A Knight for the modern age – Some reflections inspired by Amar Bhidé's "Uncertainty and Enterprise"*

Richard Friberg†

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1 Introduction

1921 saw the publication of "Risk, Uncertainty and Profit", (Knight (1921)), a path-breaking book that has stimulated discussion ever since of risk, uncertainty and entrepreneurial profits. Readers of the current piece are likely to be aware that following Frank Knight's work, risk is often taken to denote randomness that can be captured by probability distributions whereas uncertainty is taken to denote more amorphous hazards that are not so easily tamed.

1921 also saw the first of a string of British expeditions to Mount Everest, ending with Mallory and Irvine perishing high on the North Ridge in 1924. The first reconnaissance expedition of 1921 was faced with astonishing uncertainty, as is beautifully chronicled in Davis (2011). Where exactly was the mountain? What would be a passible way to the top? How would Tibetan officials see on an incursion by the Brittish? How would the body respond to low levels of oxygen at high altitude – was it even possible to breathe at more than 8,000 meters? What weather would they encounter at these altitudes and was the clothing they had at all suited for the conditions?

A lot has happened since 1921, both in Himalayan climbing and in the world at large. As argued in Amar Bhidé's "Uncertainty and Enterprise" (Bhidé (2024)), Knight's

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†CEPR, Norwegian School of Economics and Stockholm School of Economics, P.O. Box 6501, 113 83 Stockholm, Sweden. Email:nerf@hhs.se

concept of uncertainty is often only paid lip service and has to some extent become a dead end. Bhidé (2024) is a "modernizing project" where he argues for an updated way of operationalizing some of the key insights of Knight, Keynes and other early thinkers on risk and uncertainty. Bhidé investigates how our understanding of entrepreneurship, and how it is financed and supported, is intertwined with our understanding of uncertainty. It is a work of breathtaking breadth.

The book contains three major parts. The first major part is a historical overview of how the concept of uncertainty has developed (or failed to develop). It is fantastic reading. A deep understanding of the concepts is intertwined with personal details of some of the colorful key personas such as Knight, Keynes, Savage, Ellsberg, Simon and Kahneman/Tversky. The story is wonderfully curated and Bhidé is not afraid to give his own views on what works and what has turned out to be fruitless expeditions to barren landscapes. With a sure hand he comments on what his take-aways are for the modernization project. I can think of no better overview of the concept of uncertainty and this will be my recommended introduction for future PhD students and others interested in applying the concept.

The second part focuses on the different stages of entrepreneurship and how our understanding of them can be improved by a deeper understanding of uncertainty. While the emphasis on risk and uncertainty is fairly broad in the first part of the book, this second part narrows down the analysis to entrepreneurship and development of new products. This is a highly relevant application and clearly well in line with Knight's own focus on the sources of profits. An important conclusion is that the nature of uncertainty for different types of projects aligns with how the financing and support for such projects is typically done, from self-financed startups, business angels and venture capitalists up to the corporate bureaucracies of the largest firms. Rather than focusing on moral hazard, as done by much of modern corporate finance theory, Bhidé wants us to focus on uncertainty. The final part concerns how the rhetoric of entrepreneurship interacts with uncertainty. The parts are all immensely readable and complement each other even if, arguably, each of them would work well as a standalone book.

I have long taken an interest in risk and uncertainty and the strategies that firms can use to manage the same. I have worked little on entrepreneurship and even less on rhetoric so I will choose to focus my reflections on Bhidé's reformulation of uncertainty as a concept and what uses it might serve outside of applications to (funding of) entrepreneurship. One way to interpret the scope and motivation for the book is to take Keynes (1937, p. 213-214) ubiquitous quotation as a spring board:

> "By 'uncertain' knowledge, let me explain, I do not mean merely to distinguish what is known for certain from what is only probable. The game of roulette is not subject, in this sense, to uncertainty; nor is the prospect of a Victory bond being drawn. Or, again, the expectation of life is only slightly uncertain. Even the weather is only moderately uncertain. The sense in which I am using the term is that in which the prospect of a European war is uncertain, or the price of copper and the rate of interest twenty years hence, or the obsolescence of a new invention, or the position of private wealth-owners in the social system in 1970. About these matters there is no scientific basis on which to form any calculable probability whatever. We simply do not know. Nevertheless, the necessity for action and for decision compels us as practical men to do our best to overlook this awkward fact and to behave exactly as we should if we had behind us a good Benthamite calculation of a series of prospective advantages and disadvantages, each multiplied by its appropriate probability, waiting to be summed."

