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Identifying Opportunities to Improve
Strategic Decision Making Within
International Organizations

MSt in International Relations

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Abbreviations

IOs	international organizations
IR	international relations
RAM	Rational Actor Model(s)
BR	Bounded Rationality
PT	Prospect Theory
PHT	Poliheuristic Theory
PR	Problem Representation
DU	Decision Units
GT	Group Think
SDMAT	Strategic Decision Making Assessment Tool
PoN	Power of Nutrition
IRC	International Rescue Committee
WHO	World Health Organization

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Introduction & background

Decision making as a research domain

Decision making serves an essential role in allowing organizations to function and succeed. Strong decision making capabilities may be considered as essential to sustained performance and operations over time, providing necessary clarity and structure for prioritizing activity and actions, achieving the goals and mandates an organization has set forth (or depending on one's viewpoint, has set for it). While robust decision making capabilities are not the only contributor, nor their existence a guarantee of an organization's success, vast academic resources have dedicated themselves to advancing this important domain.

Decision making has its foundations in a wide variety of academic, scientific and applied disciplines, from economics, statistics and mathematics to international relations, psychology, neuroscience and organizational theory. Extensive and ongoing studies of decision making are found in most of these domains as academics and scientists aim to uncover the drivers at the basis of people's actions. The reasons for such goals and efforts by researchers vary, but may contribute to improving organizational performance and risk management as well as predicting outcomes of actions.

A review of decision making research across disciplines reveals a gradual evolution of insight and findings. Various models have evolved from underlying theories, some more practical in nature

than others. Over time we see varying levels of focus and study as certain theories or models gain popularity and recognition, at times as a result of current affairs. In its earlier days, decision making was explored in a more unidisciplinary manner, while recent decades have seen growth in multidisciplinary studies, with recognition for the potential value and contribution such an approach can yield.

A technological element is also evident as part of the domain's evolution. This encompasses the manner in which information is gathered, processed (analyzed) and disseminated to decision makers. We witness the evolution of varying technological capabilities such as artificial intelligence and pattern recognition, advanced statistical models and learning algorithms capable of identifying trends and correlations across vast data sets.

Research objective

The objective of this research is the development of a toolkit that enables practitioners in international organizations (as a sample regime) to identify opportunities for enhancing their decision making capabilities, with a focus on strategic decisions. Strategic decisions are ones with extremely high stakes and implications for the organization as well as the constituencies they serve. These stakes and implications may be measured in terms of capital at stake (for mid to large organizations, levels of tens to hundreds of millions of \$/£), the vast number of lives that may be affected via programs, aid or military action, as well as broad geographic and other resource bases that may be influenced.

The very nature of the challenges faced by many international organizations and the implications of their strategic decisions are so great that any incremental improvement in their decision making capacity has the potential to yield a measurable outcome.

Research questions

This research will address several key questions. First, what are the core decision making models, frameworks and techniques (approaches)? Second, which decision making approaches are commonly used by IOs today? Third, are there opportunities to improve decision making practices by refining current approaches?

Core assumptions

For purposes of this research, we assume that:

1. It is possible and useful to apply findings across domains, for example, deriving decision making best practices and insights from the field of economics and applying them to the fields of IR and Foreign Policy Decision Making;
2. That a methodically constructed assessment tool, developed based on select decision making best practices and insights from across a subset of theories and research, can be of benefit to decision makers by highlighting opportunities for sustained action or areas for improvement.

Methodology

1. Literature Review - A comprehensive review of decision making literature explored the domain of decision making. This theoretical base was not intended to encompass every theory of decision making given the scope of such an effort. Rather, a select array of prominent theories, approaches, models and frameworks with a high degree of academic pedigree were identified. This choice was determined by the scope of work by core authors, academics and scientists, and the longevity and sustainability of the theories.
2. Development of the Strategic Decision Making Assessment Tool (SDMAT) - Selected decision making methodologies provided the basis for the development of an assessment tool designed to indicate the prevalence/degree of adherence to specific decision making practices. The assessment tool was designed to:
 - a. Provide an overall understanding of an organization's decision making practices, with insight into the strengths and shortcomings of their activities;
 - b. Allow organizations to identify opportunities for improvement through an understanding of the practical implications resulting from their practices.
3. Field Tests - This assessment tool was applied and tested with three IOs using a case study approach. This approach was designed to yield actual results from adopters of this tool and to offer insights which a theoretical test could not provide. As part of the field test, each IO underwent the same assessment procedure aimed at understanding their individual decision making styles and identifying opportunities for improving their decision making processes.

Research scope

The opportunity to influence decision making within IOs and consequently the manner in which they conduct their activity is not undertaken lightly. Actions resulting from the adoption of the SDMAT and its implications for action can impact strategies involving human lives and large-scale resource allocations. This has influenced the research in terms of its depth and comprehensiveness, as well as the goal of achieving measurable, yet incremental improvements as a result of the adoption and use of this assessment tool.

To achieve these results, the research scope is constrained as follows;

1. The array of theories/number of theories is limited to a select few.
2. The type and number of organizations evaluated is limited to three IOs.
3. The sophistication (complexity of process and logic) of the assessment tool is basic.
4. The implications and recommendations resulting from the assessment are preliminary.
5. The evaluation of impact(s) is limited to incremental improvements.

Introduction to international organizations (IOs)

International regimes can be defined as ‘sets of implicit or explicit principles, norms, rules, and decision making procedures around which actors’ expectations converge in a given area of international relations.’ (Krasner 1982, pp.185–186). International organizations are a form of such regimes.

International organizations are considered by researchers as central features of modern IR, influencing domains such as trade, international debt, financial restructuring and national security (Koremenos et al. 2001, p.761). The forces that create and influence international organizations reflect varying viewpoints developed from IR theories. The predominate rational view, born out of realist IR theory, views IOs as agents of states and largely irrelevant in their influence on international politics. The more liberal and social constructivist approach views IOs as independent actors, a product of norms and values which enable cooperation and coordination that otherwise would be impossible to achieve.

Barnett & Finnemore contribute to our understanding of IOs by elaborating on the two main theoretical perspectives of organizational theory within the realm of social science. The first, the economic view, is based upon assumptions regarding rationality and efficiency concerns. The second is a sociological perspective on legitimacy and power (Barnett & Finnemore 1999, p.702,715).

The economic lens views organizations as a solution that allows transactions to take place with greater efficiency while overcoming information gaps (Barnett & Finnemore 1999, p.702). From an IR perspective, the economist lens on organizational theory contributes to both neoliberal and neorealist debates over international institutions. Neoliberals and neorealists 'view world politics as analogous to a market led with utility-maximizing competitors'. They see IOs as supportive of states in advancing their interests, as 'instruments created to serve state interests' (Barnett & Finnemore 1999, p.703).

Sociologists take a different viewpoint to the role of organizations and include the role of social rules, or cultural content outside of purely competitive environments. According to Barnett & Finnemore 'organizational environments can take many forms' with varying missions and metrics for success. They add that while IOs may be constrained by states, they must not be seen as 'passive mechanisms with no independent agendas of their own'. They add 'IOs can become autonomous sites of authority (also seen as a bureaucracy), independent from the state 'principals' who may have created them' (Barnett & Finnemore 1999, pp.703–707).

In contrast to the rational, economist view, Barnett and Finnemore's research views IOs through a constructivist or sociological lens (Johnston 2001, pp.487–489), which reveals a different viewpoint regarding their place, role and function. They view them as purposive, powerful actors in world politics rather than agents of states and arenas where state policy manifests (Barnett & Finnemore 1999, p.726; Koremenos et al. 2001, p.762).

Abbott & Snidal take a middle ground and indicate that the role of IOs synthesizes rationalist (including realist) as well as constructivist approaches, and that states use IOs as a tool to help generate information, idea and norms. They add that IOs can serve to provide legitimacy to ideas and practices and to enhance their capacities and power (Abbott & Snidal 1998, p.8).

Irrespective of the theoretical lens, today IOs play an important role in IR. Decision making, the focus of this research, lies at the very foundation of organizational conduct and the core of its ability to meet its goals. As Herbert Simon noted in the preface to the first edition of his 1947 seminal work on organizational decision making theory (Simon 2013, pt.Preface to 1st edition) 'decision making is the heart of administration...the vocabulary of administrative theory must be derived from the logic and psychology of human choice'.

Organizations are conceived (formed or form) in order to achieve mandates of various scope, whether local, regional, national or international. Public or private, military, law enforcement or civilian, these mandates may be socially oriented in nature, educational, humanitarian, financial, military, territorial or cultural as well as a combination of these and other types. Whatever its mandate and objectives, organizations rely on individuals and groups to determine which priorities to engage in, how to apply resources, who to work with, and under what terms. This research aims to contribute to the strengthening of such decision making abilities.

Decision making theory

This section provides an introduction to the domain of decision making. It commences with a general overview of decision making theory, then proceeds to describe in greater detail a subset of the theories selected for inclusion in this research. The following criteria were used to identify and select these theories or frameworks:

1. A substantive body of academic knowledge exists from reputable sources.
2. They can be related to the domain of IR and thus could be of possible contribution to the goals of this research project.
3. It was possible, within the constraints of this research, to extract sufficient insight from them for the design of the assessment tool.

The numerous theories, models or frameworks which met these criteria but not included in this work are no less important or valuable. They could not be included given the academic focus and scope of this specific research effort.

Introduction to decision making theory

Decision making theories have been the subject of research and development across various academic disciplines and practice domains for decades, beginning in the 1940's. From economics to cognitive psychology, organizational behaviour to IR, an array of models and approaches have evolved in an attempt to explain how people in organizations arrive at a decision for a course of

action. It is possible to separate these theories and models into several broad categories, streams or primary approaches based on the main underlying thesis of each individual one.

The term 'decision making' requires a definition from which to proceed. According to Herbert Simon, decision making encompasses three 'classes of things': a. Finding problems that need attention and attending to them; b. Thinking about solutions to the problems; c. Evaluating these solutions and deciding among them (Simon 1993, pp.394–395). The term 'rational' is used extensively in this research and is explained by Simon: 'Rationality is the set of skills or aptitudes we use to see if we can get from here to there-to find courses of action that will lead to the accomplishment of our goals. Decisions are rational to the extent that they lead to such action...irrational means poorly adapted to goals' (Simon 1993, p.393).

Rational approaches are perceived by individuals to be the most common way decisions are made. In the first page of his book, James G. March opens with the words 'By far the most common portrayal of decision making is one that interprets action as a rational choice. The idea is as old as thought about human behavior'. (March 1994, p.1). The reason for such a definition is the gap between people's perception of themselves as rational individuals that carefully weigh all options and the manner in which they actually operate in practice.

Gigerenzer offers an understanding of the term 'non-rational' and of such theories. He explains that internal consistency is a key criterion for rational choice, whereas non-rational theories 'place

less weight on internal consistency...nonrational theories emphasize performance in the external world, both physical and social. Measures of external performance include the accuracy, speed, frugality, cost, transparency and justifiability of decision making' (Gigerenzer 2001, pp.4–5).

Building on the work by Simon, alternatives to rational decision making theory rose to greater prominence in the 1970s, beginning with the publication of research by Kahneman & Tversky (Kahneman & Tversky 1979). According to these approaches, Rational Actor Models (RAM) were overly pure and did not withstand tests of reality. Rational action was not discounted; rather the manner in which people arrived at their choices was seen as more involved, influenced by additional factors beyond the models put forward by RAM.

The factors that these models introduced included intuition and experience, discounted as part of traditional RAM. New heuristic (or 'mental shortcut') based approaches evolved, ones that incorporated additional considerations in their models; factors such as intuition, cognition and recognition for human constraints in the areas of information search, processing and attention. The research that evolved under these domains introduced refined models, alternatives that were capable of producing positive and even superior outcomes in certain cases, particularly when applied to complex, uncertain situations.

In his 2008 work (Gigerenzer 2008, p.20) Gerd Gigerenzer notes 'Heuristics are frugal—that is, they ignore part of the information. Unlike statistical optimization procedures, heuristics do not

try to optimize (i.e., find the best solution), but rather satisfice (i.e., find a good-enough solution). Calculating the maximum of a function is a form of optimizing; choosing the first option that exceeds an aspiration level is a form of satisficing'. Gigerenzer explains that the value of heuristics is in part derived from the fact that they require very little effort from decision makers (he says they 'come for free') and have been honed to address complex problems of diverse nature, as opposed to very well defined challenges where pure logic and probability functions may work (Gigerenzer 2008, p.27).

An example of heuristics from every-day political life is demonstrated by Lau and Redlawsk through voter evaluation of political candidates. These include judgement according to their political party affiliation, endorsements they receive, political poll results and candidate appearance (Lau & Redlawsk 2001, pp.953–954). Another heuristic employed by decision makers is the availability heuristic, which is a probabilistic type heuristic noted by Tversky and Kahneman. It states that decision makers judge the likelihood of a future event based on the ease with which they recall past occurrences of the event. Dramatic events, frequently occurring or recent events are naturally easier to recall and serve as a way to judge probability (Schwenk 1988, p.43). Gigerenzer describes several core misperceptions of heuristics in Table #1 (Gigerenzer 2008, p.21).

Table #1 - Common misperceptions about heuristics

Misperception	Response
Heuristics produce second-best results; optimization is always better.	In many situations, optimization is impossible (e.g. computationally intractable) or less accurate due to estimation errors (i.e. less robust).
Our minds rely on heuristics only because of our cognitive limitations.	Characteristics of the environment (e.g., computational intractability) and of the mind make us rely on heuristics.
People rely on heuristics only in routine decisions of low importance.	People rely on heuristics for decisions of both low and high importance.
People with high cognitive capacities use complex weighting and integration of information; those with lower capacities use simple heuristics.	Not supported by experimental evidence. Cognitive capacities seem to be linked to the adaptive selection of heuristics and seem less to the execution of a heuristic.
Affect, availability, causality, and representativeness are models of heuristics.	These terms are mere labels, not formal models of heuristics. A model makes precise predictions and can be tested, such as in computer simulations.

Misperception	Response
More information and computation is always better.	Good decisions in a partly uncertain world require ignoring part of the available information (e.g. to foster robustness).

Review of decision making theories

This section expands on the introduction to decision making theory and examines key theories in greater depth. This in-depth review of specific theories and frameworks is subsequently used as primary input into the design of the decision assessment tool.

