Question Proposal

Tam Nguyen

Quest University

December 2017

How can we improve decision making?

Definition

The study of decision making has long used the classical decision making model, or the rational choice theory as the theoretical basis for psychological and economic researches. This model is rested on the assumption that people consistently make choices that are optimal for themselves (Schrager & Madansky, 2013). In this scenario, a person will take all accounts of costs and benefits of the situation and decide upon that basis. However, while the classical economists assume people are rational and self-interest, experimental evidence often shows that people are not optimally choose for their best strategies. One of the most popular cognitive models of thinking systems refuting the classical model is the dual-system model, proposed by Daniel Kahneman. This model states that there are two modes of thinking - System 1 and System 2 (Kahneman & Egan, 2011).. System 1 consists of automatic judgements. This mental mode is quick in accessing and deciding and always be running in the background. As Daniel Kahneman puts it: "System 1 is designed to jump to conclusions from little evidence" (Ibid). It is based on intuitive thinking and does not require mental resources. System 2, in contrast, is very throughout and more conscious process. When we choose to focus on something, System 2 is activated and it is cognitively demanding. Though System 2 is more accurate and is a better decision maker compared to System 1, it is System 1 that is more influential and often becomes the director of many of our decisions and judgments.

On the other hand, bounded rationality is another concept criticizing the classical model in claiming that human minds alone cannot be able to keep all possible actions and consider all possible events and contingencies (Schrager & Madansky, 2013). Furthermore, the act of calculating probabilities and optimal choices can take a long time and can surpass the time required to make the decision. Decision makers, instead, only find a choice that satisfy their

minimum desired utility levels, in which he called "satisficing" (Ibid.). In other words, this classical decision making model only works theoretically, yet under a practical consideration, one has to make an urgent act which satisfies their current calculable requirements.

Since the coming of the dual-system model, there are a growing number of researches addressing the problems of the classical decision making model and provide empirical evidence showing the limits of human cognition. One popular account of such limitations is stated in a book by Dan Health, where he called humans' cognitive limitations as "the villains of decision making" (Heath & Heath, 2013). This "villains" are narrow framing, confirmation bias, short term emotions and overconfidence. Narrow framing happens when we define our decisions in limitations and often in binary terms. Confirmation bias occurs when we subconsciously seek informations that support our beliefs rather than counter-evidence. Likewise, short-term emotions, such as anger and arousal can dust our thinking, thereby influencing our decisions. Finally, overconfidence addresses our tendency to see future as more optimistic than it is. This often leads us to not prepare for preventing negative outcomes. These combinations of cognitive limitations suboptimal decisions.

One might hypothesize that experts are more likely to make better decisions, including making forecasts in events of their expertise. However, researches done on the capacity of prediction has revealed insight into the limitations of human decision making in noisy events. A leading researcher in forecasting, Philip Tetlock, shows that a fair number of experts do not advance very far than normal people in terms of prediction capacity in guessing political and economic questions (Tetlock & Gardner, 2016). It hints at the limitation of expertise in a complex world, perhaps in this world it is ever more unpredictable and becoming increasingly more difficult to predict. In forecasting particularly, Tetlock hypothesizes that in the future there will be more replacement of human judgement being replaced by computers. This is

because humans is subjected by subjective opinions and judgments. They are also easily influenced by psychological pitfalls.

+ what about the humans that design the hardware + the software?

Scope

There are a lot of potential paths on decision making and it will be very broad if I study decision making as a whole. Because of this broad field, I will focus on one approach that is potentially related to my Keystone, which is problem-solving approach and its relationship to decision making. Specifically, I want to focus on the how humans use computers as a complement for their shortcomings of decision making with the help of data and modelling. This is specifically related to my Keystone, in which I intend to apply analytics to address a social or economic problem, and see how analytics can be a complement to decision making.

Rationale

As I previously elaborated in the previous section, our decision making process usually lacks rigours and often leads to these villains of decision making possessing our thinking and lead us to wrong directions. Our flawed decisions can have large consequences if we scale it to the international level. For example, the decision of the United States to invade Iraq in 2003 was justified by the intelligence community's claim that Iraq possessed Weapons of Mass Destruction. Policymakers were so certain about that claim and acted based on this motivated reasoning. They were subjected to the confirmation bias and this decision costs trillion of dollars and thousands of lives (Fallows, 2015). By studying the process of decision making and

how to improve our decision making, we can avoid making costly decisions and solve problems efficiently.

Another rationale is the lack of falsifiability and the solution-oriented approach in current social sciences. Currently, there are hundreds of perspectives and theories proposed, yet there is hardly a consensus. It is not difficult to propose a theory, yet our ability to propose theories has long surpassed our ability to test theories we could test empirically (Watts, 2017). Some possible suggestions are either (1) to increase replicability, because no matter how interesting or novel a theory is, if it is not reproducible, it is not science. Another possible solution is (2) directing attention to a more solution-oriented approach, in which social scientists could tackle real world problems. This approach does not necessarily lead to the eradication of traditional social sciences, but instead, it can provide the empirical testing grounds for the theory we have previously established (Prasad, 2018).

With this approach, there will be less about trying to study social problems, but our focus would be to try to solve social problems and propose what can be changed. By directing our attention this way, there will be a need for creative thinking and more challenging tasks (Prasad, 2018). Furthermore, with increasing data in social science fields such as health care, economics and online behaviors, this opens up a new era for social sciences to test those perspectives or theories that have been untested, and thereby proposing solutions for urgent social problems. Given this problem-solving approach, decision making becomes a more important concern for social scientists and researchers, as they have propose theories of not only how social problems exist, but also to identify what are possible solutions for the existing social problems.