Bhidé in essence argues that such a stance of "We simply do not know" makes uncertainty a dead end. Just like Keynes noted, something that we ostentatiously pay homage to but without properly taking account of in our decision processes. In Bhidé's modernization project he focuses on uncertainty and (Bhidé (2024, p. 170) chooses to "specify uncertainty as doubt, typically produced by missing information about known unknowns, where we know what we do not know".

A facet that I find particularly attractive with Bhidé's updated definition of uncertainty is the ample references to legal and medical practice, with their need to make decisions in a particular case (is the suspect guilty of murder, does this patient suffer from Friberg's syndrome?) and their reliance on contextual information. I hope and believe that this broadening of the view of evidence relative to how economists and logicians have thought about uncertainty to be supremely useful for the future. Much of the thinking about uncertainty has been made in the shiniest of ivory towers – the modernization project has the scope to tie practice and theory closer together.

There are two areas however where I am somewhat hard pressed to abandon my preconceived notions and below I discuss them in turn. First, I still find the distinction between risk and uncertainty useful and spend some ink explaining why. Bhidé (2024, p. 171) notes that "The missing-information specification [which is what the book proposes] subsumes Knight's distinction between uncertainty and numerical 'risks.'" and that

"Knight's risk-uncertainty dichotomy *does not*[emphasis in original] play a significant role in my modernization project." I can see the reasoning, but I keep finding the distinction useful. After all, my magnum opus, Friberg (2015) revolved around this distinction and how they could be related to firm decision making. Second, Bhidé finds little use for "unknown unknowns", emphasizing that this is of limited relevance for firm decision making. Here, also in line with Friberg (2015), I would emphasize the value of thinking in terms of what kinds of shocks can we as a firm handle, rather than what the precise nature of those shocks are.

2 An updated view of Knightian risk

Just like Bhidé proposes to modernize "Knightian uncertainty" I believe that also the concept of risk might benefit from some modernization. In standard parlance as to the distinction between risk and uncertainty we tend to describe the former as randomness that can be described by probability distributions or circumstances with known probabilities (Gilboa (2009, p. 79)). Of course Knight (1921) was written before so much of the developments of statistical techniques that we've seen in the century following its publication.

Knight (1921, p. 233) put the point as follows: "The practical difference between the two categories, risk and uncertainty, is that in the former the distribution of the outcome in a group of instances is known (either through calculation a priori or from statistics of past experience), while in the case of uncertainty that is not true, the reason being in general that it is impossible to form a group of instances, because the situation dealt with is in a high degree unique."

Arguably, the key aspect of risk in more modern times is not whether we can reject whether a particular variable follows a specific probability distribution or not (as in a common interpretation) and whether probabilities are "known", but whether it is amenable to statistical analysis using e.g. tools from econometrics, statistics or machine learning. I find the concept of state of the world, fundamental to the probability calculus of Savage (1954) and others, very useful. A state of the world is a full description of a possible set of conditions as it applies to the decision maker (e.g. it rains, the die shows a 5, the euro/dollar exchange rate is at a particular level). In much of the work that economists have devoted to risk and uncertainty the key question is how make decisions when different objective or subjective probabilities are attached to the different states (see e.g. Gilboa (2009)). However, the concept is very useful, also without directly moving to

numerical probabilities of the different states.

By temperament I'm not a researcher that tends to focus on definitions, but clearly a focus on known probabilities makes the applicability of risk very limited. On the other hand, as discussed below, statistical analysis is valuable in many situations I believe it useful to have a category that captures such situations. In my current thinking I would propose that *risk* concerns the case where there is *a lack of knowledge about which state of the world that will be or has been chosen and where the tools of statistics are useful for increasing that knowledge*. It is inspired by Keynes and Bhidé in that it focuses on a lack of knowledge and that it is not necessarily forward looking.

In preparing this piece I re-read parts of Knight (1921) and was struck by the insightful discussion – the points below can therefore largely be seen as an updating of references to Knight's reasoning rather than some grand remake.

