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REFLECTIVE PIECE

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Insights from creation theory: The uncertain context rendered by the COVID-19 pandemic

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Frank Knight lived in uncertain times. Born on a farm in Illinois in 1885, between 1900 and 1910, he moved with his family to Colorado, where his father owned a fruit orchard (Knoop, 2010). As small business owners, the Knights likely experienced the adverse effects of the almost biennial recessions, depressions, and financial panics that roiled the U.S. economy at the turn of the 20th century (Knoop, 2010). The first global war—World War I—began in Europe in 1914 (when Knight was 29) and included the United States by 1917. Four of Knight's brothers served in the military in this "war to end all wars"—a war that saw 9 million soldiers and 13 million civilians killed (MacMillan, 2013). And in 1918—when 33-year-old Knight revised his dissertation for publication—the world experienced a flu pandemic that killed between 19 and 50 million people worldwide. Some have estimated that the death toll from this pandemic was as high as 100 million (Spinney, 2017).[1]

Thus, it is perhaps not surprising that Knight's first published research focused on the difference between risk and uncertainty and particularly on the implications of uncertainty for businesses (Knight, 1921). For Knight, decision-making settings were risky when decision makers did not know, ex ante, what an optimal decision was but did know both the possible outcomes of a decision and their probability. Decision-making settings were uncertain when decision makers did not know, ex ante, what an optimal decision was and also did *not* know the possible outcomes of a decision nor their probability.

Coase (1988: 1) once observed that his work was "much cited, but little used." The same can probably be said about Knight's work on uncertainty. The problem with uncertainty, from the point of view of traditional economics, was that it is often not possible to write formal models under conditions of uncertainty, while such models can be written under conditions of risk (Stigler, 1985). So, while acknowledging the existence of uncertainty,[2] economists focused on the risky conditions where they could adopt their preferred predictive methodology.

[1]Historical information about Knight's family was obtained from 1900 U.S. census, McLean County, Illinois, population schedule, Lawndale, p. 6, dwelling 104, family 104, Winton and Julia Knight; digital image, *Ancestry* (http://www.ancestry.com: accessed June 16, 2020); citing NARA microfilm publication T623. 1910 U.S. census, Mesa County, Colorado, population schedule, Pomona, p. 14B, dwelling 297, family 308, Winton C. and Julia A. Knight; digital image, *Ancestry* (http://www.ancestry.com: accessed June 16, 2020); citing NARA microfilm publication T624. "U.S., World War I Draft Registration Cards, 1917–1918," images, *Ancestry* (http://www.ancestry.com: accessed June 16, 2020), card for Melvin M. Knight, serial no. 20637, Local Draft Board, Clark University, Worcester, Massachusetts; also card for Frank Hyneman Knight, serial no. 964, Local Draft Board No. 15, Chicago, Illinois. "Colorado, Soldiers in WWI, 1917–1918," database, *Ancestry* (http://www.ancestry.com: accessed June 16, 2020), entries for Paul Edwin Knight, Mark Knight, Bruce Winton Knight; citing *Roster of Men and Women Who Served in the World War from Colorado, 1917–1918*. Colorado, USA; Adjutant General, Colorado National Guard, 1941. "U.S., Department of Veterans Affairs BIRLS Death File, 1850–2010," database, *Ancestry* (http://www.ancestry.com: accessed June 16, 2020), entries for Paul Knight, Bruce Knight, Mark Knight.

[2]Some economists deny the existence of uncertainty altogether, arguing that because decision makers always operate with a probability distribution in their mind, decisions are always made under conditions of risk (Savage, 1954). See Alvarez and Barney (2020) for a summary of the behavioral economic critiques of such a model of human decision-making.

However, in the last few years, interest in Knightian uncertainty has grown, primarily among management scholars (Alvarez & Barney, 2005; Milliken, 1987; Teece & Leih, 2016). While interest in Knightian uncertainty spanned many areas of management (Burns & Stalker, 1966; Lawrence & Lorsch, 1967; Thompson, 1967), it is the entrepreneurship scholars that have more recently embraced Knightian uncertainty and its implications for research (Alvarez & Barney, 2007; McMullen & Shepherd, 2006; Sarasvathy, 2001). Therefore, it is not surprising that, when "Discovery and Creation: Alternative theories of entrepreneurial action" was published, it generated significant interest. While many scholars had written about uncertainty and its difference with risk, the Discovery and Creation paper was the first to systematically articulate those differences and what they meant for theories of opportunity formation.

Knightian uncertainty is a key assumption of the Creation Theory of the formation and exploitation of entrepreneurial opportunities and is growing in importance (Alvarez & Barney, 2007; Alvarez, Barney, & Anderson, 2013). In contrast to discovery views of entrepreneurship that have assumptions of risk, Creation Theory suggests that entrepreneurs often begin the process of forming opportunities—defined as competitive imperfections in a product or factor market (Alvarez & Barney, 2020)—with limited or no information about the characteristics of the opportunity they may ultimately create. That is, consistent with Knight's definition of uncertainty, entrepreneurs begin the opportunity formation process in conditions of Knightian uncertainty before the outcomes of the creation process can be anticipated even probabilistically. Through an iterative path-dependent learning process undertaken through a series of actions, entrepreneurs can sometimes end up creating an opportunity that did not exist before they acted to create it.