Personal Statement

This question serves as a leading question for my future endeavor as well as my Keystone. Decision making has been my long term interest and how to improve it is still a much debated topic. Not all decisions are well-decided as we see the limitations of our cognition. In this paper, therefore, I hope to address a relevant problem and try to solve it using the scientific approach, such as data analysis and modelling. My Keystone will serve that purpose. My hope is to shed light on the process of decision making and how can we minimize noises and solve relevant problems.

For my long term goal, adapt a well-reasoning and thoughtful decision making habit for myself to improve my thinking in various aspects of life. As System 1 has well dominated our decision making process, we decide intuitively without very sharp reasoning and thoughtful process. And this approach can lead to wrong assumptions and unintended consequences., yet let alone assuming the absolute validity of our assumptions. Our intuition does not always lead to the right decision, and might not receive regular feedback to improve our decision. I hope in this process, I can potentially find a way for me to improve my decision making.

Context:

Given that decision making is inherently multi disciplined, I have to narrow it down into some of the essential topics that most align with my purpose of study.

Some of the academic disciplines I want to explore are:

- Economics (Complexity Economics and Behavioural Economics)
- Computer Science (Information Theory and Data Analytics)
- Sociology — where in courses?
- Psychology (Decision Making)
  - only Neuro Psych

I want to incorporate these academic disciplines to provide a new perspective besides the traditional approaches that traditional economics have been based upon. Behavioural economics has a different set of assumptions of human nature, arguing that humans have bounded rationality, due to the limit of information processing (Kahneman, *2009*). Furthermore, sociology can provide new insight into human behaviours because as humans are influenced by norms and social constraints, studying the networks and interactions between individuals can help understand the decisions that they make in an economy.

On the other side, I also want to take a pragmatic approach to my question by investigating how to deal with data and how decisions are made in constraints. This will shed light on how can we process information to derive insight.

Course Plan:

1. *Computer Science*: this course provides philosophical traditions to the birth of computers and its significance. It also helps to understand the nature of computability, giving more suggestions to the significance of information in our everyday life. This course gives some foundations to differentiate insight from information.

2. *Microeconomics*: understanding the essentials of economics gives me theoretical frameworks and tools to do more researches about human behaviors and its constraints in the market economy.
3. *Behavioral Economics*: the relationship between economics and psychology is what I deeply care about and this course can provide further theoretical backgrounds about the limitation of human judgments and its consequence in economics.
4. *Statistics:* taking this course gave me important quantitative skills to analyze data and take inferences from data.
5. *Qualitative Research Methods:* this course can teach me important research skills to know how to derive insight from observations.
6. Data Analysis using R: this course is essential for me to develop necessary knowledge and skills in statistical models and reasoning to do my Keystone.

Course Schedule[1]

[1] I also had 8 credits transfered from my previous college. This statement is to make sure that I have enough credits to graduate and take Keystone in Spring 2019.

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Fall 2017	Neuropsychology	Statistics	Political Economy	Question
Spring 2018	Behavioral Economics	Biodiversity of British Columbia	Microeconomics	Scholarship
Fall 2018	Qualitative Research Methods	Computer Science	Biodiversity of British Columbia	Data Analysis
Spring 2019			Experiential Learning	Keystone

Experiential Learning:

1. Research Opportunities or Internship at a Business Sector

I plan to apply for a research opportunity in a university around Canada or other countries, focusing on understanding economic problems. Another choice will be working in a business sector for a few months and learn how businesses use scientific knowledge to produce products that solve problems. Therefore, I would like to intern in startups that blend sciences and businesses together and focus on social innovation.

Read but not as touchstone

Touchstone

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This book provides me the difference between common sense and scientific knowledge. This addresses how scientists should not fall into the tendency to derive common sense knowledge. This book addresses how the world is less obvious than we think it is and our wrong assumptions have led us to predict and manage social systems imperfectly.

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(2,3) The two lit reviews marked w/ *** from Behavioral Syllabus

(4,5) need two more (not Anomalies) - can be applied of Thinking, Fast+Slow

Goal

My goal for the coming keystone is to be able to apply decision making in relevant projects, some of which including data analysis. I want to see how decision making principles could be applied to tackle other social and business problems.

My long-term goal is to research more on people's decision making ability in high stake environment, in which they have to face multiple constraints and challenges.

I also aim to gain skills which are relevant to my future such as data analysis and economics. They will provide me the necessary frameworks to either advancing my career or going to graduate schools.

#5 4+
- affective forecasting / emotion+ decision-making by Gilbert & colleagues
- insight - Ippolinski & Reber (2010)
- problem-solving - dig around

Bibliography:

Christian, B., & Griffiths, T. (2016). *Algorithms to live by: The computer science of human decisions*. Macmillan.

Fallows, J. (2015, May 19). The Right and Wrong Questions About the Iraq War. Retrieved November 14, 2018, from

10 journal articles by beg of January deadline

update after reading touchstones about end of Feb deadline

https://www.theatlantic.com/politics/archive/2015/05/the-right-and-wrong-questions-about-the-iraq-war/393497/

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Keystone: Churn Analysis; Logistic Regression
- telecomm;
- variables

Monday
Dec 10/18 4:15pm

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Spring 2019			Experiential Learning	Keystone

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