The prices of inputs can be hedged on financial markets, or bought on long-term contracts. Whether that should be done is usefully based on statistical properties of the input price. While the literature on risk management that relies on financial instruments has uncovered many anomalies, it is still well established that many firms are using insurance and futures contracts to manage risks (see e.g. Hankins and Hoberg (2023) for a survey). Long-term contracts on inputs are used to manage input price risk and statistical techniques are used to manage credit risk. None of this perfectly insulates from the effects of randomness, but arguably a great number of firms are finding that financial instruments and insurance based on statistical analysis of historical data are useful in their day-to-day management of risk.

Similarly, inventory management frequently relies on statistical techniques to model the uncertainty associated with demand with different distributional assumptions (see e.g. Qin et al. (2011) for an overview of theory, in particular newsvendor models, and Huber et al. (2019) for an application). In another vein, using historical data together with distributional assumptions to predict consumer purchases and customer lifetime value appears widely used in markets where customer-level data is available (see e.g. Ehrenberg (1959) for prescient work or Fader and Hardie (2009)).

To some extent the distinction between risk and uncertainty is one of in what context that we discuss randomness. Consider a firm that imports raw materials, refines them in an energy-intensive production process and then sells the output on an international commodity market. A plethora of shocks to producers of the input and demand for the output will affect the profitability of the firm's operations. To a large extent however these will be operating via prices – of inputs or outputs. Models used in e.g. options

pricing assume that many events shock market prices, like that when pollen in water is continually moving as they are rocked by molecules, in what is known as Brownian motion after its observation by Scottish botanist Robert Brown in 1827 (see e.g. Karatzas and Shreve (2014)). Similarly, for many firms the randomness of prices, rather than the set of shocks that move those prices, will be the key variable to keep track of.

In a similar vein what is uncertainty at the individual level can in some cases of aggregation at the firm level behave more akin to risk. Just as the question within a couple of whether they will eventually divorce or not can seem full of unmodelable contingencies, the share of marriages that end in divorce at the economy-wide level can be usefully studied with statistical models (see e.g. Wagner and Weiss (2006)). Similarly, it used to be taken as given that our ability to predict the success of a particular book or movie was very limited (see e.g. De Vany and Walls (1999)). Publishers and movie producers then operated in a business model where, even if it was supremely hard to predict success at product level, the business as a whole could operate rather comfortably on the assumption that in the portfolio of products a few products would be stars that would compensate for the inevitable duds (see Friberg (2021) for further analysis of how risk at the level of a portfolio of products can be modeled).

One important point to emphasize about risk is that just because it can be usefully studied with the help of statistical tools it does not follow that the process is flawless. The probability that a homeowner is not able to pay a mortgage is in principle something well suited for a statistical analysis, something that holds true even if obviously erroneous assumptions on the structure of how shocks covary can have serious repercussions, as when an underestimation of the correlation of shocks to home owners led to faulty prices on mortgage backed securities, thereby contributing to the financial crisis of 2008 (see e.g. Kacperczyk and Schnabl (2010)). The logic of Mark Twain's observation that "It ain't what you don't know that gets you into trouble. It's what you know for sure that just ain't so" prompt some to argue that it'd be better not to try to tame uncertainty at all (see e.g. Taleb (2012)). I do not agree but this is anyway a slightly different problem. If we have a model that predicts very well 9 days out of 10 and then disastrously on the tenth, it is clear that statistical analysis is to some extent useful in making predictions, but also that it has some flaws. In terms of risk it is not a situation like pulling balls from an urn, but it is also not a totally unknowable state of affairs. The decision making processes that this suggests are to some extent a separate problem from the characterization of randomness per se. But we can still be in agreement with Knight (1921, p. 235) when he stated that "The problem of the human attitude toward uncertainty (not for the present

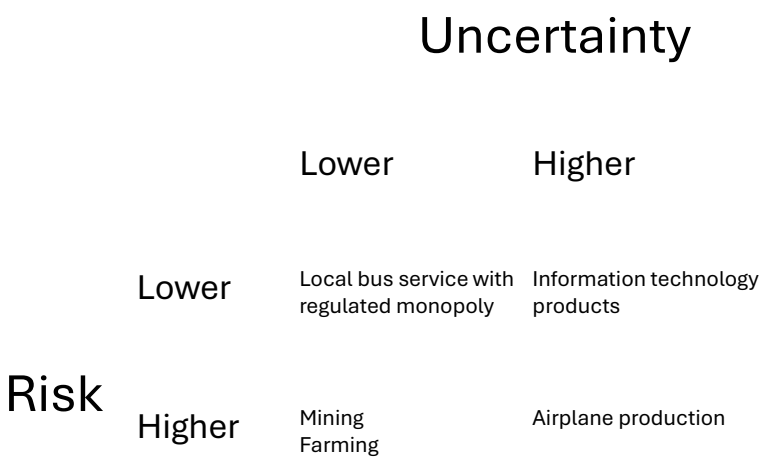
purpose distinguishing kinds) is as beset with difficulties as that of uncertainty itself."