Rational Actor Model (RAM)/Utility Theory

As part of this model's core concepts we recognize a rational actor within an organization or group of any form (also referred to as an agent, an individual at the most basic level) who has goals, objectives and the ability to evaluate alternatives, consequences and choices. The actor's interests and values are 'translated into a 'payoff', 'utility' or 'preference' function, which represents the desirability or utility of alternative sets of consequences' (Reinalda & Verbeek 2004, p.18). The rational agent evaluates alternatives, examining the consequences of each one. The actor's rational choice consists of selecting the highest-ranking alternative based on the consequences derived by the payoff function (Mintz & DeRouen 2010, p.7).

The concept of 'holistic decision making' plays an important role across multiple rational actor/utility (RAM) models. Holistic decision rules generally rely upon a complete and comprehensive evaluation of all alternatives. Only then are evaluations compared to determine the best choice. Holistic models are considered to be more formal and demanding, while non-holistic heuristic-based models are often streamlined by cognitive shortcuts. Non-holistic models employ a simplified process whereby the decision-maker sequentially eliminates or adopts alternatives 'by comparing them to each other, or against a standard, either across dimensions or across alternatives' (Mintz et al. 1994, p.441), without weighing every option against every dimension.

RAM is also a compensatory model, where the decision maker may compensate for a low value on one dimension of an alternative with a higher value on another dimension. The expected utility models are compensatory in that the elements that comprise the utility scores are additive. For example, high political costs associated with the use of force can be compensated for by large military benefits. The various elements of a multidimensional object contribute independently to its overall utility, the components are added together for a 'score' (Mintz et al. 1994, pp.445–448).

According to Graham Allison, well known for his 1971 book *Essence of Decision*, 'the leading decision paradigm in IR is the RAM (Mintz 2004, p.3). If the costs attached to a certain alternative increase, then the chances of selecting that alternative are reduced (Mintz et al. 1994, pp.442–443; Reinalda & Verbeek 2004, p.18). According to de Mesquita, expected utility theory can be used to gain substantive insight into the role alliances play within both balance of power and power

transition theories. That is, the expected utility captures these two theories by explaining what a third party will do when confronted by an ongoing conflict (Mintz et al. 1994, pp.442–443).

The overarching criticism of RAM pertains to the practical mismatch between the requirements of RAM and the reality within which decision makers actually operate. The RAM does require certain stringent assumptions that have been found by researchers to be too demanding to accurately describe the cognitive processes associated with foreign policy decisions. These pertain, in particular, to the exhaustive evaluation of all alternatives across all dimensions with complete information, which simply does not occur in reality (Mintz et al. 1994, pp.442–443,445–448; Levy 2003, p.215).

As a compensatory approach that is linear in nature, all alternatives are reviewed against all dimensions one after the other, then aggregate scores are compared at the end. RAM may result in application challenges when applied to data that has nonlinear characteristics (for example when alternatives need to be substituted even within the same evaluation). RAM allows for less variation in the dimensions being evaluated and does not account for environmental and contextual variables (unlike noncompensatory models, that are seen as better aligned with underlying cognitive processes by decision makers) (Mintz et al. 1994, pp.445–448).

The Bounded Rationality (BR)/Cybernetic Perspective

Alternatives to RAM are seen as of the 1940's and 1950's with Herbert Simon's work in the area of behavioural organization theory (Simon 2013, chap.Preface to 1st edition). Simon challenged the rational approaches by revealing the true manner in which individuals in organizations actually made decisions, rather than the ideal circumstances that RAM model proponents put forth (Simon 1979, p.503). Simon notes in his 1979 work that 'there can no longer be any doubt that the micro assumptions of the theory-the assumptions of perfect rationality-are contrary to fact. It is not a question of approximation; they do not even remotely describe the processes that human beings use for making decisions in complex situations' (Simon 1979, p.510).

Through the 1970s, theories arose that focused on understanding how organizations worked, with a common element, as Simon adds that 'Most of them depart from the assumption of profit maximization in the short run, and replace it with an assumption of goals defined in terms of targets that...are to greater or lesser degree satisficing theories' (Simon 1979, pp.508–509; Simon 1993, pp.395–396). Satisficing can be defined as a concern with finding acceptable rather than optimal alternatives, as it allows for the possibility that not all dimensions are considered before a decision is made (Dacey & Carlson 2004, p.40).

Herbert Simon's theory of Bounded (or limited) Rationality (BR) is proposed in his 1972 work as a way of characterizing the actual decision making processes of individuals in organizations, recognizing cognitive as well as organizational limitations that affect people's actions. According

to this theory, individuals facing uncertain conditions with imperfect information apply a limited rationality approach to such decisions rather than the traditional RAM (McGuire et al. 1972, p.163; Simon 1979, p.497).

Simon describes the reasons that rationality tends to be limited. How people gather and process information is constrained by their attention, memory, comprehension and communication (March 1994, p.8) as well as practical limited knowledge of alternatives (McGuire et al. 1972, p.163; Mintz et al. 1994, pp.443–445). BR recognizes the complexity of decisions and the cognitive constraints imposed on decision makers. It also recognizes that how things are framed matters a great deal to how people respond and the risks they may take (March 1994, p.14).

Unlike RAM, BR recognizes dynamic change and evolution in the situation being assessed, as well as the dimensions used to examine alternatives. The BR model is non-exhaustive (non-holistic), therefore not all alternatives are considered along all dimensions (it is purposely less comprehensive), aligning better to the reality of information and time constraints imposed on the decision maker (Mintz et al. 1994, pp.443–445). BR recognizes that decision makers will in fact choose the metrics and process they deem best for the situation at hand, given cognitive and contextual constraints. It does not prescribe a phased evaluation, although one may occur.

Prospect Theory (PT)

Prospect theory presents an alternative theory of choice under conditions of risk. It deviates from expected utility theory (RAM) by positing that people evaluate choices with respect to gains and losses from a reference point. It indicates that people tend to overweight losses with respect to comparable gains, and that they engage in risk-averse behaviour with respect to gains and risk-acceptant behaviour with respect to losses. Simply stated, prospect theory leads us to expect people to persevere in losing ventures much longer than standard rationality would lead one to expect (Jervis 1992, p.190; McDermott 2004, p.123; Levy 2003, p.215).

PT captures the behavior of a normal person according to Dacey & Carlson (Dacey & Carlson 2004, p.42), while the PT research by Kahneman and Tversky (Kahneman & Tversky 1979) is based on studies in social psychology and experimental economics, as well as laboratory findings in finance, insurance, and consumer economics. According to Kahneman and Tversky, people deviate from the predictions of expected-utility theory in a number of ways, starting with the fact that 'people are more sensitive to changes in assets than to net asset levels and to gains and losses from a reference point rather than to levels of wealth and welfare'. This reference dependence stands in contrast to basics of a utility function (and utility theory) and constitutes the foundational analytic assumption of prospect theory (Levy 2003, pp.216–217).

According to Jack Levy, an important implication of loss aversion is a greater tendency toward status quo choices than an analysis based on expected-utility theory may predict (Levy 2003, p.222). As Jervis notes, 'actors place a higher valuation on what they have than on what they might gain', also known as the endowment effect. The relevancy of prospect theory to IR is substantial, as its tenets have the ability to influence bargaining, negotiations and actual conflict resolution by leaders. The previous example from Robert Jervis highlights the implications in such cases (Jervis 1992, pp.192–193, 201–202).

Poliheuristic Theory (PHT)

In the mid 1990s, Alexander Mintz introduced the concept of Poliheuristic Theory (PHT) as an alternative to RAM, to better explain organizational decision making (Mintz 2004, p.4). The core theory identifies a two-stage process. Phase one is a heuristic based approach during which decision makers discount alternatives due to one or more key criteria that are deemed unacceptable, irrespective of how strong the others are. Decision makers reduce the 'decision matrix' in an effort to find one (or more) options that satisfy the core acceptance tests (Stern 2004, pp.108–109; Redd 2002, p.336).

The heuristics (shortcuts) allow decision makers to overcome the need for complete information, as they aid in determining which information to gather, the extent of information needed and how to organize it so that it is easier to analyze. The resulting one (or more) acceptable alternatives are subsequently evaluated in phase two (Mintz et al. 1994, pp.445–450). PHT introduces the idea of

noncompensatory attributes, whereby the existence of certain ones cannot be countered by others irrespective of how strong they may be. As an example, in the case of a politician who cannot secure popular political support, it may not matter how economically beneficial her plans may be, they simply are not viable. This differs from RAM where typical analysis includes weighting and aggregate scoring to determine the optimal option (attributes compensate for each other).

PHT's defining characteristics, in addition to being noncompensatory, include non-holistic search (limited search for information across a subset of dimensions) and dimension-based processing whereby attributes or characteristics of a problem drive the search rather than alternatives, while alternatives that fail to meet minimum standards on key dimensions are immediately discarded. Dimensions are examined in a sequential manner, generally influenced by the ease of information availability for consideration.

In addition, PHT is traditionally characterized by satisficing behaviour, whereby the search for alternatives ends when an acceptable alternative is found, one that survives scrutiny on key dimensions even if it does not maximize utility. Mintz & Geva add that 'Ambiguity, uncertainty, and value complexity—as well as cognitive and practical constraints—tend to rule out 'maximizing' (Geva & Mintz 1997, p.86).

Finally, PHT recognizes great importance to the order in which alternatives are examined, while RAM assumes that changes in the order in which alternatives are described do not influence

decision makers (who evaluate all alternatives across all dimensions, then score them accordingly) (Stern 2004, pp.108–109; Dacey & Carlson 2004, pp.39–40; Mintz et al. 1994, pp.448–450; Geva & Mintz 1997, pp.86–87).

A key premise of poliheuristic theory is that policy makers use a mixture of decision strategies when making decisions (Mintz 2004, p.4,8). Heuristic-based models are particularly well-suited to decisions when one goal or outcome is understood to be paramount. The types of decisions studied by researchers of the theory include the use/nonuse of force, crises reaction, coalition formation, negotiations, conflict resolution and many more (Mintz 2004, p.4). PHT is applicable to IR relations given its adaptability to changing environmental and contextual considerations, as it allows the decision maker to alter the decision criteria in a flexible manner as they address the issues at hand, and does not attempt to force a decision based on a standard matrix of considerations irrespective of the environmental reality. This is where the theory differs from RAM (Mintz et al. 1994, pp.448–450,453).

Characteristics of the decision making environment

The following frameworks are not decision models as they do not attempt to explain the logic or processes underlying how decisions are made. These features of the broader context interact with and influence decision making processes, facilitating or discouraging the use of various models. They can also help decision makers understand, explain and possibly even predict actions and

outcomes based on the attributes and characteristics of the people involved and the environment within which the decisions are being made.

Problem Representation (PR)

Problem Representation is a core subcomponent of any decision making process, rational or otherwise, which focuses on the manner in which problems are discovered, perceived, and framed (Stern 2004, pp.119–120). The manner in which issues are understood and represented has a critical impact on how they are understood, the alternatives that are analyzed and subsequent policy that evolves from it (Sylvan & Voss 1998, p.189; Sylvan & Thorson 1992, p.716). Stern summarizes that it is important to treat 'prevailing narratives as a crucial part of the cognition of leaders' and that skill in the manipulation of narratives may be a critical factor in competitive political and policy-making settings (Stern 2004, p.116).

Decision Units (DU)

DUs specify the conditions under which alternative decision unit configurations are likely to be involved in committing the resources of the government or ruling body. The framework:

1. Focuses on three types of authoritative decision units: leaders, groups, and coalitions.
2. Identifies the key factors in each of these types of DUs that influence alternative decision making processes.
3. Associates these alternative decision making processes to particular foreign policy outcomes (Stern 2004, pp.117–118).

A predominant leader is a single individual who has the power to make a choice and commit resources, while a single group makes decisions through an interactive process among its members. A coalition consists of 'multiple separate entities with independent authority structures, none of which can commit the resources of the regime without the agreement of all or some of the others' (Hermann & Hermann 1989, pp.365–369).

The Hermann DU framework (Hermann 2001, p.58) is a practical model with a series of questions to help identify the DU type, and then describes corresponding DU dynamics and characteristics one would expect to see (Hermann 2001, p.67). Most relevant for our purpose is the nature of decisions by the various DUs. Predominant leaders tend to more extreme decision making, groups are less so inclined and a coalition is more moderate in its decisions (Hermann & Hermann 1989, pp.365–367,377). By simplifying a complex situation, the model allows the focus to be on the essential elements (Stern 2004, pp.118–119).

Group Think (GT) and other Group Dynamics

Group research focuses on the composition of the decision making group with respect to the breadth of skills and opinions represented from inside an organization and outside experts, as well as the pure size of the group making the decision. Irving Janis, a leading researcher in this field, introduced the term Group Think into the decision making theory lexicon. In his work Janis considers GT as a process where group norms and patterns essentially take over, resulting in deeply flawed decision making. The group appears to take on a 'life of its own', group cohesion

is valued above the quality of information processing, dissent is discouraged, suppressed or eliminated, while shortcuts are taken in the process, assumptions by the leader or key advisors go unquestioned and biases lead to decisions (Schafer & Crichlow 2010, p.6).

In their 2001 work, Reinalda & Verbeek identify risks that may arise from GT, strengthening observations by Janis (Rice 1980, p.133) that GT may override 'the realistic appraisal of alternative policy choices' (Reinalda & Verbeek 2004, p.19). Rice's work provides a useful overview of Janis's analysis on GT within organizations, the conditions that lead to it, and the symptoms and outcomes resulting from such situations (Rice 1980, p.132). Susan Mohammed and Erika Ringseis introduce the term cognitive consensus, which refers to 'similarity among group members regarding how key issues are defined and conceptualized' (Mohammed & Ringseis 2001, p.311; Mohammed 2001, p.411).

Schafer & Chrichlow analyze the effects of GT on decision making within the context of IR. They note '...the chances of policy making leading to better or worse results is greatly affected by matters that occur long before that policy is set. We see that how decision making groups are structured and perform have a powerful effect on the policies that come out of them' (Schafer & Crichlow 2010, p.238).

Additional environmental characteristics

This section reviews a set of additional attributes that are prevalent in strategic decision making environments. They are not tied to individual models per se but rather underlie and cut across many of them, similar to Problem Representation, Decision Units or Group Think, which are common ways in which decision makers tend to act, irrespective of the approaches they adopt. The importance of these attributes is in their implications, as they affect the decision strategies used by leaders and their ultimate choices (Mintz & DeRouen 2010, p.25). We start with an understanding of these attributes to clarify what to look for in the decision making environments.

