



## Forecasting and leader performance: Objective cognition in a socio-organizational context



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### ABSTRACT

Traditionally, it has been assumed that leaders, like other people, are typically poor at forecasting. In the present effort, we argue that people can sometimes prove effective at forecasting and that effective forecasting is particularly important to performance in leadership roles. Subsequently, evidence bearing on how four key variables, mental models, objectivity, time frame, and case content, influence the effectiveness of leader forecasting is examined along with interventions that might contribute to effective forecasting on the part of leaders. The implications of these observations for understanding leader cognition are discussed.

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### Introduction

Those who occupy leadership roles in organizations, both for profit and non-profit organizations, are expected to solve, or resolve, many problems (Mumford, Zaccaro, Harding, Jacobs, & Fleishman, 2000)—problems ranging from resolution of strategic crises (Drazin, Glynn, & Kazanjian, 1999) to providing followers with appropriate, effective, feedback (Gaddis, Connelly, & Mumford, 2004). Given the complex nature of the problems that leaders must address, a number of cognitive skills have been held to contribute to leader performance—skills such as planning (Marta, Leritz, & Mumford, 2005), intelligence (Hedlund et al., 2003), creativity (Mumford, Connelly, & Gaddis, 2003), critical thinking (Marcy & Mumford, 2010), and wisdom (McKenna, Rooney, & Boal, 2009).

We do not wish to dispute the importance of these, and other, complex cognitive skills as potentially noteworthy influences on leader performance. Indeed, the complex, dynamic, ill-defined, or poorly structured, nature of the problems presented to leaders may well call for a number of distinct cognitive skills. By the same token, in discussions of leader cognition, we often lose sight of one skill of potentially great significance—forecasting (Shipman, Byrne, & Mumford, 2010). Our tendency to discount forecasting is, of course, based on the assumption that most people are poor at forecasting (Pant & Starbuck, 1990). Limited capacity for forecasting, however, says nothing about the relative value in individual differences in forecasting skills.

In the present effort, we will argue that forecasting skills are critical to performance in leadership roles. Subsequently, we will present a model of the critical variables that influence leaders' ability to forecast effectively in complex, dynamic, social situations. Finally, we will examine some of the practical implications for improving leader performance suggested by our observations concerning the variables influencing leaders' skill in forecasting.

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## Forecasting

### *Attributes of forecasting*

Of course, our foregoing statement of intent broaches a rather basic question. What, exactly, is meant by the term forecasting? Forecasting, ultimately, involves prediction—prediction of the effects of actions, or events, on future outcomes for individuals, groups, firms, or social institutions (Mumford, Schultz, & Osburn, 2002; Mumford, Schultz, & Van Doorn, 2001). The apparently straightforward definition of forecasting, however, has a number of rather subtle implications with respect to the skill we refer to as forecasting.

To begin, forecasting, as a form of cognition, is not tied to one specific outcome or goal. People may forecast with respect to a single goal, or outcome, when this goal or outcome is salient (Locke & Latham, 1996). However, forecasts may be made with respect to a variety of goals, outcomes, or actions of relevant actors. Thus, forecasting is not tightly bounded but, instead, may consider a range of actions, actors, and outcomes. Along related lines, forecasting is not bound to outcomes, actions, or actors operating at one specific level. Thus, people may forecast actions, actors, and outcomes at the individual, group, firm, or institutional levels. Indeed, forecasts may, at least at times, consider actions, actors, and outcomes operating at multiple levels of analysis (Thomas, Clark, & Gioia, 1993).

Not only does forecasting entail predictions about multiple outcomes, actions, and actors, it is inherently dynamic. In other words, forecasts refer to future events where the events forecasted unfold over time (Dörner & Schaub, 1994). This point is noteworthy because it implies forecasting occurs in a temporal context. Moreover, because the future is inherently uncertain, forecasts also evidence some degree of uncertainty with uncertainty increasing as the time frame over which forecasts are being made increases (Jaques, 1976). One noteworthy implication of this observation, moreover, is that forecasting is not an “abstract” purely analytic skill. Instead, it requires active monitoring of the environment and environmental change (Xiao, Milgram, & Doyle, 1997) with forecasts being updated as a function of environmental change.