2.1 Risk and uncertainty – still a useful distinction?

I would then propose that the distinction between risk and uncertainty remains a useful one. Define risk as above and we can a define uncertainty as the other end of the spectrum, *uncertainty* concerns the case where there is *a lack of knowledge about which state of the world that will be or has been chosen and where the tools of statistics are of very little use for increasing that knowledge.* Figure 1 presents a stylized that very tentatively contrasts different types of firms/markets where risk and uncertainty can be expected to be higher or lower. I do not want to think of the distinction between risk and uncertainty as a dichotomy but more as a scale. Even in the case of a roulette wheel there may be some uncertainty as to whether the wheel is flawed. At the other end of the spectrum it is hard to think of an uncertain situation where not some use of odds based on historical evidence can help shed light on whether some outcomes are more relevant to consider than others.

Thus the manager of a local bus service with a regulated monopoly can likely take care of her work without losing much sleep over risk or uncertainty. A firm active in markets where the output is sold on commodity markets and where there are well established routines for production is likely to be subject to substantial risk in the sense that market prices have large effects on profits and survival, but those market prices are at least somewhat amenable to statistical analysis. Airline production has a high reliance on risk factors related to e.g. exchange rates at the same time as behavior of a few customers, technological mishaps and a phletora of other shocks can affect profitability. Finally one could argue that for (developing) many information technology or medical products there is little risk in the sense of exchange rates or input price fluctuations crucially affecting performance, whereas the uncertainties about the efficacy of proposed solutions and how they will be received by the markets are likely to be large. This placing of industries in different bins is only meant to help intuition and is not in any way deterministic. Characteristics of industries can also change over time. A mid-1900s telecoms operator would face very little of either risk or uncertainty as they were typically legal monopolies operating at a time when there was relatively little technological change in their industry. In contrast, many telecoms operators would today rely on winning licenses in auctions and on the success of bet-the-firm adoption decisions of new technology.

Figure 1: Matrix of risk and uncertainty with examples from different markets



One important notion in Bhidé is that we can reason about uncertainty even when we have little or no numerical information. One nice observation in line with this comes from the discussion of risk factors in the highly structured annual reports of large US corporations known as 10-Ks. In Section 1A of the 10-K firms are required to discuss "risk factors" where risk includes both risk and uncertainty. In Item 7A they are required to provide information on "market risks". The latter are particularly close to what we above categorize as risk. In its 10-K Boeing (2023) for instance provide quantitative information about the risk associated with interest rates, exchange rates and commodity prices and how these are partly managed with the aid of derivative contracts and fixed rate contracts. In Item 1A many of the factors mentioned are more squarely uncertainty. Reliance on unique situations feature prominently as in Boeing (2023, p. 6) "We derive a significant portion of our revenues from a limited number of commercial airlines. We can make no assurance that any customer will exercise purchase options, fulfill existing purchase commitments or purchase additional products or services from us." Interestingly, reflections about the extent of knowledge are also mentioned as in Boeing (2023, p. 11) "We use estimates and make assumptions in accounting for contracts and programs. Changes in our estimates and/or assumptions could adversely affect our future financial results." Rapid technological change in some industries is a clear type of uncertainty and mentioned in for instance Apple (2023, p. 6) "Global markets for the Company's

products and services are highly competitive and subject to rapid technological change, and the Company may be unable to compete effectively in these markets."

The text relating to risk in 10-Ks have tended to become more and more extensive over time and frequently contains large chunks of boilerplate language,[1] but a growing body of work that relies on textual analysis of 10-Ks indicate that quantitative analysis of such textual data nevertheless can be a useful way to analyze the perceived relation between firm's performance on the one hand, and risk and uncertainty on the other hand. Hoberg et al. (2014) for instance uses textual analysis based on 10-Ks to create a measure of how "fluid" various product markets are. Other sources of data, like earnings calls, have also been used to provide quantitative analysis of how firms reason and act in relation to risks, see e.g. Hassan et al. (2019).