Stress, time constraints, ambiguity (when information has multiple, often competing, meanings), familiarity with the situation, threat level and inherent risk are all important environmental, contextual, characteristics. A common denominator of these is the cognitive demands (or 'load') imposed by the decision task. Mintz & DeRouen note that as demands increase, the more likely the decision maker is to employ simplifying heuristics (Mintz & DeRouen 2010, p.25).

Stress is a common characteristic of a strategic decision making environment (Mintz & DeRouen 2010, p.8; Renshon & Renshon 2008, pp.512–513). Alexander George and Mintz & DeRouen found that stress can lead to rigidity in decision making and over reliance on standard operating procedures. In such cases we can expect decision makers to fall back to standard procedures, possibly even in cases where their applicability to the situation as a whole is questionable (Renshon & Renshon 2008, p.515; Mintz & DeRouen 2010, p.25).

These standard operating procedures are, by definition, pre-defined methods of action that allow us to better understand and even predict behaviour in such cases. Further research indicates that the physiological effects of stress influence perception by 'narrowing the range of cues and decreasing sensitivity to peripheral cues' (Renshon & Renshon 2008, p.515), further reinforcing the use of standard operating procedures to support the decision at hand.

Mandel and Holsti summarize the impact a stressful environment can have on decision makers. Stress caused by time constraints or uncertainty can lead to feelings of shame, as well as cause decision makers to oversimplify, ignore key information and rely more on historical analogy. They add that stress can also cause leaders to overestimate their opponents' capabilities as well as cause them to panic, lead to decreased focus, and even a tendency towards random behaviour (Mintz & DeRouen 2010, p.29).

Alexander George identifies the effects of stress upon decision making to be impaired attention and perception, increased cognitive rigidity and shortened, narrowed perspective (Renshon & Renshon 2008, p.513). Renshon adds that the research by Holsti from 1984 concluded that elevated stress levels are likely to reduce the search for information and policy alternatives. Another outcome is the increased domination of emotions over the decision process, while at other times it is most common to witness a mixture of both (Renshon & Renshon 2008, p.513).

Mintz and DeRouen indicate that in familiar situations foreign policy decision makers are likely to employ heuristics or standard operating procedures. This results from a belief that past success

may indicate future prospects (Mintz & DeRouen 2010, p.27). They identify a tendency to employ intuition and jump to conclusions rather than conduct a deeper cost-benefit analysis.

While familiarity does have benefit, for example in simplifying the situation, it can also result in discounting information found to be inconsistent with the familiar understanding, leading to biases and errors in decisions. Ambiguous situations, when information has multiple meanings, often increase the complexity of the situation for decision makers, resulting in such information being ignored or discounted and in the use of heuristics to simplify the decision making (Mintz & DeRouen 2010, p.27).

Finally, information and time constraints are two characteristics that lead decision makers to an increased use of heuristics. RAM requires an extensive amount of time and a broad information base upon which to base the considerations, attributes often not available to strategic decision makers in high stake situations. As a result, there is a tendency to simplify, to adopt non-holistic practices, and to engage in satisficing rather than optimizing behaviour.

Concluding observations on decision making theories

The review of select decision making theories and frameworks reflects the current state of research into decision making and offers foresight into possible future directions. Over the past 70 years we witness the rise and partial fall (truly an evolution) of rational theories, alongside the growth

in heuristic based approaches. In practice, we see that rational approaches have not disappeared but rather evolved to contribute in a more flexible way to an overall hybrid approach, which relies heavily on the flexibility and adaptability of heuristics, strengthened by the right degree of rational modeling and analysis.

Modern day decision making research presents this hybrid type approach as far more aligned with the way decisions are actually made, with varying degrees of success. This author expects the trend of substantial research into heuristic based approaches to persist. The goal is to further understand how people make complex decisions, why they approach matters as they do, the influencing factors (psychological, environmental, group related, etc.) and the implications of these actions.

What is clear from the theoretical review is that a strong understanding of these core elements can offer organizations and their decision makers the potential to proactively and positively influence the manner in which they address complex, strategic challenges and decisions. These theoretically based insights are reflected in the development of the Strategic Decision Making Assessment Tool.

Development of a Strategic Decision Making Assessment Tool (SDMAT)

Introduction to the assessment tool

This SDMAT is designed to indicate the manner in which decisions are made within an organization and to uncover the main attributes of the decisions, the decision makers and the decision environment being addressed. The tool is applicable to organizations of all types and in all domains, and can highlight tendencies, strengths, vulnerabilities and possible areas for improvement.

The output of the SDMAT will be in the form of a summary of an organization's decision making inclinations, highlighting strengths, weaknesses and their implications for the organization itself as well as third parties they interact with (e.g. partners, adversaries). The objective is for these implications to have a measurable effect on how leaders:

1. Re-evaluate and improve their own internal processes (reduce errors, biases, wasted efforts) to arrive at better decisions in a more efficient way;

2. Anticipate, predict and where possible, influence the outcomes of external situations (where they may advise, control or collaborate with others, for example, in crises situations, negotiations) through unique insight into the factors affecting others.

The desired outcome is to develop a useful toolkit that helps enhance the decision making capabilities of IOs and consequently the outcomes of such decisions.

Determining the questions

The assessment questions are based on the underlying decision making models and frameworks presented in the previous chapters on decision making theory. Unless otherwise referenced, the questions themselves were not articulated by the models or by the researchers. Rather they were developed by this author as a result of a critical analysis of these models and theories that captured their key attributes and characteristics and then translated them into questions (tests). The manner in which the questions are worded aims to measure the prevalence of one or more theories/models and offers a useful indication of whether or not, and the degree to which, they are practiced by an organization. As individual references are not noted by question, readers should refer back to the theory chapter for the background underlying them.

Where possible, the questions were worded to avoid biases that could influence the responses. The tendency of respondents to answer in the affirmative when encountering questions that contain yes/no options, as well as the inclination towards choosing alternatives perceived as more positive

and less judgmental, were carefully accounted for in the development of the questions. Rather than provide yes/no options, the scoring is based on a continuum, whereby respondents are invited to indicate the degree to which they are inclined to one alternative versus another. This continuum included, where possible, two clearly defined attributes (derived from respective theories/models), presented as extremes on opposite ends of a five-point spectrum.

Structure of the SDMAT

Part A of the assessment aims to identify the dominant models or theories used by decision makers, and is comprised of 11 questions. Part B is designed to identify the dominant attributes of the decisions, the environment, and the decision makers and includes 23 questions. The attributes covered in this section complement the observations from Part A, and enhance the results to create a more comprehensive view of decision making by an organization.

When combined with the method/approach used by decision makers (Part A), the reviewed attributes/characteristics (Part B) allow for a better understanding of the decisions, the decision makers and what to anticipate going forward. The attributes add the context and nuance that influence how the model may actually be used, given how decision makers may act in a certain situation. By understanding how they make decisions (Part A) and adding in the implications of those theories and other attributes (Part B), we can begin to estimate the actual inclinations of decision makers.

Guidelines for application of the SDMAT

Key considerations in using the SDMAT include:

1. Mode - The delivery of the SDMAT assessment should be via firsthand interviews, whether in person or via skype/phone. The facilitator delivering the questions should send the online questionnaire to interview subjects, and then guide them through the questions while documenting responses. It is recommended to record the interview, if permitted, to aid with detail in the subsequent analysis of results.
2. Level - The tool is completed by individuals or groups, but is meant to measure the attributes of a group's decision making procedures.
3. Nature of organization and decisions - There are currently no perceived restrictions on the types of organizations or decisions the tool may be used for, as long as they meet the criteria of strategic decisions for the respective organization.
4. Length - The number of questions is limited for two reasons:
 - a. To increase the chance of receiving accurate completed responses.
 - b. To create a short assessment tool that achieves the desired outcome.
5. Ordering - It is recommended that the questions are answered in the order in which they are presented in the SDMAT, as they have been carefully grouped by theories and in some cases, build on each other.
6. Implications - Each model/theory has various implications resulting from its practice and use. These should be used to interpret the results (see below).

The Strategic Decision Making Assessment Tool (SDMAT)

The SDMAT presented herewith is identical in format and content to the questions presented to each of the three IOs upon which it was tested.

Name _____

Role and Organization _____

Email address _____

Date Completed _____

This Assessment tool is designed to indicate (Part A) the manner in which decisions are made within an organization, and (Part B) to identify the main attributes of the decisions, the decision makers and the decision environment being addressed. It is applicable to organizations of all types and in all domains, and is to be used to highlight tendencies and possible areas for improvement.

The scales used for responses are generally 1 through 5. 1 represents a clear inclination of one sort, while 5 the other extreme. Ratings such as 2 and 4 are intended to allow for less absolute situations, where a clear tendency exists, in the majority of the scenario. 3 represents equal, neutral ground, whereby there truly is no inclination towards either side. Respondents are encouraged to provide qualitative comments to further describe their response. Mark only one oval (response) for each question.

To use this tool, please select a current or past strategic challenge or initiative faced by your organization. Please describe below the nature of the strategic decision or challenge which the following questions address. This specific scenario is relevant to Part A, while Part B seeks to understand the broader context and environment within which your organization operates. All questions ask about overall style actions within your organization (as they pertain to a specific decision/challenge or overall), not to your individual management style.

Part A - decision making Style

#A1. When making a decision, do you methodically review every option against the same dimensions or attributes (gathering information about every option as thoroughly as possible)? Alternatively, do you review options in an un-prioritized manner and immediately disqualify some based on a single overriding attribute? An example would be disqualifying an option due to high cost regardless of whether it was consistent with your organization's mission or due to the fact that it would not result in popular support.

1 = We initially filter options to weed out unacceptable ones

5 = We review every option

1 2 3 4 5

#A2. When assessing alternatives, do you trade off attributes against each other, allowing them to compensate for each other? For example, does a high score on some make up for a low score on others. Or, are some attributes simply so important that they dominate over others, no matter what?

1 = Certain attributes cannot be offset and lead us to disqualify alternatives

5 = We allow attributes to offset each other

1 2 3 4 5

#A3. When examining alternatives in depth, do you conduct an extensive dimension based analysis? For example, do you select an array of attributes, weight them and then assign a score following methodical information gathering. Or, do you use any form of shortcuts (or other methods) to sift through the alternatives and determine the best one?

1 = We examine only a subset of alternatives across a subset of dimensions

5 = We examine and score each alternative across all dimensions.

1 2 3 4 5

#A4. Do you tally aggregate scores for each alternative based on the individual attributes, then rank them by overall score, or rather use a different way of deciding and selecting between them?

1 = We do not create an aggregate score, and use alternate methods

5 = We create an aggregate score for each alternative and that is how we decide the optimal one to choose

1 2 3 4 5

#A5. When performing an initial screening of alternatives as part of which some are immediately discounted due to a single overriding, unacceptable attribute -- do you stop

looking for additional alternatives once an acceptable one is found, or do you continue and create a 'shortlist' of acceptable alternatives?

1 = This is not relevant to how we make decisions

5 = Yes, when we find an initially acceptable alternative we stop looking for others, and review it in greater depth

1 2 3 4 5

#A6. As part of your decision making practices, how many alternatives are evaluated?

We evaluate 3 or fewer alternatives

We evaluate between 4 and 7 alternatives

We evaluate between 8 and 10 alternatives

We evaluate between 11 and 14 alternatives

We evaluate 15 or more alternatives

#A7. As part of your decision making, do you find that there are certain overriding contextual, political and environmental factors that constrain the range of alternatives and

options you can consider? Or, rather that you can approach the decision while examining the broadest range of considerations and alternatives available, to help find the best approach?

1 = No, we are able to generate alternatives and evaluate them very openly without such pressures

5 = Yes, certain considerations greatly influence the range of alternatives we consider

1 2 3 4 5

#A8. When assessing decisions, do you focus more on the individual losses and gains along the path (resulting from the means you are considering) or rather on the result, end objective?

1 = We focus on the end result (less so the means)

5 = We focus heavily on the losses and gains along the way

1 2 3 4 5

#A9. When assessing and evaluating a complex matter, do you use known reference points (or anchors) as a way to better understand, simplify and shorten the time needed to estimate the size, value and position of your own considerations? Or, do you find that reference points are not applicable, useful or simply distracting given the nature of the decisions you are considering?

1 = No, we do not use reference points or anchors

5 = Yes, we use reference points or anchors

1 2 3 4 5

#A10. Do you use existing available experiences (whether experienced by your own teams or in the media, literature) to influence your considerations and make it easier to arrive at a decision? Or, do you find that such experiences are either not available, not applicable or simply distracting?

1 = No, we do not use previous personal experience as a consideration in our assessment

5 = Yes, we allow previous personal experiences to influence our considerations

1 2 3 4 5

#A11. Do you use representative results when possible to shorten time spent collecting and analyzing information? Or do you find that such results are insufficient and therefore not useful?

1 = No, we do not use representative results to simplify our analysis process

5 = Yes, we use representative results to simplify our analysis process

1 2 3 4 5

Part B - The dominant characteristics and attributes

Part B focuses on identifying overall organizational attributes and inclinations. The term 'We' refers to the decision makers.

Decision Units (Q#B1 to Q#B6) -- Decision Units help identify the entity that is making the decision. Each has a different decision process and as result different inclinations

#B1. To what degree is there a single leader who qualifies as a Predominant leader?

1 = This does not represent our organization (go to #B3)

5 = There is indeed a clearly predominant leader (go to #B2)

1 2 3 4 5

#B2. If there is a Predominant leader, to what degree does this person choose to be involved?

1 = N/A (go to #B6)

5 = The predominant leader is very much involved (Go to #B3)

1 2 3 4 5

#B3. To what degree does the situation put one group in a key position to handle the problem?

1 = N/A (go to #B4)

5 = To a very strong extent

1 2 3 4 5

#B4. Are there separate independent actors (i.e. more than one group, whether within the organization or external to it) that must agree before action is possible?

1 = N/A (go to #B5)

5 = There are clear independent actors that must agree before action is possible (go to #B5)

1 2 3 4 5

#B5. Are there entities outside your organization that generally participate in these types of decisions?

1 = There are no entities outside the Regime that participate in these types of decisions

5 = There are entities outside the regime that generally participate in these types of decisions

1 2 3 4 5

#B6. Are there entities outside your organization that generally participate in these types of decisions?