These observations imply that forecasting is a form of situated cognition (Mumford, Friedrich, Caughron, & Antes, 2009). Thus, forecasts are not made with respect to abstract idealized future outcomes or events. Rather, forecasts are made with respect to outcomes more, or less, likely to occur in a particular situation or a situation as it unfolds over time. One implication of this observation is that forecasts involve imagining unfolding actions, events, and outcomes. In other words, forecasting involves the *mental simulation* of the effects of a situation and actions in this situation on relevant outcomes (Mumford et al., 2001)—potentially multiple outcomes applying at different levels of analysis. Another implication of this observation is that forecasting will require both ongoing scanning of the environment (Souitaris, 2001) and monitoring of key outcomes (Xiao et al., 1997).

Thus, forecasting is an active, conscious, cognitive activity requiring the investment of resources, potentially substantial resources, over long periods of time. This observation, in turn, broaches a question, why invest substantial resources in forecasting? Ultimately, the answer to this question is pragmatic. Forecasting allows people to project the likely effects of actions. Systematic evaluation of projected actions, in turn, allows people to select those actions most likely to bring about sought after outcomes (Loneragan, Scott, & Mumford, 2004). Thus, forecasting allows for adaptive action within a given context.

### *Forecasting as a skill*

Our foregoing observations imply that forecasting reflects the identification and prediction of multiple potential outcomes of action in a situation where predictions of the effects of action are based on mental simulation—simulations which provide guidelines for real-time actions (Mumford et al., 2001). This observation, however, broaches another question. Can people forecast? In fact, forecasting has been discounted as a viable, potentially useful cognitive skill, in part, because much of the available evidence indicates that when people are asked to forecast, these forecasts are often inaccurate (Buehler, Messervey, & Griffin, 2005; Josephs & Hahn, 1995; Pant & Starbuck, 1990). In other words, people typically produce overly optimistic forecasts which are inaccurate with respect to projected “point” outcomes—actually obtained outcomes. By the same token, however, these findings do not speak to the accuracy of range of forecasts or differences among people in their skill in forecasting.

In fact, a series of studies by Guilford and his colleagues (Berger, Guilford, & Christensen, 1957; Kettner, Guilford, & Christensen, 1959; Merrifield, Guilford, Christensen, & Frick, 1962; Wilson, Guilford, Christensen, & Lewis, 1954) have provided some evidence for the existence of meaningful individual differences in forecasting skill. In these studies, a battery of divergent thinking measures (e.g. list the consequences of unlikely change events, list alternative uses of object, provide alternative headlines) was administered and scores on these measures were factored. In addition to traditional divergent and convergent thinking factors, a forecasting factor involving prediction of future outcomes consistently emerged (Mumford, 2001).

Not only is evidence available for the existence of a distinct forecasting skill, but it appears people are not always ineffective in forecasting. In one study along these lines, Dailey and Mumford (2006) asked undergraduates to assume the role of a member of a proposal review committee for a non-profit foundation. Participants were asked to read through three proposals drawn from either the educational or public policy domains. These proposals were drawn from real-world cases where historic case data allowed actual resource requirements and actual outcomes to be established. Participants were asked, as members of this review panel, to forecast ten outcomes of funding the proposal (e.g. likely acceptance, time to adoption, how many positive outcomes) and ten resource requirements (e.g. how difficult to implement the idea, how many different groups will be involved in idea implementation, how much financial support will be needed). Divergence of forecasted outcomes that are resource requirements from actual outcomes and resource requirements was assessed. It was found, although some over optimism was observed, especially with respect to time and money, forecasts were typically within a quarter of a standard deviation of actual case events. Thus peoples' forecasts are not completely inaccurate.

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