As an example of the potential value of distinguishing risk from uncertainty Friberg and Seiler (2017) rely on textual analysis of 10-K statements. Loughran and McDonald (2011) proposed a list of risk words for 10-Ks. In Friberg and Seiler (2017) we take their word list as a starting point and categorize words according to whether they primarily relate to risk in the Knightian sense (e.g. variability), to ambiguity/Knightian uncertainty (e.g. unknown) or whether they are words related to risk but not particularly clearly to either risk or uncertainty in the Knightian sense.

We find a positive relation between the use of risk words and use of derivatives, in line with the idea that derivatives are used to deal with risk due to e.g. fluctuations in commodity prices or exchange rates. Uncertainty words on the other hand are positively related to the amount of cash held, consistent with the notion that a large war chest of cash is useful for dealing with many sources of uncertainty. In Friberg and Seiler (2021) we instead rely on supervised learning to classify different ways of dealing with risk as discussed in 10-Ks. Some are more suitable for risk in the Knightian sense (e.g. insurance and derivatives) whereas others are more suitable for uncertainty in the Knightian sense (e.g. diversification).

3 Unknown unknowns

The second point related to the risk/uncertainty distinction that I still find valuable is what Donald Rumsfeld memorably referred to as unknown unknowns. Trying to enumerate these ex ante may well be a futile exercise. I can also see that in an entrepreneurial

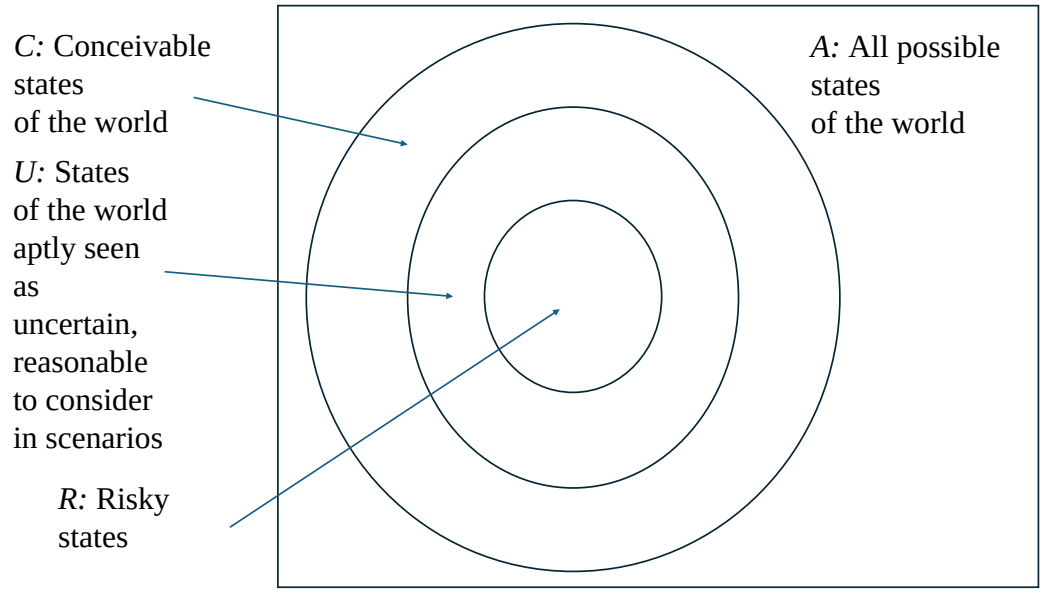
[1] These areas of concern inspired a 2020 update of the requested outlines, see https://www.sec.gov/files/rules/final/2020/33-10825.pdf

setting there are more pressing issues to focus on than worrying about things that you can't even envision. But, as discussed above, I think that Bhidé's "modernization project" is valuable also outside entrepreneurship settings and thus want to evaluate what use the notion of unknown unknowns can play.