Note: This question purposely repeats as it is part of the flow that a respondent follows as they answer questions #B1 through #B4

1 = There are no entities outside the Regime that participate in these types of decisions

5 = There are entities outside the regime that generally participate in these types of decisions

1 2 3 4 5

Problem Representation (Q#B7 to Q#B13) - The manner in which problems are represented has implications for how they are handled

#B7. We tackle well-structured problems (the facts are known, information is readily available, quantities of elements are clear, the risks are clear, the outcomes are known once a process is followed - for example mathematical calculations)

1 = We do not tackle well-structured problems (go to #B11)

5 = We largely face well-structured problems

1 2 3 4 5
○ ○ ○ ○ ○

#B8. In groups, we use stories or explanations (narrative of events) as a way to summarize them (challenges, problems)

1 = We do not use stories (or explanations) as a way to summarize

5 = We extensively use stories (or explanations) as a way to summarize

1 2 3 4 5
○ ○ ○ ○ ○

#B9. When tackling these well-structured problems, we use model or case based approaches

1 = We do not use model or case based approaches to tackling such problems

5 = We use model or case based approaches to tackling such problems

1 2 3 4 5

#B10. We tackle ill structured problems (the facts are not all known, information is not easily available, quantities of elements are not clear, the risks are murky, the outcomes are not known and the process to be put in place unclear)

1 = Most problems are not ill-structured

5 = Most problems are indeed ill-structured

1 2 3 4 5

#B11. When tackling these ill structured problems, we use model or case based approaches

1 = We do not use model or case based approaches to tackling such problems

5 = We use model or case based approaches to tackling such problems

1 2 3 4 5

#B12. When tackling these ill structured problems, we use explanation based approaches

1 = We do not use explanation based approaches when tackling such problem

5 = We use explanation based approaches when tackling such problem

1 2 3 4 5

#B13. We consider past decisions when we evaluate current ones (eg what the problem was, what we did, how it concluded)

1 = We do not consider past decisions when evaluating new ones

5 = Past decisions weigh heavily on our considerations

1 2 3 4 5

Group Think (Q#B14 - Q#B16) -- The degree of homogeneity of a group has inclinations to act in a certain way and that has implications regarding the outcomes

#B14. How many people participate in typical strategic decisions?

#B15. Is the group that participates in decisions comprised of people with varying skill sets and backgrounds?

1 = The group that participates is quite homogenous (similar) in terms of skill set

5 = The group that participates is quite heterogeneous (varied) in terms of skill set

1 2 3 4 5

#B16. Do you engage external experts at this stage?

1 = We very seldom engage external experts at this stage

5 = We almost always engage external experts at this stage

1 2 3 4 5

Decision Environment Attributes (Q#B17 to #B23)

#B17. There is very little time to carry (make) out important decisions

1 = We have very little time to carry out important decisions

5 = We have ample time to carry out important decisions

1 2 3 4 5

Please indicate a typical timeframe (range) for making strategic decisions

#B18. The situation is very ambiguous (there are competing meanings to the information available)

1 = The situations we face are often very ambiguous

5 = The situations we face are often quite unambiguous in nature

1 2 3 4 5
○ ○ ○ ○ ○

#B19. There is a high degree of uncertainty in the situations we face (uncertainty is the result of, for example, ambiguity)

1 = The situations we face are often very uncertain

5 = The situations we face are often quite certain in nature

1 2 3 4 5
○ ○ ○ ○ ○

#B20. The situations we face are familiar

1 = The situations we face are largely unfamiliar

5 = The situations we face are largely familiar in nature

1 2 3 4 5

#B21. The situations we face are dynamic (the choices/alternatives or dimensions/criteria are not static)

1 = We largely face static situations

5 = We face largely dynamic situations

1 2 3 4 5

#B22. The situations are risky (the probability of a positive outcome is low, even post our decision process)

1 = The situations we face are not very risky in nature

5 = The situations we face are largely risky in nature

1 2 3 4 5
○ ○ ○ ○ ○

#B23. The situations are often high stress situations

1 = We face primarily low stress situations

5 = We face primarily high stress situations

1 2 3 4 5
○ ○ ○ ○ ○

Guidelines for interpretation of assessment results

Results of the assessment require human interpretation to derive useful conclusions, insights and recommendations. An administrator guide was not developed as part of this research scope, which focused on the design of an assessment tool that could identify opportunities for IOs to improve their decision making. Those interpreting results may use the theoretical chapters and the analysis of each case study as a guide for interpreting their own results. Results are not aggregated to a single score, but rather presented for evaluation both individually and in a holistic manner.

Testing the SDMAT

Identifying and engaging potential organizations

The following selection criteria were used to identify and qualify organizations for inclusion in this research:

1. Status - An IO (including Non-Governmental Organizations).
2. Scope and impact of decisions faced - The nature of decisions faced have high impact and significance: capital at stake is tens to hundreds of millions of \$/£, vast number of lives lie in the balance whether via aid or military action, vast geography and resources that may be affected.
3. Accessibility/willingness - The organization is accessible for purposes of securing sufficient information from primary and/or secondary sources to allow for an analysis and understanding of their practices.
4. Scope of challenge for analysis - It is possible to isolate one or more challenges or scenarios for analysis using the SDMAT.
5. Additional considerations in selection - The focus was on non-military/non-security oriented organizations due to the inherent complexity in securing access to information in the time frame available for this research project.

An initial list of potential IOs was augmented in conversation with a Chatham House staff member, during which the objectives and scope of the research were discussed. This led to the identification of a refined array of organizations for consideration (12), see Appendix 1. A subsequent analysis of these organizations led to the identification of a subset of those suitable (5). Appendix 2 includes a copy of the introductory letter sent to these select organizations. Those responding favorably (3) were interviewed via live online conversation, while completing the SDMAT questions in parallel. These conversations were recorded with the permission of the interview subjects.

Case study approach

This phase of the research was comprised of four main parts.

- a. Capture of raw results - via online survey responses and personal interviews (conducted by skype/phone and recorded with permission of interview subjects).
- b. Consolidation of results - Combining results to develop comprehensive responses, supported by qualitative narrative.
- c. Analysis of the results - Interpretation of the results within the context of the respective individual models or frameworks with possible implications deriving from these results.
- d. Summary of insights - Where possible, specific insights and conclusions were drawn reflecting on strengths, weaknesses and opportunities that arose from the assessment.

The following case study evaluates the decision making styles of three IOs through the application of the SDMAT. It builds on the theoretical foundation which informed the design of the SDMAT and guides readers as necessary to theoretical references and to the specific assessment question to aid in understanding the observations drawn. Rather than list individual question results for each interview, an analysis and discussion of the main findings is provided, offering readers an understanding of the respective organization's decision making capabilities, strengths and potential weaknesses. A consolidated series of observations as well as their implications are presented as a summary of the case study.

The organizations

Organization #1 - Power of Nutrition (PoN)

The Power of Nutrition is an IO focused on addressing hunger and nutrition related problems in Sub-Saharan Africa and Asia. This IO leverages a partnership model (private and public) in order to fund and operationalize its initiatives (PoN n.d.). The interview subject from PoN requested to remain anonymous and to be referred to as a senior executive.

The strategic decision selected for review as part of this study pertains to determining which strategic partnerships the organization chooses to pursue. PoN works exclusively via partnerships with entities such as the World Bank, UK Aid, and Unicef. Many organizations approach PoN for purposes of collaboration, while others are identified as potential partners by PoN staff. In all cases PoN must determine who to engage with as implementing agents for their programs. A successful

partnership can successfully meet and exceed its mandate, while an incorrect partnership has the potential to be disastrous to the organization and its funders at various levels, from overall trust and support by other partners and stakeholders through to the misallocation of finite resources and poor implementation of initiatives on the ground. Developing a strong approach to partnership vetting is deemed a critical decision of strategic nature to PoN, and a suitable case for analysis using the SDMAT.

Organization #2 - International Rescue Committee (IRC)

The International Rescue Committee (IRC) responds to global humanitarian crises, helping to restore health, safety, education, economic well-being, and power to people devastated by conflict and disaster. Founded in 1933 at the call of Albert Einstein, the IRC works in over 40 countries and 26 U.S. cities. The President of the International Rescue Committee is former British Foreign Secretary David Miliband (Navigator n.d.). The interview subject at the IRC requested to remain anonymous and to be referred to as a senior executive.

The strategic decision selected for analysis was determining which grants to invest in and apply for. The process of grant application is a very expensive and involved one. It involves extensive due diligence across many elements, such as the financing organization, including its leadership and stakeholders, the source of its financing and past activity, successes and failures. Engaging with an organization in this form is a strategic partnership with the potential to support the organization in achieving its goals, while a poorly chosen partner carries the risk of impeding its

objectives and tarnishing its reputation. To further narrow the scope of the assessment, the focus will be on R&D grants. The interview subject indicated that this area has a 'higher level of strategic decision making' and as such has been chosen for this analysis.

Organization #3 - World Health Organization (WHO)

The goal of the World Health Organization (WHO) is to build a better, healthier future for people all over the world. The WHO staff work closely with governments and other partners in more than 150 countries to achieve 'the highest attainable level of health for all people'. WHO is financed in part by member states dues, calculated relative to each country's wealth and population (WHO 2016). The interview subject at WHO requested to remain anonymous and to be referred to as a senior executive in the Director-General's Office.

The strategic decision evaluated was the development of a sustainable financing strategy and mechanism for the WHO. The global economic crisis of 2008 wreaked havoc on the WHO, which has its programs funded by member states. The crisis forced the organization to rethink elements of its core strategy and launch a reform process. This involved developing a new strategy across multiple aspects of its operation, with a key underlying one being the manner in which it sustains itself financially over time as an organization.

Assessment results

Part A of the assessment (Questions #A1 to #A11) is designed to indicate whether the organization is inclined towards RAM and expected utility models in their strategic decision making, or alternatively towards heuristic driven, PHT type approaches (with varying degrees of influence from BR, PT). Responses for each of the three organizations are addressed together, for each question or relevant grouping of questions.

The initial criterion evaluated to make this determination is whether an organization disqualifies alternatives based on the existence of certain unacceptable attributes without allowing others to compensate for them (Question #A1). The narrative from the PoN interview subject indicates that some criteria are absolute 'must haves', including an 'ability to influence government, track record and experience in running a nutrition program, the ability to match funds/to bring funds to the table, scale of operations as well as reach'.

Indeed, PoN does filter out organizations that do not have certain capabilities, reinforcing the conclusion that the client utilizes a form of PHT to initially screen options and disqualify those that do not meet certain criteria. What is interesting to note is that unlike traditional PHT, this organization operates in the positive (rather than the negative), defining a minimal 'passing threshold' as the existence of certain criteria, rather than disqualifying certain alternatives due to the existence of criteria deemed to be unacceptable. Whether one seeks the existence of essential elements or screens for the lack of detrimental ones, it is the author's opinion that there is clearly

employment of a PHT type approach that leverages defined barriers in the form of a small subset of criteria, rapidly screening through a vast array of options and selecting those that merit further consideration. Either way, there is a need to perform some form of information search, gathering and analysis to determine where these criteria stand.

The IRC filters out unacceptable options as part of an initial review of alternatives. They seek several core elements to determine initial suitability, including whether a program or grant are evidence based and evidence generating. An initial screen against these two criteria may indicate that while funds are available to address a problem, there simply does not appear to be sufficient data to successfully measure the potential results, nor is the initiative itself based on a strong enough evidence base to merit adoption and support. The interview subject adds that 'evidence is the trump card'. In practice, this is a qualitative review by the group, not a quantitative one. Based on this response and the corresponding narrative, it is clear that IRC employs a PHT type approach.

The WHO appears to take a more traditional approach to their screening process. In the situation examined as part of this case study, they evaluated financing models used by several other organizations and did so in a sequential manner, one at a time. They assessed the details of each model against a series of predefined criteria, in line with a RAM-type approach. This involved examining the degree of alignment with the WHO's identity, its governance structure (as it pertains to decisions on funding), the duration of financing that would be secured, the source of financing (in terms of its vulnerability) as well as the degree of transparency into this source, the

degree to which the model improved predictability of multi-year (5-year horizon) financing for the WHO, and the degree of flexibility allowed to the WHO (earmarking of resources).

To determine whether an organization treats its screening criteria as compensatory or noncompensatory (Q#A2), we examine whether results of individual dimensions can 'balance each other out', allowing for weak scores to compensate for stronger ones. PoN appears to treat their initial screening dimensions as noncompensatory and indicate that specific criteria must exist for the overall partner to pass this initial screening, irrespective of others. This further strengthens the observation that a PHT type approach is used by PoN.

Similarly, the IRC response indicates that failing to meet core criteria cannot be offset and will lead them to disqualify alternatives. The interview subject added that they use a grading system whereby the programs are rated Red, Amber, or Green based on the degree to which evidence is available. A Red score on evidence criteria is a fail and this program will not be considered. Amber allows a program to proceed and undergo further evaluation. The WHO stands in contrast to the other organizations in that they will allow the various criteria to offset each other. They clearly adhere to a compensatory approach, which reinforces the observation that they engage in a more rational type decision making process.

The responses to Q#A1 and Q#A2 also allow us to draw further observations and resulting implications for PoN, IRC and the WHO with respect to their information search and alternative

evaluation inclinations. A core distinction between RAM and PHT is the fact that RAM based approaches are optimizing by nature (decision makers go through an extensive and often complex, lengthy process to find the best solution), whereas PHT supports a satisficing approach (decision makers seek an acceptable solution). Furthermore, RAM prescribes a holistic, exhaustive search for information across all dimensions, while PHT a non-holistic one (only enough information is sought to help make a determination across a subset of dimensions). RAM users will be inclined to spend far more time making an optimal decision, while PHT users can be expected to yield results faster, even if they are imperfect.

As organizations that rely heavily on a PHT type approach, PoN and IRC will be inclined to conduct less comprehensive information searches and to find acceptable solutions from their respective evaluations while the WHO will be more inclined to spend more time searching for complete information and identifying the optimal alternative. Q#A3 and Q#A4 evaluate these aspects in greater depth. It is important for internal stakeholders at these organizations to be aware of these implications. Organizational leadership must take measures to ensure the skill set of those involved in the decision making is suitable, and that the core dimensions used for analysis are extremely well thought out ahead of time and clear to these 'users' (decision makers). Furthermore, they must help ensure that information is easily accessed (removing internal barriers as needed) and as easy as possible to comprehend.

For external parties working with (or against) such an organization, this insight can also help gauge the type of solution that may result and the timing of such outcomes. In addition, it may offer the potential for guiding or swaying the analysis via careful misinformation (cluttering up available information, making it harder to access and from which to draw conclusions).

Questions #A3 & #A4 highlight the nature of this in-depth screening (when conducted), its comprehensiveness, complexity and scoring method, so that alternatives may be compared and selected. Question #A3 helps determine the existence of and the base form of the dimension-based analysis. Whether as part of RAM or PHT, we expect to see strong use of this method. Where it is less prevalent, this is cause for further analysis into how the organization evaluates options to understand the method used, and an indication of a possible gap in thoroughness.

