren, K. (2012). *The Trouble with Strategy: The brutal reality of why business strategy doesn't work and what to do about it*. CreateSpace Independent Publishing Platform.
- Weick, D. E. (1995). What theory is not, theorizing is. *Administrative Science Quarterly*, 40, 385–390.
- Whetten, D. A. (1989). What constitutes a theoretical contribution? *Academy of Management Review*, 14, 490–495. <https://doi.org/10.5465/amr.1989.4308371>
- Whitlock, C. (2013). Pentagon weighs future of its inscrutable nonagenarian futurist, Andrew Marshall. *The Washington Post*. [https://www.washingtonpost.com/world/national-security/pentagon-weighs-future-of-its-inscrutable-nonagenarian-futurist-andrew-marshall/2013/10/27/f9bda426-3cac-11e3-b6a9da62c264f40e\\_story.html?noredirect=on&utm\\_term=.aeba68789825](https://www.washingtonpost.com/world/national-security/pentagon-weighs-future-of-its-inscrutable-nonagenarian-futurist-andrew-marshall/2013/10/27/f9bda426-3cac-11e3-b6a9da62c264f40e_story.html?noredirect=on&utm_term=.aeba68789825)
- Yeoman, I., & Curry, A. (2019). Bridging Theory and Practice. *World Futures Review*, 11(2), 103–107.
- Yoon, J., Kim, Y., Vonortas, N. S., & Won Han, S. (2018). Corporate foresight and innovation: The effects of integrative capabilities and organisational learning. *Technology Analysis & Strategic Management*, 30(6), 633–645.

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## APPENDIX

- Anderson, N., Ones, D., Sinangil, H. K., & Viswesvaran C. (2001). *Handbook of industrial, work and organizational psychology*. London, UK: Sage Publications.
- Buchanan, D., & Bryman, A. (2009). *The SAGE Handbook of Organizational Research Methods*. Sage Publications.
- Cassell, C., Cunliffe, A. L., & Grandy, G. (2018). *The SAGE Handbook of Qualitative Business and Management Research Methods: History and Traditions*. Sage Publications.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences*. Mahwah, NJ: Erlbaum.
- Kerlinger, F. N., & Lee, H. B. (2000). *Foundations of behavioral research*. Forth Worth, TX: Harcourt.
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric Theory*. New York, NY: McGraw Hill.
- Rosenthal, R., & Rosnow, R.L. (1991). *Essentials of Behavioral Research: Methods and Data Analysis*. New York, NY: McGraw Hill.
- Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasiexperimental design for generalized causal inference*. Boston: Houghton-Mifflin.
- Van de Ven, A. (2007). *Engaged Scholarship: A Guide for Organizational and Social Research*. Oxford, UK: Oxford University Press.