Where I do see a role for allowing unknown unknowns in a forward looking framework is in the spirit of "expect to be surprised". There are two points here – a first concerns how to organize decision making and authority within the firm. We might not be able to foresee a lot of the things that can happen but we can be clear in who has the right to make decisions, irrespective of what they are. This is the type of insight that has for instance guided some thinkers of military strategy over the years, where at least since Von Clausewitz (1832), the "fog of uncertainty" has been seen as key to where decision making power should rest. In words attributed to Helmuth von Moltke the elder: "It would be wrong if he [the officer] had to wait for orders at times when no orders could be given." Central staff officers may be more or less ignorant about the developments in the field, making sure that officers on the frontline have knowledge of the overall mission and authority to act are then a way of handling the possibility of unknown unknowns. A second point regarding unknown unknowns is that of separating the source of the shock from its transmission. Take the example of an airline for instance. A number of issues can lead to the crashing of a plane with requests for compensation and a loss of reputation. Some of the reasons for a crash can be very much in the unknown unknowns domain and come as surprises, as when Malaysia Airlines Flight 370 literally flew off the radar and disappeared in 2014. A gazillion other events could have happened but many of them would boil down to the same consequence, a plane is lost with all passangers and establishing routines for handling such a situation seems prudent, even if limited time is spent on trying to identify all the possible reasons for such an outcome.

To further clarify, Figure 2 sketches a simple diagram to illustrate the way that I like to organize my thinking regarding risk and uncertainty, broadly defined. Again I rely on the concept of a state of the world, this of course is central to how much of the formalistic modeling of choice under risk following e.g. Savage (1954) has proceeded. A full description of the relevant situation as it applies to the decision maker. A small set of states can be described as certain or subject to risk only, R. They are a subset to all of the states of the world that we describe as uncertain and in line with find Bhidé's this set concerns known unknowns, and we denote this set by U.

Figure 2: Venn diagram with possible states of the world



Outside of this are additional states: some of these are states that are (in principle) conceivable even if we did not ponder them ex ante. When an ash cloud from an Icelandic volcano shut down air traffic this was a novel possibility to me, but potentially knowable and hopefully airlines and air transport authorities were aware of the possibility. So I use the set C to denote states of the world that are in principle knowable and that may be relevant to consider in scenarios. Here some judgment will clearly need to go into a choice of what scenarios to ponder. Consider for instance a setting with 10 different state variables that each can take 100 values. Doesn't sound to complicated but of course this gives 10^{100} possible combinations, more than the number of atoms in the known universe. Figuring out which of these states are relevant to consider ex ante is clearly an art. The notion of "unknown unknowns" is often invoked also in situations that I would classify as belonging to the set C. That tsunamis can strike Japan is hardly a secret and thus that such an event could impact a nuclear reactor placed close to the ocean should not have come as a surprise to the builders of the Fukushima power plant for instance. That a meteor hitting the ocean could create a tsunami also in the Baltic sea is however an event that is far out on the charts of the possible. For designing a nuclear power plant we might want to ponder this; for pretty much any other commercial decision the likelihood is sufficiently remote that it can be safely ignored.

Outside of this is a set of states that literally are unimaginable, putting ourselves in

the shoes of various indigenous populations the first time that they encountered foreign conquerors with guns is an example that springs to mind. Disregarding these for corporate decision making seems like a wise strategy.

4 Concluding remarks

Let me end as I began, with some reflections based on the 1921 Everest expedition that shares anniversary with Knight (1921). Given Bhidé's mentioning of mountaineering already in the first paragraph of Chapter 1 Bhidé (2024, p. 3) this coincidental timing was all that I needed as an excuse to, as an avid mountaineer, reflect on the role of risk and uncertainty in mountain climbing. Given the ambiance and style of Bhidé (2024) I also felt that I needed to include some observations a bit less pedestrian than citing long passages from item 1A of annual reports in the form of 10-Ks.

Very few, if any, of the hazards that the British Everest expeditions encountered could aptly be described as risk in the Knightian sense. They were arguably all uncertainties. I also find them a good illustration of Bhidé's focus on the usefulness of uncertainty as missing information about known unknowns, we know what we do not know and they carried with them cartographers and the whole skill set that helped establish the British empire.[2] It is also an example of how exploration led to development and use of new techniques, in this case bottled oxygen and down jackets.[3]

Climbing Everest nowadays has become somewhat of a routine business. Several of the hazards faced would be more aptly described as risk, with good weather forecasts in particular. Our understanding of altitude inflicted health problems such as pulmonary oedema has increased and we can reason in terms of probabilities surrounding this. Uncertainties remain, in particular regarding the behavior of others.