Question #A4 examines scoring as part of the in-depth review of alternatives, further indicating the application of basic RAM, whether on its own or as a method for phase two PHT analysis of remaining alternatives. In cases where an organization creates aggregate explicit scores, we seek to understand the logic with respect to its depth as well as inherent complexity (whether the logic can even yield a clear result, which may become less evident when overly complex logic is introduced). When aggregate scoring methods are not used, we attempt to understand such alternate methods and similarly examine the logic, rigour and complexity of the process.

PoN indicates that they examine and score each alternative across all dimensions, in their case twelve core criteria which cover financial, legal, operational as well as relationship aspects that include the existence of monitoring and evaluation capabilities, track record with past partnerships, experience managing large budget programs, whistleblowing policy and financial resilience. The methods used for 'scoring' each dimension may be quantitative ('objective, mathematical' where applicable) or qualitative ('subjective') based on the nature of the dimension. This comprehensive array of dimensions is evaluated using a flexible approach that is not overly complicated and helps yield meaningful results from which conclusions are drawn.

PoN does not tally an aggregate quantitative score for an organization based on this part of the analysis, rather they look at the individual array of responses across dimensions and 'evaluate the partner holistically' according to the interview subject, using non-quantitative heuristics to produce a final result for their analysis. From this extensive list of dimensions, against which all remaining alternatives are considered, it is clear that they make use of a RAM approach during the second phase analysis. This further reinforces the observation that PHT with a phase two RAM approach is extensively used as a core decision making process within PoN.

Similar to PoN, the IRC also examines and scores each alternative across an array of dimensions after the initial filtering of options is complete. These dimensions for analysis include the scale of the program, its potential impact, appropriateness to IRC and the underlying severity of the problem. The IRC uses a four-point based scoring system for each dimension, then tallies the

scores of each option and creates an overall aggregate rating which is used to compare the alternatives. The scores are not aggregated using a purely quantitative, empirical, algorithmic approach, but rather a heuristic-driven one. The use of a grading system at this phase is indicative of a PHT driven methodical process based on pre-established evaluation criteria and appears to well support IRC in its screening of new partnerships.

The WHO differs from the other two organizations in this respect, as it examines only a subset of alternatives across a subset of dimensions. As part of their evaluation the WHO does not rely on a quantitative analysis at this phase, but rather on a qualitative review without explicit scoring, explained by the fact that the dimensions require extensive ‘political understanding’ of the situation to determine overall suitability of alternatives. As noted, the WHO does not follow a clear PHT type process with a dual-phased filter. The insights from the responses to these questions (and the specific WHO case evaluated) indicate a form of hybrid approach, whereby a single-phase evaluation is based largely on qualitative heuristics for measurement.

Given the results from this analysis (and making the assumption that this is a representative case for other strategic WHO decisions), the WHO may benefit from a reexamination of its process to ensure that the dimensions considered can in fact be measured and understood in a manner that allows for informed decision making. The process may indeed persist as a largely heuristic driven based approach; however, it is essential that evaluations are sufficiently rigorous to allow WHO decision makers to evaluate, compare and decide in an orderly manner.

Question #A5 explores an important element: whether an organization seeks out single or multiple alternatives as part of a dimension-based analysis. When decision makers are satisfied with the first alternative that passes the minimal threshold (exhibiting satisficing versus optimizing behaviour), the order in which options are presented is very important, resulting in the selection of an alternative based on the (possibly) arbitrary order in which it was evaluated. The implications of this are tremendous as they can greatly influence the results.

Understanding upfront whether an organization engages in satisficing or optimizing behaviour is critical for the organization itself to take into account as part of its decision making procedures, as well as an important insight for partners or adversaries. Satisficing approaches require less time and investment in information search, while optimizing approaches the very opposite. In both cases there is opportunity for interested parties within and external to the organization to influence results by manipulating the availability of information and thus the ordering of information and alternatives presented, as well as the time required to evaluate them.

The observations thus far regarding PoN and IRC determine that they use a PHT type approach for strategic decision making rather than a RAM approach. The nature of PHT lends itself well to scenarios where there are many alternatives to be considered (in this case many potential partners or grant opportunities for the respective organizations) and provides an efficient as well as effective method to screen them successfully. PHT offers organizations a way to sift through alternatives at greater speed as compared to RAM, which is far more time consuming. PHT also

offers enhanced flexibility by allowing organizations to adapt their decision making process to changing problems and conditions, without compromising the quality of the result. The use of PHT as part of the PoN and IRC decision making process is, in this author's opinion, well suited to support their successful decision making.

The WHO is far more inclined towards a hybrid RAM-PHT type approach. The WHO evaluates multiple options against the same extensive array of criteria, seeks an optimal solution (a maximizing approach to outcomes), processes alternatives in a sequential manner, and allows individual criteria/dimension results to compensate for each other, all of which point towards RAM. However, the nature of decision making by WHO also includes great reliance on non-quantitative analysis to evaluate challenges.

The next series of observations regarding the organizations being assessed are based on an evaluation of the prevalence of Bounded Rationality (BR) characteristics. BR is a general approach to decision making that focuses on reducing the cognitive complexity of decisions by promoting non-holistic, satisficing analysis of options inline with the skill set and mental capacity of the decision makers. It asserts that a simplified, heuristic based, well executed decision process, even if far from perfect, is better than an overly complex one that cannot be successfully implemented in practice.

BR does resemble PHT in that it relies heavily on heuristics, though it varies in that it does not prescribe a two-phased process (or any process for that matter), and in this sense can be considered less systematic. BR recognizes that decision makers will in practice adopt what they deem to be suitable mechanisms, criteria and processes (a combination of heuristics and traditional approaches) to evaluate and make their determinations.

Organizations that use PHT or BR approaches can be expected to reach decisions faster than those employing RAM decision models, and to reach what may be seen as acceptable, rather than optimal decisions. While similar to PHT, organizations that exhibit stronger BR characteristics over PHT must take extra care in the design and support of their decision making processes due to the less systematic nature of BR.

BR influences may be consciously or subconsciously used by an organization as part of their primary decision making approach. The limited subset of BR influences covered in this study are evident through characteristics such as the pure number of alternatives considered, the breadth of freedom that decision makers have in exploring a range of alternatives and the influence of contextual or political considerations. The prevalence, nature and implications of BR use by an organization must be evaluated alongside the existence of RAM or PHT characteristics, to help determine its implications.

The number of alternatives considered by an organization as part of their decision making process (Q#A6) is pertinent across various approaches, including RAM, PHT and BR. Important to note are the potential implications. First, the amount of time and resources required naturally increase with the number of alternatives, which includes the pure time required to consider, collect information and then conduct an analysis. When a PHT or BR approach is utilized, this helps mitigate some (but not all) of this impact. With a greater number of alternatives and a longer process arises the possibility that organizations will tire of methodical review, given the volume of data to find and analyze, and simply rush to the easiest, obvious conclusions.

A higher number of alternatives does not, on its own, directly indicate that an organization has an overly complex decision process. The number of alternatives must be considered together with information as to whether a traditional RAM, PHT or largely BR type approach is used. For cases where PHT or BR are used, the risk of over complication is reduced (though other elements of the process will influence its ultimate effectiveness). Conversely, for cases where a high number of alternatives are employed in a traditional RAM manner without any semblance of BR characteristics (to help simplify), we can anticipate higher complexity and a more challenging, lengthy decision process, with lower chances of a timely outcome.

In parallel, the downside of a limited number of alternatives is the possibility of overlooking promising options. The risk of this happening is reduced when a PHT approach is used, whereby the less desirable alternatives are rapidly discarded as part of a well-thought-out phase one

screening, allowing the more in-depth review to be conducted on alternatives that passed the initial thresholds. When a BR heavy process is in place, the rigour inherent in the process will influence the degree to which strong alternatives are identified or overlooked.

In the case of PoN, fifteen or more partnership alternatives are evaluated. PoN appears to employ elements of a BR type approach as part of its second phase PHT review process, whereby the scores are not aggregated using a purely empirical, algorithmic approach, but rather the results of the screening are integrated in a manner aligned with the pace, complexity and skill set of PoN decision making teams. Therefore, it is concluded that the high number of alternatives should not be a matter of concern to PoN.

The IRC evaluates between three and seven alternatives in each cycle, which focuses on ‘a certain initiative or problem area’, with hundreds of grants evaluated annually. They are similar to PoN in that the results are not quantified using precise mathematical logic, but rather heuristics that help indicate levels of strength and weakness across dimensions, and subsequently across alternatives. Here as well the screening procedures (a mix of BR and RAM) are integrated in a manner aligned with the pace, complexity and skill set of IRC decision making teams.

The WHO indicated it evaluated three or fewer alternatives as part of the strategy reform process. This low number may be indicative of a constrained process that does not seek broad inputs and alternatives, but chooses to focus on a limited number and evaluate them in depth. The

implications of this derive from the hybrid RAM-heuristic screening employed by the WHO, whereby a small number of alternatives and an unstructured evaluation process may increase the risk of erroneous choices by the WHO.

The breadth of freedom a decision making group (or groups) has (or perceives it has) in exploring alternatives, given political, environmental or other contextual factors, offers insight into how best to interact with and influence it (Q#A7). For PoN, it is clear that certain considerations greatly influence the range of alternatives considered. An example provided by the interview subject included a hypothetical scenario whereby a board member of PoN may have had a difficult historical relationship with someone from the partner organization being evaluated, and as a result it would be an 'uphill battle' to include them. This example strengthens the observation that an organization must be aware of such influences and their ability to affect decisions. PoN appears to understand their susceptibility to such considerations. The use of an approach that includes attributes of PHT as well as BR continues to be well suited to PoN.

In contrast to PoN, IRC indicates they are not greatly influenced by such pressures and are able to generate alternatives and evaluate them openly without the influence of external considerations. In this case the WHO is similar to PoN, as they appear to be greatly influenced by overriding political considerations. As an example, the interview subject indicated that financing the entire program by assessed contribution (membership fees) would be an outstanding financing option for the WHO but would create tremendous political conflict and never be accepted by member

states. Therefore, it is not even considered amongst alternatives. WHO is exposed to such pressures and must account for their influence on decision making.

Prospect Theory (PT) is important as its attributes represent a divergence from RAM. According to PT, people are more sensitive to changes in their assets (their utility) than to the net utility itself (such as net earnings) and tend to accept much more risk when trying to avoid losses than they will accept when trying to secure gains of the same magnitude. PT introduces the concept of a reference point, against which these (potential or actual) gains or losses are evaluated. These reference points are highly subjective and dynamic, influenced by organizations realized or expected utility levels at a point in time (e.g. losing \$100 tomorrow may actually be a 'gain' if one expected to lose \$200; gaining \$100 today may be a 'loss' if one expected to gain \$200).

Research conducted on PT reveals that people respond to risks nonlinearly and will perceive the increase in risk to be lower than the actual net increase when in the 'domain' of loss. Consequently, they may persevere in losing ventures longer than standard rationality would lead one to expect, given the reference point. This is valuable insight for an organization (and its adversaries) to consider, as it can greatly influence perception and action by this organization.

When an organization is more concerned about losses than gains, their behaviour and actions differ from parties more concerned with a choice's net utility. These organizations are more likely to assume less risk and adopt less risky outcomes as part of their decision making, and often attempt

to maintain the status quo as they are aware of the impact of their decisions. Furthermore, this understanding helps explain and even predict that organizations may exhibit a less strategic outlook when focused on shorter term gains and losses, and exhibit less stamina in sustaining risky decisions. Question #A8 examines these characteristics.

As an organization that is monitored very closely (funders, partners), the manner in which their programs are implemented, the ongoing results as well as the end outcome of the programs are of great importance to PoN. As a result, PoN is likely to assume only low-to-moderate levels of risk as part of their standard decision making practices. The IRC's input in this case offers similar results and conclusions (i.e. low to moderate levels of risk tolerance), due to their status as an externally funded IO operating across global initiatives. The WHO has an even lower tolerance for risk as they must focus very heavily on the losses and gains along the way, clarifying that 'in order to ensure support from parties involved, the WHO absolutely has to be very considerate of the process itself and not just the end result.

Question #A9 establishes the degree of reference point use as an integral part of an organization's conscious decision making process, determining the extent to which the influences and implications of PT should be considered. These heuristics aid in simplifying complex matters but must be used appropriately to ensure that only suitable reference points are included, lest they provide adverse influence.

PoN exhibits a high degree of reliance on anchors or established reference points as a simplifying heuristic against which losses and gains are measured. PoN uses them as an 'aide memoire, a way to assist', in critically assessing past partners. The interview subject further adds: 'if you [potential partner] are doing it this way, our experience suggests this would lead to these types of outcomes, so how come you got different outcomes? Tell us how you did things differently, as other reference points indicate you cannot obtain or attain those outcomes, using the methodology you used...'

From this narrative, it is clear that they indeed use referential anchors as part of their decision making practices surrounding partnership assessment as benchmarks against which to compare partner's actions and outcomes. PT heuristics aid PoN in evaluating the degree of risk that may exist in a partner they are considering. It is essential to bear in mind that the successful use of reference points to greatly simplify situations is highly contingent on the reference point itself and its robustness.

The IRC also reveal heavy reliance on reference points or anchors. The interview subject noted they use various heuristics, such as whether implementing a program is even needed ('better than just giving people cash'). They also use reference points in the form of cost benchmarks, since 'we know what things should cost', allowing them to weigh grant guidelines against these known anchors, helping them to determine whether to proceed and also to inform program designs.

These heuristics likely aid IRC significantly in speeding up and simplifying a complex and lengthy process. IRC faces similar risks to PoN, in that extensive use of reference points must be carefully monitored to ensure they are accurate and suitable for the scenario at hand. In contrast, the WHO indicated a low degree of reference point or anchor use, relying on their standard analysis procedures to gather data and inform decisions. In their case this may result in longer timelines and increased complexity for their decision makers.

Question #A10 examines the use of existing experiences to better understand the situation and evaluate gains, losses and net assets, one of the core attributes of PT. The degree to which this element is prevalent within an organization's standard practices helps to explain its behaviour (and potential behaviour). As an organization, PoN does include existing experiences as an influential consideration in its decision making. The interview subject notes that while PoN does place great importance in their depth of personal experiences, they are mindful that only 'part of the universe' is revealed through such a lens. This indicates that they are aware of the potential for distorted results, and aim to use experience as one of the inputs to aid them in reaching a stronger and more reliable decision.