Putting Knightian uncertainty front and center in understanding the process of forming entrepreneurial opportunities in the 2007 paper seems remarkably prescient given recent events that eerily parallel the setting within which Knight did his original work—including the emergence of the global Covid-19 pandemic, associated economic upheavals, and growing racial tensions connected to the death of George Floyd and others. All these events were difficult, if not impossible, to anticipate before the actions of individuals set them in motion. Of course, that is what makes human action important—these actions can set Knightian uncertainty into motion with individuals often unaware of doing so. What, if anything, can the concept of Knightian uncertainty do to be helpful in this context?

First, a central feature of the formation of entrepreneurial opportunities under conditions of Knightian uncertainty is that, in the beginning, what is not known is substantially greater than what is known, and what we think is known may not be relevant as human actions bring about change. In the case of the pandemic, we knew very little about the pandemic when it started, but over time, we have learned more about the spread of the virus and the treatment of those infected. Initial efforts to reduce uncertainty were, at best, informed guesses. In the early days, data are often nonexistent or incomplete. As we have witnessed with the current pandemic, conventions and techniques used during stable periods in the treatment of known flu types have been rendered useless. What we knew about medical care and the scientific method was often not relevant as we began to learn more about the situation. Those looking to reduce uncertainty often do not know the right questions to ask, let alone how to answer those questions.

Second, ex post, it is easy to attribute the many missteps taken by individuals in the early stages of Knightian uncertainty to incompetence. And, indeed, some of these steps may be the result of incompetence, but they may also reflect the fundamental uncertainty facing decision makers in the early stages of resolving uncertainty.

Third, the experimentation conducted early in the process of Knightian uncertainty often generates incomplete and even contradictory results. Knightian uncertainty makes it difficult to design optimally informative experiments. What is typical in these conditions is that a person tries one thing, and if it does not work, they try something else. If something works, then they do more of it. As the famous quote of Lord Maynard Keynes replying to a heckler illustrates "When my information changes, I alter my conclusions. What do you do, sir?" This is perhaps most exemplified by the changing mask recommendations. The public was first told that masks did not make a difference in fighting the virus. Then, the public was told that masks helped but only to curb the spread of the virus to others. The most recent information as of this article is that masks help both to curb the spread but also to not catch the virus.

In conditions of Knightian uncertainty, what turns out to be incorrect experimental design, ex post, can create ambiguous and contradictory conclusions early on.

Fourth, from the point of view of trying to address challenges in a Knightian uncertain environment, encouraging multiple approaches to addressing these challenges is likely to be a more reasonable strategy then prematurely settling on a single approach. There have been numerous examples of this during the pandemic. The public heard about hydroquinone from the president, the use of steroids from the medical profession, and even something as simple as turning patients on to their stomachs as a way to prevent having to intubate critically ill patients from the medical community. Ex post, it may turn out that many of these approaches were dead ends. But, ex ante, under conditions of Knightian uncertainty, it is not possible to reliably distinguish between fruitful and fruitless paths forward. It is only as the situation and the creation processes unfold that new questions are raised and new answers developed as individuals begin to grasp the context of the condition. The uncertainty is a result of being at the edge of our knowledge and where new knowledge has to be created in order to reduce the uncertainty.

Fifth, decision makers under conditions of Knightian uncertainty use cognitive biases and heuristics when optimization is impossible (Busenitz & Barney, 1997; Gigerenzer, 2008). The lack of historical conventions, knowledge, and techniques render the ability to use traditional data-driven tools for decision-making moot. Cognitive biases and heuristics can be used when there are little to no data. Four particularly common biases and heuristics that are often operating in an uncertain setting are the representativeness bias (i.e., the willingness to generalize from small numbers), the overconfidence bias (i.e., having a great deal of confidence in your ability to generalize from small numbers), the confirmation bias (i.e., engaging in experiments that can only confirm your hypotheses), and the persistence bias (i.e., increasing your commitment to a course of action in the face of negative feedback). These biases vary significantly from the standards of rational risk-based decision-making, but under conditions of Knightian uncertainty, rational risk-based decision-making is not possible. Thus, in order for experiments under Knightian uncertainty to be undertaken, those engaging in these experiments will often manifest these and related biases.

While Covid-19 and other recent events seem almost surreal to many of us, Frank Knight would have recognized these situations as uncertain. He would have also known that the theories and techniques used for analysis and practice during periods of business, economic, medical, and political stability—tools consistent with discovery theory, scientific methods, rational or boundedly rational analysis, theories, and their related tools that assume the world exists and is static—would be inadequate in dealing with the challenges presented by uncertainty. But Creation Theory tells us how to proceed: Go back to the beginning, when the virus first jumped from animals to humans, when one man died under the knee of another. Go back to the beginning and understand the human actions that started the uncertainty that disrupted the world. By understanding what happened and the specific actions that started the uncertainty, individuals can shape the uncertainty and create opportunities for the betterment of humankind.

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