Climbing is also a nice example of how we can handle risk and uncertainty in that a rich lore of previous experiences can help guide our understanding. Some of this comes

[2]The large scale and gradual approach of the British Everest expeditions in the 1920's contrasts with the more purist approach of the first serious efforts at scaling 8,000 meter peaks by Westerners, led in 1895 by Albert F. Mummery to Nanga Parbat on which he perished in an avalanche. He was an extraordinary alpinist whose name crops up on many classic routes in the Alps, his climbing life chronicled in Collie (2003). Somewhat remarkably he was also an economist, with some ideas of business cycles related to Keynes' later work and whose main book is still in print, Mummery and Hobson (1889). Mummery's small team approach assures him a standing as an icon of modern climbing, with the uncertainties that he faced the large scale approach by the first British Everest expeditions were probably more up to the task however.

[3]See e.g. here for a description of George Finch and his innovation of Eiderdown jacket, https://www.abc.net.au/news/2019-05-25/puffer-jackets-the-incredible-true-story/10133112.

in almost statistical format, as the lovely little volume Accidents in North American Mountaineering which, as it says on the website of the American Alpine Club "Published annually since 1948, Accidents in North American Climbing documents the year's most significant and teachable climbing accidents. Each incident is analyzed to show what went wrong, in order to help climbers avoid similar problems in the future."[4]

Different areas of practice in the face of risk and uncertainty have also developed some routines for acting that can contain lessons also for other fields. In mountaineering for instance some routines are summarized in sayings that are part of the tool kit for many. "Speed is safety" is one of these. The quicker that you are, the less risk that you will still be on the route when bad weather and afternoon thunderstorms appear. The lower the risk that you will be exposed to rock fall as the afternoon sun starts to melt snow fields and trigger rock fall. The Norwegian "Det er ingen skam å snu", there's no shame in turning around, is another saying that can act as an anchor for behavior. A final favorite is "you've got to keep making decisions", iconized by Joe Simpson. In Simpson (1988) he tells the tale of how he lies with a shattered leg on snow ledge deep down in a crevasse high in the Andes after his partner has cut the rope as a final desperate measure in a one man rescue effort under abominable conditions. Simpson believes his climbing partner to be dead and the probability of outside rescue is best described as zero. You'd be forgiven for accepting the fait accompli that this was it, but remember, you've got to keep making decisions. Simpson abseils further down into the crevasse, eventually manages to come up to the surface only to face several days of crawling over rocks and debris. Obviously, he lived to tell the tale and show how a rich skill set, determination and continuing to make decisions in face of what circumstances throw at you saved the day. Together with a good dose of luck.

A final aspect of management of uncertainty in mountaineering that may be of some outside interest is the common distinction between objective hazards and subjective hazards. Objective hazards are taken to be naturally occurring hazards and different routes and times will differ in their exposure to this. Climbing a 100-meter granite rock face set at sea level may contain very little nature-induced hazards. Climbing on late afternoon on an alpine south face on the other hand may involve rock fall, climbing under a hanging glacier that may release tons of ice in a largely unpredictable manner, exposure to avalanches and thunderstorms. By choosing a suitable objective and time you try to select a level of objective hazards that you find acceptable.

Subjective hazards on the other hand are man-made hazards, often with a focus on

[4]https://publications.americanalpineclub.org/about_the_accidents, accessed September 13, 2024.

your own abilities (as a team) to perform at the required level. Will you be able to be fast enough to be past rock fall areas by the time they are hit by the sun ("speed is safety", remember)? Will you have sufficient strength and expertise to place protection in cracks on a route of a particular difficulty? I find the distinction between subjective and objective hazards very useful and believe that this is something that future work on risk and uncertainty could usefully highlight more. The concept is of course not limited to mountaineering and the insight that one of the uncertainties that firms face is if they are good enough to deal with what circumstances throw at them is well established. As a simple of example of this one of the risks discussed in Boeing (2023) is that "Our Commercial Airplanes business depends on our ability to maintain a healthy production system, ensure every airplane in our production system conforms to exacting specifications,..." – in short, we need to be good enough.

In ending let me reiterate that Bhidé (2024) is a wonderful book. I hope and expect that it will revitalize the systematic analysis of responses to risk and uncertainty within firms. The book is clear how such an analysis is affected as to entrepreneurship, the short reflections above hopefully convey how this "modernization project" of Knight can be useful also more broadly.

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