The IRC indicated only moderate levels of influence by previous personal experiences. The subject noted they 'try and look at objective criteria to shape...decision making. Obviously, our own personal judgement, views are highly caught into that, and no doubt biases'. They are aware of potential biases but work with metrics throughout their entire process, which likely helps

temper, to some degree, the influence of such biases. The WHO recognizes a high degree of influence by previous personal experiences though only ones from inside the organization, which indicates a very significant bias against external resources as inputs. It is unclear to what extent the WHO is aware of the implications of their inclinations and whether they account for them in their decision making, though they would be well advised to do so.

Question #A11 examines one final characteristic of PT; the use of representative results. Representative results are ones drawn from a limited sample which may be based on non-comparable results. This element also aims to understand the degree to which potential shortcuts are used in order to simplify the risk assessment. Depending on how they are derived and from which cases, the degree of accuracy will vary. Organizations that are inclined to use representative results must be aware of their value and pertinence to the cases at hand, and the degree to which they are influencing their risk assessment.

PoN indicates a low use of representative results to simplify its analysis process. This reduces the risk that PoN relies on incorrect bias and questionable data for strategic decision making. The IRC indicates a very high level of reliance on representative results to simplify the analysis process. The interview subject added 'we invested in aggregating all the systematic reviews of programs in global development so that we can use that to judge whether or not to pursue a program'. This indicates strong use of heuristics that contribute to a more rapid review and evaluation. In this case, due to the rigour demonstrated by IRC, the risk of incorrect data injected into the process is

considered to be low. Similar to PoN, the WHO does not rely heavily on the use of representative results, but clarified that this could vary by the type of decision being considered.

Overall PoN appears to exhibit moderate characteristics of Prospect Theory. This indicates that they have a very strong degree of awareness of their risk tolerance and have established a decision making process that reduces biases. The use of various elements characteristic of PT may strengthen the quality of PoN decision making, while also highlighting situations where awareness to potential biases may occur and extra care required to ensure continued high-quality decisions inline with the organization's goals. Overall the strong heuristic use by PoN appears well aligned and supportive of its reality and goals.

The IRC exhibits strong characteristics of Prospect Theory. This aligns with the overall strong use of heuristics as part of what appears to be a methodical evaluation and decision making process. IRC's heuristics are well formed and likely play an important role in allowing the assessment process to achieve desirable degrees of efficiency and effectiveness. In contrast, the WHO exhibits an overall low level of PT characteristics, though prevalent heuristic use is prevalent, as this research has indicated. The WHO demonstrates a varied mix of attributes that are, in some cases, inconsistent and may inhibit its decision making abilities.

Part B of the case study (Questions #B1 - #B23) departs from a single decision and broadens scope to the organization as a whole. It reveals key characteristics of the decision making participants

and the size, skill set and composition of those involved. It further examines how the organization tends to represent problems and the type of problems tackled (structure, risk, uncertainty and ambiguity).

Questions #B1 through #B6 pertain to aspects of Decision Units (DUs), which refers to the entities making decisions. They are arranged so that respondents may skip questions depending on their responses, hence not all questions may be answered. The DU framework focuses on three types of authoritative decision units (leaders, groups, and coalitions), identifies key factors in each of these types of decision units that influence alternative decision making processes, and associates these alternative decision making processes with particular tendencies and foreign policy outcomes. For example, coalitions tend to be inclined to less extreme behaviour (and decisions), while groups show moderate inclination, and predominant leaders indicate a tendency to such behaviour. This is explained in greater depth in the DU theory section.

Understanding the characteristics of the entity that is making the decision (often a hybrid of various unit formats) allows organizations to understand their varying decision processes and even predict their inclinations. With this valuable information, they can recognize strengths in their process as well as potential weaknesses. It also allows external parties to better analyze and even predict the behaviour of organizations they are interfacing with as partners or adversaries. Questions #B1 and #B2 help establish whether the organization operates in a centralized manner with a single decision maker as the one who has the authority to commit its resources (as well as

their degree of involvement), or whether there is instead a more distributed approach. This has substantial implications for how decisions are made, and the quality and reliability of these decisions. This information is of great importance for the organization itself to be aware of, as well as external parties such as partners and adversaries.

PoN indicates that decisions are governed by small teams rather than a single leader. This is not a negative reflection of the leadership aspects of the organization, but instead of the managerial processes put in place to support strategic decision making. Within IRC, power is fairly distributed between multiple business units in the field and in headquarters, and decisions are the primary responsibility of the respective units and not a single leader. In contrast WHO has a predominant leader, the Director General (DG), who is very much involved in decisions of strategic nature.

Questions #B3 to #B6 are addressed together and help determine whether the decision unit is a group and if there is more than a single group involved. Within PoN, the interview subject noted that there are indeed primary groups mandated with respective strategic matters, such as partnership due diligence. These groups' opinions are trusted, and their recommendations usually accepted. However, PoN's board members review their recommendations and can reject them. He adds 'they take an independent view of this and can say no even though they rarely do'.

Therefore, while a single group within PoN may dominate, they may still be dependent on other parties under particular conditions. From the interview, it is clear that the organization as a whole

does not involve external experts on a regular basis, and appreciates the potential bias that may arise from lack of such external perspectives. It appears that PoN decision making is primarily in the form of groups, with occasional intervention by a board or outside entities which may in such cases qualify as a coalition unit. As a result, we may expect overall moderate decisions on their part.

Within the IRC single groups are mandated to make strategic decisions, such as the 'strategic opportunities group' responsible for new grant applications, which is not chaired by the CEO. The interview subject clarified that 'the respective situations indeed place one group as primarily responsible given the decision, yet there is a high degree of veto power'. Several groups are involved and play a determining role in decisions within IRC, though the organization as a whole does not involve external experts to any notable degree, and does appreciate the potential bias that may arise from lack of such external perspective.

It appears that IRC decision making units takes the form of a coalition of groups based largely on internal participants from across the organization, which implies an overall tendency to lower risk decisions and actions. From coalition based decision making we may expect moderate decision making without tendency to extremes.

The WHO has a predominant leader who is heavily involved in strategic decision making. While the DG plays a strong central role, the WHO does rely on a group of regional directors elected

from within member states who are greatly involved in strategic decisions. Furthermore, the WHO has an executive board (the governing body of the WHO) that is responsible for some decisions that are not fully delegated to the DG, as well as an array of external partners who may be central to respective initiatives and important to ensure buy in and support.

The interview subject paraphrases the DG, describing her interaction with the various stakeholders: 'I consult, I listen, I decide'. This response indicates that while heavily involved as an input and source of consultation, the DG retains final decision making authority. Organizations with predominant leaders and without strong groups are exposed to a greater risk that these leaders will initiate more extreme policies. The author concludes that the WHO is only moderately exposed to such risk given the decision making structure, as the nature of the groups involved are such that they can be expected to temper any potential extremes by the DG.

Questions #B7 through #B13 examine how problems are represented within an organization. Problem Representation is not a decision making model but rather a core subcomponent of any decision making process and focuses on the manner in which problems are discovered, perceived and framed. The manner in which issues are understood and represented has a critical impact on how they are evaluated, the alternatives that are analyzed, and the subsequent policy that evolves from it.

Establishing the degree to which the organization handles problems it perceives to be well-structured or ill-structured, and the manner in which it chooses to represent them to decision makers is of great importance. Certain types of approaches to Problem Representation are more useful and suitable when dealing with problems of varying degrees of structure. The two primary representations we seek to identify in our reviewed organizations are case (or model based) explanations and story based explanations.

Question #B7 establishes the degree of structure inherent in the challenges faced by an organization. Less structured problems introduce additional challenges over well-structured ones. For instance, while well-structured problems appear to have single solutions, ill-structured problems have multiple possible solutions. Similarly, the information search may be more straightforward when dealing with well-structured problems. RAM is best suited to such well-structured problems while other methodologies and techniques are better for ill-structured ones, providing decision makers with enhanced tools and capabilities to arrive at improved outcomes. Question #B8 highlights the degree to which organizations rely on stories as a mechanism for capturing and describing important elements pertaining to the decisions they face, while #B9 inquires as to the use of model or case-based approaches as part of the decision making process.

Narrative stories can be used as a way to illustrate, tie together and add context and 'color' to events, from which assumptions and facts are derived and evaluated. The strength and benefit of stories is that they can simplify situations and add essential context or background, without which

complex situations may be harder to grasp. Their drawback lies in the manner and degree to which they are used and relied upon. Over-reliance on stories, with (possibly) more interesting and emotional input than other forms of data, runs the risk of confusing assumptions and stories with facts and weakening the decision process, even subconsciously.

In contrast, case-based approaches are ones that rely on a scientific approach whereby hypotheses are developed, followed by a model (developed, adapted or adopted) that is then tested and against which results are evaluated. The strength of such models is in their structure and rigour, which may also be their detriment when applied to ill-structured challenges that may not easily conform to such structure. In such cases the analysis process may be overly complex and convoluted, yielding incorrect observations and recommendations.

PoN indicates that it deals with a mix of structured as well as ill-structured problems as part of its normal course of business. PoN relies extensively on stories (or explanations) as a way to summarize and make sense of challenges. The interview subject indicated that the explanatory aspect of stories aligned to the manner in which PoN evaluates information and makes its decisions. Explanation-based summaries of events are well suited to ill-structured problems, and allow organizations to better understand them. The risk with such approaches is that these representations become the basis upon which organizations base their decisions (because they are so much easier to grasp than hard facts), rather than relying more on the facts themselves. PoN and other organizations that use such approaches need to be aware of these concerns.

The IRC deals predominantly with ill-structured problems and situations as part of their standard strategic decision making requirements. They use a mix of story-based and model (case) approaches, with greater reliance on stories and their narrative to help explain problems and situations. The interview subject noted that a key determining factor that influences which approach to use is the degree to which the decision making unit has been trained and supported in its decision making processes (their 'maturity'). Those more mature are inclined to adopt model based approaches, whereas others rely on 'intuitive approaches' in his words. He adds that in units where IRC has invested more resources there is greater capacity to adopt such [case study] approaches.

The narrative is insightful in that there appears to be a mix of approaches, which may cause tremendous variance in the decision making process, and as result the outcome. Advanced knowledge of this approach by organizational stakeholders and external parties can play an important role in supporting how decisions are made and mitigating errors and weaknesses, as well as influencing or anticipating outcomes (for partners or adversaries).

Given that the nature of challenges faced by IRC are largely ill-structured, the current inclination towards explanation based approaches may be seen as a positive one. It offers greater flexibility to successfully address challenges of such nature, whereas case based approaches may be more challenging to work with and apply. This is worth noting within IRC, which may be struggling to refine their decision making by eliminating a heuristic that is in fact useful and supportive.

In contrast with others, the WHO appears to usually face well-structured problems. The interview subject added that 'as an organization we are focused on a very data and information based approach to problem solving' adding that only in some cases does he feels qualitative rather than quantitative measures can be used to derive more 'analytical assessments'. As a whole WHO utilizes both case (model) as well as story (narrative) approaches to problem description. The interview subject notes that their approach varies by 'nature of the issue being tackled' though there is a preference for a quantitative analysis over qualitative ones. This overall balance appears well suited to the WHO.

Question #B13 also forms part of the basis for evaluating potential inclinations and biases in organizational decision making process, by understanding the degree to which past decisions are considered when new ones are being evaluated. The use of past decisions is not, on its own, a positive or a negative action. What is important is the degree to which an organization relies on them and how they are used. An organization that places great emphasis on past decisions and uses primarily a story or explanation based approach may suffer from certain deficiencies in their decision making.

Stories of past hardships and challenges (even if accurate) that are light on fact but heavy on graphical emotion can easily influence listeners to overstate risks or concerns, whereas fact based approaches may provide more appropriate context. Such organizations would be well advised to be aware of these risks and account for them. Simultaneously, the use of past decisions when

evaluating current ones (understanding what the problem was, what was done and how it concluded) is an invaluable resource to be appropriately leveraged. Organizational memory should be seen as an asset that plays an important role in strategic decision making and must be integrated correctly as part of a well-designed and supported process.

PoN indicates that past decisions weigh heavily on their considerations. The interview subject further notes that explanations are important to PoN, as they offer relevant background and context to better understand what happened and whether the result was positive or negative. Furthermore, the explanations of historical events provide insight into decision making within other organizations or stakeholders, revealing possible flaws and concerns, irrespective of the result. A previous response to Q#A10 (which indicated a moderate degree of influence by past experiences) helps clarify that the organization is well aware of the potential for bias that such information can yield, and takes steps to mitigate such matters.

Similarly, IRC indicates that past decisions weigh heavily on their considerations. The interview subject clarifies that this is due to the fact that 'some parties in the organization have long institutional memory.' It is important for IRC to recognize these cases and integrate them where possible as part of the decision making process as a heuristic, but to do so consciously along with other sources to reduce the risk of unintended bias that can unduly influence a decision process.

The WHO also appears to rely heavily on past decisions, as the interview subject notes that they 'do very much weigh previous decisions and the impact of them, when looking to current ones both in terms of whether the problem was the same and how it was resolved, whether the previous solution worked or not'. As an aside, he added that they may do this a little 'too much'. For the WHO, as for PoN and IRC, past decisions do and can continue to play an important role in achieving successful outcomes from their strategic decision making, as long as they are accounted for in a proper manner, evaluated and considered alongside other inputs.

Questions #B14 to #B16 focus on identifying characteristics of Group Think (GT). GT is not a decision model but rather an explanatory framework for how group characteristics (composition, skill set, size, internal vs. external experts) may affect decision making and outcomes. GT manifests in the form of flawed decisions due to group pressures, overlooking flawed information sources, flawed processing and minimal dissent over prevailing group norms or patterns.

Therefore, awareness of GT is of great importance to organizations with respect to the design of their internal processes (such as who to include), as well as how to anticipate and accommodate for potential biases and inherent weaknesses. Furthermore, these attributes can be of great value to external parties (partners and or adversaries) who may be better able to anticipate the decisions and behaviour of others, should they have insight into certain attributes within organizations of interest.

The number of participants may have various implications, such as an inherent inclination to seek out multiple, varying input, opinions and points of view. As the number of participants increases, this array of viewpoints may also increase. Conversely, a high number may add additional complexity and slow down the process. This research did not touch upon the size of groups nor establish a benchmark for analysis (for example, 3 to 5 is optimal, over that number may cause certain influences, etc). Such possible insights and implications remain for future research efforts to explore.

Composition of the group with respect to skill set and other personal attributes also has an important effect on the decisions a group is able to reach, and the degree to which it can challenge existing mindsets and perceive existing biases and inclinations. More homogenous groups (people of similar background, training, experience) vary less in their behaviour than more heterogeneous groups with a mix of such attributes. The former are considered far more likely to exhibit symptoms of GT than the latter.

In this respect, the composition of the group will affect the breadth of information sought, the array of options evaluated, the complexity of the process, the speed with which decisions are made and the outcomes. While this research has not established a benchmark for analysis of skill, background and experience characteristics, the theoretical underpinnings indicate that a combination of dissimilar people (in some of the manners evaluated), is inherently a positive factor that contributes to more varied analysis of situations, with reduced risk of GT.

PoN indicates that they typically have between 4-6 people in their groups charged with strategic decisions (Q#B14). These groups are quite heterogeneous (varied, Q#B15) in terms of skill set, as the interview subject notes that the executive team is quite varied and comprised of people from domains of communications, development and the private sector. PoN does not normally include external parties (Q#B16) as part of its decision making group composition (though it may draw on them as experts in specific domains such as finance or legal). Overall the degree of varying skill sets should be seen as a positive factor for PoN decision making, with low risk of GT. The lack of external parties may be countered to some extent by the internal variety of decision makers.

A typical IRC group is comprised of 6-8 people and is quite heterogeneous (varied, Q#B14, Q#B15) in its skill set, although similar to PoN there is limited inclusion of individuals from outside the organization. Similar conclusions are drawn; the internal variety is a positive contributor to the process, and although the lack of external experts may constrain their range of options to a degree, they are of low risk of GT.

The WHO global policy group is comprised of 8 members including the DG, the deputy DG and 6 regional directors. 'The group is quite homogenous (similar) in its skill set, and the interview subject added that 'most [individuals] previously worked in the WHO, with strong technical backgrounds and varying skills across domains (insurance, medicine, public health, civil service administration) that contribute to different perspectives, though the manner in which they use these skills within WHO is quite homogenous'. He noted that the executive board is generally more

heterogeneous than the global policy group. The fact that WHO 'very seldom engage[s] external experts at this stage' (Q#B16) and the high degree of homogeneity in the core decision making group poses a risk of constraining decision making capabilities within the WHO, in part due to GT.

As mentioned, benchmark data has not been established as part of this research to indicate an optimal size of a decision making group. What is reasonable to derive from the work thus far is that the size of group and its composition play important roles in supporting successful decision making. While PoN and IRC appear to have a reasonable number of participants of varying backgrounds to allow for varied input and reduced risk of GT, the WHO is at risk of suffering from the adverse impacts of GT.

The final section of the assessment is comprised of questions #B17 to #B23, which focuses on identifying the prevalence of several important attributes of the strategic decision environment typically faced by the organization. The implications for the organization vary based on the individual results for each of these attributes as well as a result of the amalgamated responses (combined results of one or more).

The questions explore characteristics such as the time frame available for decisions to be carried out, and the perceived clarity, ambiguity and degree of risk. The manner in which the questions are phrased only allows for subjective, relative results to be gathered (for example, we have little

time to complete decisions) and corresponding interpretation. This research has not introduced benchmark scales for any of these attributes, to determine, for example, what a sufficient amount of time really is. Question refinements and further research may allow for more extensive analysis of the implications of these characteristics for PoN on its own, and in comparison, to others.

Allocation of sufficient time is one way to measure the degree of support for a process and also a very subjective one (what is enough time?). Yet it is a test that is easily administered. The subjective relative response is, for purposes of assessing perceived importance within the organization, a helpful indication. The second element is absolute time available. This attribute can be compared across organizations and various observations derived, followed by possible recommendations. Both elements, relative time (relative to other tasks and workload an organizational team faces) as well as absolute time allocated, are important factors that help organizations understand and refine their decision making process. These elements can also be useful to external parties working with (or against) the entity.

PoN indicates that while decision making within the organization is not a rushed process, there isn't an abundance of time to complete strategic decisions (Q#B17). It appears that the perceived time constraints may result simply from sheer workload and competing priorities. IRC is similar to PoN in this respect, as the interview subject's narrative indicates that it is not a rushed process and that IRC is able, in his opinion, to execute decisions successfully in the time allocated 'when there is a forcing mechanism' [in the form of a time constraint].

The narrative by the IRC interview subject is insightful, as he indicates IRC is able to make important decisions quite quickly on 'certain big things like whether to enter a country, how to respond or whether to go for a grant' and adds that 'in some ways we are a fast-moving organization when faced with particular decisions that we have to make, but when there is less of a forcing mechanism...we probably drag it out'. A typical timeframe for strategic decision making was not provided by PoN nor IRC interview subjects, both indicating that it varied greatly.

That it is not a rushed process indicates that PoN and IRC's decision process, at least in terms of time allocation, receives a suitable degree of organizational support. Otherwise we would expect to hear that the time allotted is insufficient, as a possible indication of a process relegated as secondary to other competing ones. This does not appear to be the case for PoN nor for IRC. This also allows us to conclude that given the right time constraint, forces or considerations, it may be possible to influence some aspects of the decision making process within PoN and IRC (ie to expedite or slow it down).

The WHO interview subject indicated they have ample time to carry out important decisions (Q#B17), adding 'we know many strategic decisions require a consultative process in terms of getting buy in and we usually avoid making decisions too hurriedly'. A typical timeframe was not offered, as emergencies are immediate while other challenges require a consultative process and take weeks, months or years. This response reduces to some degree the risks posed by other characteristics of the WHO's decision making process, by offering sufficient time to work through

its current process despite the fact that there may be certain opportunities to consider for improvement.

PoN appears to deal primarily with moderately ambiguous situations (the subject noted that some decisions are easy while others are 'particularly testing', Q#B18). His response and choice of words to describe both extremes are insightful, leading us to understand that in practice they face a variety of situations, some more straightforward while others less so, and enough of a mix to indicate that PoN indeed faces complex challenges.

While ambiguity may be moderate, PoN operates in an environment wrought with a high degree of uncertainty (Q#B19), as the subject adds 'the situations we face are quite often uncertain, this is development, not math or science'. In terms of familiarity (Q#20), PoN encounters both new and familiar situations, as he notes 'while some programs are in more stable countries where we have run programs in the past, others are quite unfamiliar, and we will never have the same team on exactly the same situations, there is no one size fits all'.

Highly dynamic situations are a notable characteristic of PoN's environment (Q#B21), although interestingly the interview subject characterized the level of risk they face (risk that their programs will not succeed) as low (Q#B22). He clarifies that while the situations are inherently risky, the probability of a positive outcome is quite high, thanks to the manner in which they are analyzed and addressed via PoN programs to ensure the highest possible chances of success. It is unclear as

to what extent this is in fact the case as the outcomes were not evaluated as part of this research.

The final attribute evaluated was the inherent level of stress in the typical PoN decision making environment (Q#B23). Not surprising, PoN feels it faces primarily high stress situations. That many suitable steps are taken to properly manage programs does not detract from the fact that they are stressful simply given their very nature, as human health and livelihood are at stake.

The results of this final series of questions aimed at clarifying the environment within which strategic decisions occur. Coupled with the responses from previous sections, they lead to several observations regarding PoN and its strategic decision making process. The corresponding narrative strengthens the observation that PoN deals with complex situations where information is at times ambiguous and highly uncertain, making the decision process (information gathering, analysis) more challenging. PoN often faces new situations, which reduces the opportunity to rely on past situations and use such inputs as reliable heuristics.

The dynamic nature of the environment further complicates decision making by PoN, although the low degree of perceived risk likely plays a calming role in helping the organization tackle the complex matters at hand. Risk, as other elements examined in this section, is addressed in a subjective manner without guidelines for measurement. Nevertheless, what is of importance is how it is perceived by PoN. Coupled with high perceived degrees of stress, it is clear that the methodical process and awareness to inherent complexity of the situations are, in this author's

opinion, indicative of an organization that has a strong grasp of their reality and a suitable process for managing its strategic decisions.

The IRC faces ambiguous and highly uncertain environments (Q#B18, Q#B19). Recognition of these facts is critically important as it influences other action (or inaction) on behalf of the organization. Further importance of the degree of ambiguity lies in the fact that this must be explicitly accounted for by the organization in support of decision makers, for example with respect to policies that support and aid information availability and gathering (to help reduce ambiguity), and by allowing sufficient time for decision makers to complete their analyses. An organization that does not acknowledge this reality (and work to mitigate it through suitable support) runs the risks of making faulty strategic decisions.

In terms of familiarity, IRC notes that they face both familiar and unfamiliar situations (Q#B20), adding 'compared to many organizations the context within which we operate is pretty changeable, new facts, new issues but they are often only 20 miles away from something that may have been seen in another place'. The degree of familiarity is important, as situations perceived as overly familiar may lead to bias. Alternatively, if the organization leverages familiar elements as part of its process and decision, such heuristics may be very useful in rapidly understanding the situation.

The IRC faces highly dynamic situations that are very risky in nature and yet characterized as low stress by the interview subject. He clarifies that while the field staff does face higher stress realities

by the sheer nature of the work, decision making at headquarters is not high stress.

The results of this final series of questions lead to several summary observations regarding IRC and its strategic decision making process. The responses to questions #B18 to #B23 along with the corresponding narrative clearly indicate that IRC operates in an environment that is wrought with ambiguity and uncertainty, often unfamiliar, very dynamic and high risk. Interestingly, the respondent noted that it is perceived as low stress by the decision making teams at headquarters.

These responses further strengthen the observations that the most appropriate decision process for IRC must include a high degree of heuristic based practices with measures of rational approaches, to provide essential flexibility, adaptability and rigour to the organization as it makes critical strategic decisions. While this analysis did identify some areas for consideration and improvement, the concluding observation is that the IRC has established a solid and suitable decision making process to meet its goals.

The WHO characterizes its decision making environment as very ambiguous and highly uncertain (Q#B18, Q#B19). The interview subject added that many strategic decisions do not have adequate information, nor does everyone share the same understanding of that information, with varying perceptions or judgements being made on the nature, relative value and level of confidence in the information. He notes 'so much around health...is based on human nature, patterns of behavior and politics that are often unpredictable and lead to a degree of uncertainty'.

The WHO also faces largely familiar situations (Q#B20). The subject notes that although familiar, sometimes there are situations they misjudge and recognize incorrectly. He offered the 2014 Ebola outbreak as an example of a situation that was familiar and dealt with in what seemed at the time an appropriate manner, however they failed to identify that it was happening in a part of the world and a community that were not familiar with the situation. This example illustrates the complexity of challenges faced by the WHO, and the need for enhanced decision making capabilities that will help address situations with greater accuracy, ease and speed.

Although familiar, the situations are characterized as highly dynamic and very risky in nature (Q#B21, Q#B22). The WHO recognizes an inherent level of risk in most situations and is moving towards a more objective way of assessing risk and managing it accordingly. The final question (Q#23) examines level of inherent stress, which according to the interview subject is a mix of low and high stress situations.

The final set of responses strengthen the observation that the WHO faces very challenging situations as part of its normal course of operations. As previously noted, there appear to be multiple areas where modifications to the decision processes may be of great value to the organization. These opportunities appear at all stages, from the composition of the group addressing the matter to the initial representation of the problem, through to the manner in which information is sought, evaluated and analyzed within groups.

The overall concluding observation from the WHO analysis indicates a decision process that may be overly complex and suffer somewhat from a lack of formal guidance and consistency in how it is conducted. It is unclear to what degree their actions and the adoption of certain approaches are conscious choices on the part of the leadership, a product of inertia ('the way it has always been') or simply a response to circumstances. The fluctuating degree of heuristic use within the existing decision processes may be a detriment for the WHO, which appears to suffer from complex processes that put at risk achieving optimal results.

The results of the decisions themselves have not been evaluated, yet the process appears to have certain weaknesses which present an opportunity for the WHO to achieve improvements in its decision making. The same circumstances provide third parties to the WHO with tools to better understand, predict and possibly influence WHO decision making.

Summary observations from application of the SDMAT

The following section provides an overall summary and comparison of findings across the three organizations that were evaluated (Table #2). It is followed by the overall implications that result from these findings (for the organizations themselves as well as external parties).

Decision making characteristics of assessed organizations

Table #2 - Decision making characteristics of assessed organizations

Note: Non-bolded characteristics represent a detailed breakdown of their respective preceding bolded headings.

Characteristics/Attribute	PoN	IRC	WHO
RAM dominant approach	No	No	Moderate
Degree of heuristic use	High	High	Low
Heuristic used:			
An initial screening of alternatives against a core series of criteria (4), each of which has the potential to immediately disqualify an alternative. This is followed by a second phase assessment where the remaining alternatives are analyzed more deeply against pre-defined dimensions.	✓	✓	X
Dimensions for analysis are noncompensatory, which means that presence of certain dimensions cannot be outweighed by strength of others.	✓	✓	X

Characteristics/Attribute	PoN	IRC	WHO
Dimensions for analysis are compensatory, which means that presence of certain dimensions can be outweighed by strength of others.	X	X	✓
Adoption of a satisficing approach, whereby decisions do not have to be perfect, but rather acceptable, providing greater flexibility to take on alternatives, as well as greater speed of decision.	✓	✓	X
Adoption of a maximizing approach, whereby optimal decisions are sought.	X	X	✓
Use of non-holistic processes for search and evaluation, which allows to operate far faster than traditional processes would allow.	✓	✓	✓
The use of known reference points or anchors as performance benchmarks that help simplify complex matters, shortening analysis cycles.	✓	✓	X
Degree to which representative results are used (based on previous research by the organization).	Moderate	High	Low
Degree of past experience use, as valid input into the analysis cycle (a high degree allows to reduce information gathering, analysis timelines and effort).	Moderate	Moderate	
Degree of story and narrative use (over case or model based approaches) as a mechanism for explaining, understanding and simplifying situations.	High	High	Moderate
Aggregation of individual scores to a single consolidated one that is then used to compare alternatives	✓	X	X

Characteristics/Attribute	PoN	IRC	WHO
Use of a heuristic driven method to compare alternatives across an array of key metrics, analyze them using a mix of quantitative and qualitative criteria	X	✓	X
Inclination towards risk in decision making	Moderate	TBC	Low
Degree of exposure to potential environmental and contextual influences (e.g. political) beyond the current dimensions or metrics used for evaluation	High	Low	High
Speed and agility of decision making	High	High	Low
Decision Unit type (groups and coalitions tend to lower levels of risk assumption):			
Predominant leader	X	X	✓
Group	✓	X	✓
Coalition	✓	✓	X
Dominant type of challenges tackled by the organization:			
Structured	✓	X	✓
Ill-Structured	✓	✓	✓
Typical decision group sizes	4-6	6-8	8
Degree to which group skills and capabilities are varied (high variability indicates openness to greater range of alternatives and lower bias)	High	High	Low
Degree to which external experts are used (higher degree allows for reduced biases and increases range of alternatives)	Low	Low	Low

Characteristics/Attribute	PoN	IRC	WHO
Degree to which sufficient time is provided for decision making (relatively, in the eyes of the decision makers). More time is indicative of greater organizational support and increased chances of a methodical process	High	High	High
Typical characteristics of decision environment:			
Ambiguity and uncertainty	Moderate-High	Moderate-High	High
Degree to which situations faced are dynamic in nature	High	High	High
Degree of risk inherent in the situations faced	High	High	High
Degree of stress inherent in situations faced	High	Low	Moderate

Implications for organizations and external parties

The following observations demonstrate a sample of concluding insights that can be drawn from the use of the SDMAT. These observations can be very useful to the organizations themselves to better refine and execute their strategic decision making process, and also of great benefit to external parties engaging with PoN, IRC or WHO as partners or adversaries. By understanding how PoN, IRC and WHO decision making rates across the above metrics (Table #2), such parties may be able to anticipate as well as influence these organizations' decisions.

Information access, ease of use and reliability - Ensuring open access to information sources and removal of access barriers (perhaps as the result of internal information safeguarding) are critically important, while also ensuring that these sources are easy to use given the skill set and capacity of decision makers. In addition, these information sources must be carefully screened for bias and misdirection. This caution also encompasses human sources (with insight, experience and stories to tell) who form an integral part of this decision making process.

External parties able to identify the use of a heuristic driven process by any one of the respective organizations may have the opportunity to influence decisions through information manipulation, for example, by making certain information more readily available, easy to access or comprehend by decision makers. The non-holistic, non-exhaustive, satisficing search and evaluation process implies that decision makers will seek satisfactory input, not complete and perfect information, with a greater likelihood to adopt more readily available sources assuming they meet (or appear to meet) the necessary thresholds for utility and reliability. PoN, IRC and WHO must be aware of this possible exposure and consciously safeguard against it.

Furthermore, while these organizations do not clearly limit the number of choices they screen, (for example, by only seeking a single alternative that satisfies the criteria), the satisficing (non-optimizing) approach implies a moderate risk that the order in which alternatives are presented will influence the decision process. This inclination is important for the organizations themselves to account for, as well as external parties that may attempt to influence the order in which

information is reviewed and therefore alternatives processed.

Group composition and skill set - The size and skillset of the decision making unit is of great importance to efficiently achieving an effective outcome. Depending on their respective decisions, the groups (4-6 at PoN, 6-8 people at IRC, 8 at WHO) must be carefully selected to provide the required breadth and depth of insight, access to information, experience, breadth of experience, individual intelligence and authority. Groups that are very homogenous in nature may suffer from increased dysfunction and tend to restrict alternatives.

PoN, IRC and WHO rarely include external experts as part of their processes. This is a drawback they should consider refining to reduce internal politically motivated input as well as increase the range of inputs and alternatives. It is recommended that when possible, for strategic decisions, these organizations refrain from using existing standing groups and instead compose them based on the decisions they face (whether a single one or a series). This approach is expected to yield a more effective outcome with reduced bias and a lower risk of team member collusion, which is more likely to occur when groups remain constant.

Speed of decision making - PoN and IRC's approaches lend themselves to shortened timelines for decision making given the satisficing, non-holistic heuristics employed, which benefits the organization itself. Conversely, WHO's hybrid processes require a greater amount of time to work through various alternatives and arrive at a decision. This insight may be useful to external parties

evaluating these organizations for the purpose of estimating the pace with which core decisions (and eventual actions) may occur.

Risk of biases - PoN, IRC and the WHO rely heavily on certain heuristics to help simplify and make sense of situations. These provide great benefit by providing easy to understand narratives, anchors and existing experiences from which to draw, shortening time and aiding in making more informed decisions. However, they also expose the organization to the risk of relying too heavily on information that is at best biased, or worse, possibly incorrect, manipulated or deceptive. The risk mitigation lies in the above observations (regarding information access, group composition and time allocation) and relies on a high level of awareness from all three organizations regarding the process itself, the people involved, the information sources and the heuristics utilized.

Risk assumption - PoN and IRC decision making processes are such that they incline the organizations towards moderate levels of risk in their decisions, while the WHO is inclined to assume low levels of risk. This is an important recognition for the organization, as such awareness allows it to consciously account for this inclination when appropriate. External parties able to determine this tendency will benefit from such insight, which could allow them to predict with greater accuracy the actions of these organizations based on the risks they are inclined to assume regarding important decisions.

Stress levels - A high level of stress has various implications for organizations, including a potential decrease in the search for information and alternatives, narrowing of perspective, increased cognitive rigidity and increased domination of emotions over a situation. Further implications of high-stress situations are over-reliance on standard operating procedures (even in cases where their applicability is not optimal), a tendency to ignore key information and even a tendency to overestimate others' positions. Organizations must consciously recognize these factors, as they may greatly influence their decisions and actions.

Opportunities for further research

This research was undertaken with the understanding that it would involve a limited focus within the domain of decision making. The domain itself is as vast as it is deep, spanning multiple academic disciplines and practice areas such as; cognitive psychology, economics, mathematics, computer science, IR, management and organizational behaviour. Decision making is at the core of every type of regime, whether public or private, for profit or nonprofit, corporate, military or humanitarian. Globally, it is an integral part of the daily activity of all regime types.

This work focused on one main objective: developing a mechanism for identifying opportunities to enhance decision making within IOs (as a sample regime). As an initial step to making improvements to the decision making capacity of an organization, this author determined that it was essential to have a systematic way to methodically and consistently measure its status quo in order to identify strengths, weaknesses and important attributes to consider before improvements are made. This work does not suggest extensive recommendations for change. Opportunities for further research are presented for advancing the state of the art in this most critical of realms.

Testing of assessment results within organizations - To evaluate the implementation of the recommendations requires more time and greater consideration for internal champions and processes, stakeholder groups and change management. This effort could yield valuable feedback regarding the utility of the tool and functional considerations for improved adoption and use.

Breadth and depth of underlying theories or frameworks - The included theories and frameworks contributed to the formation of one or more questions within the SDMAT. While those selected for inclusion were suitable and sufficient for achieving the goals of this work, they were a subset of ones considered. Including additional theories and frameworks in the form of refined questions or tests would enhance the accuracy of the assessment by providing greater insight into existing and new behaviours and their implications.

Establishing benchmark data - Several of the criteria examined in this research did not have associated benchmarks to allow for more focused conclusions to be drawn. These include the number of participants involved in strategic decisions, standard time frames, and data regarding the optimal configuration of participants (skill set, background, gender etc). Such data would be useful and contribute to refined processes across organizations.

Types of organizations, challenges and situations - Given the scope of this research, testing of the SDMAT involved only IOs. Further research could use the current assessment tool with a variety of other types of regimes and organizations to assess its applicability and utility. It is also suggested that the assessment tool be applied to: 1. A variety of challenges to assess its applicability to various forms of problems and situations; 2. A larger number of similar situations to compare/contrast results and actions by organizations.

Decision making database - The development of a repository of the results of organizational decisions captured using the SDMAT would be a valuable resource. This would allow for the benchmarking and comparison of results, and serve as a valuable source of data for a more advanced, adaptive ‘learning system’.

‘Intelligence’ of the assessment tool - A key area for further work would involve strengthening the core capabilities of the assessment tool to create a more intelligent, predictive system. The focus should be on the ability of the system to interpret results with reduced requirements for human intervention (in the delivery), and to provide customized insights, recommendations and predictions that are useful to the respective organizations. This system would continuously build upon the decision making database previously noted, evolve and optimize its logic. Such developments would require the involvement of experts from the fields of engineering (including computer science, machine learning and artificial intelligence) and social sciences such as psychology, management and organizational theory.

Conclusion

This section draws overall conclusions from the entire research effort by evaluating the effectiveness and efficiency of the assessment tool and overall contribution of the research to the advancement of knowledge.

Concluding observations - the efficiency of the assessment tool

To meet the objective of this research, it was essential to develop an assessment tool that could be adopted and used by practitioners. The following measures examine the degree to which this goal was successfully achieved and demonstrate that while there are indeed opportunities for improvement, the SDMAT has met this objective.

Ease of adoption & use - The SDMAT can be adopted and implemented (on organizations) by individuals without specialized knowledge of decision making theory. The design of the tool abstracts the complex decision making theory upon which it is based and provides easy to answer questions and a reference for analysis and interpretation. Each question (or group) is preceded by a preface which establishes the rationale for the questions and offers guidelines for the interpretation of responses. As a result, the individuals administering the tool and assessing results can adopt and use the tool with limited guidance for the delivery and interpretation of results.

Delivery mechanism - Delivery via an online survey tool is an easy way for respondents to provide their answers to the questions and for the administrator to gather results. There is currently a requirement for such an administrator or facilitator to support the respondent/s in answering the questions in person or via remote conversation. The latter method (skype or phone) was used successfully with all three interviews in this research.

Interpretation of results - The analysis and interpretation of results requires an individual to evaluate responses using the case study in this work as a reference due to the absence of a more elaborate set of guidelines or manual.

Time requirements - The data gathering portion for each individual interview required 65-90 minutes to complete and gather sufficient data for analysis and the interpretation of results. This timeframe is considered suitably short to allow for ease of adoption by senior level individuals selected for completing the questions on behalf of the organization. A longer duration could result in greater challenges in securing participation. This duration of individual sessions (interviews using the tool) allows the administrator to conduct one or more sessions in an efficient way within an organization and to proceed from data gathering to analysis in a reasonable timeframe. It is estimated that the total effort to complete data gathering is within the range of 1.5 to 6 hours given the number of organization interviews and participants.

The data analysis portion was found to require between 4-8 hours to complete for the administrator to understand the data in greater depth and draw insightful conclusions and recommendations. The overall timeframe will vary, primarily given the number of interviews and individual sessions conducted within an organization to gather sufficient data. While a single session is sufficient to draw initial conclusions, it is recommended that a minimum of 3 individual sessions be conducted, where possible, to strengthen the reliability and depth of the primary input base.

Concluding observations - the utility of the assessment tool

Subsequent to the field tests and their analysis it is possible to conclude that the SDMAT assists in identifying opportunities for improving decision making within IOs. This assessment tool can serve as a useful tool for organizations to gain a better understanding of the strengths and weaknesses of their decision making abilities. The tool can help identify risks and vulnerabilities inherent in these practices, areas to consider strengthening and processes worth sustaining or reinforcing across departments or groups.

An important observation is that the assessment tool can be used by parties outside the organization to gain insight into and achieve competitive advantage over the organization itself. Partners or adversaries could use these insights in negotiations with the organization or other relevant stakeholder groups.

A final observation regarding the utility of the SDMAT pertains to the degree to which its interpreted results lend themselves to practical actions and (incremental) improvements in the decision making abilities of an organization. This may be in the form of refinements to specific components or entire processes, as well as the participant base responsible for such strategic decisions. This tool has allowed the author to draw actionable insights that can have practical implications for the practices of respective organizations. While the scope of this work did not allow for feedback from the three organizations that were evaluated, it is the author's conclusion that this research undertaking has met its stated objectives.

Contribution to the advancement of knowledge in the domain of decision making

A literature review of decision making theories and frameworks yielded the key observation that no single assessment mechanism existed that allowed for the identification of opportunities for enhancing strategic decision making within IOs or other organizations. A multitude of disparate theories and decision making frameworks describe the characteristics and the implications resulting from their adoption and use by decision makers. However, a coherent, methodical evaluation component was not evident. To address this gap, the research undertook to develop the SDMAT, and represents a contribution to knowledge in the domain of decision making upon which further research can continue to build.

Appendices

Appendix 1 - International organizations considered for assessment

IRC - International Rescue Committee - (<https://www.rescue.org/>)

CIFF - Children's Investment Fund Foundation - (<https://ciff.org/>)

Power of Nutrition - (<http://www.powerofnutrition.org>)

ICG - International Crisis Group - (<https://www.crisisgroup.org>)

European External Action Service (EEAS) - (<http://eeas.europa.eu/>)

European Investment Bank (EIB) - (<http://www.eib.org/>)

UN Fund for International Partnerships - (<http://www.un.org/partnerships/>)

United Nations Capital Development Fund - (<http://www.unCDF.org/>)

United Nations Development Programme - (<http://www.undp.org/>)

World Health Organization - (<http://www.who.int/en/>)

International Monetary Fund - (<http://www.imf.org/external/index.htm>)

Organisation for Economic Co-operation and Development (OECD) - (<http://www.oecd.org/>)

Appendix 2 - Introductory letter sent to select organizations

Winter 2016/17

Good Day,

This is an introductory note to the research I am undertaking as part of my graduate studies in International Relations at Cambridge University.

Background

The purpose of the research is to identify opportunities to enhance strategic decision making capabilities (and subsequently the outcomes of such decisions) within International Organization, through the adoption of enhanced decision making and analytical techniques. As part of my research, I have developed an assessment model that allows to better understand the manner in which organizations approach strategic decisions, who is involved, how they interact, how information is sought and ultimately how the decision is made.

My personal background and experience have played an important role in preparing me to successfully conduct this research work at Cambridge. Over the past 25 years I have served as a Military Intelligence analyst, as a strategy advisor to global firms and to the Canadian Government, and most recently as an executive leading an analytics firm that specializes in sensory technology for complex analysis and decision making. I have first hand appreciation for the practical importance enhanced decision making capabilities can offer given your resources and the tremendous stakes at play. My intentions are to provide tools that deliver on this promise, can be adopted by practitioners and offer practical, measurable improvements.

My Request

I would like to ask for your kind support by allowing me to conduct an analysis of your organization's decision making style, using the analysis tool I developed. As part of this, I would seek to assess between two and four actual decisions your organization has previously dealt with (or ones that you are currently grappling with). This process consists of two main parts:

1. An interview - Which will take place remotely via skype or phone and lasts no longer than 60 minutes. Suitable participants (one or more) would be individuals that took part in the decisions being examined. If required, your anonymity can be maintained.
2. Review of documentation - Public (such as annual reports) along with any internal information you can easily share (such as meeting minutes and internal memos, if permitted). Source documents can be kept anonymous and will be used only to support the analysis.

Timing: Jan-Feb 2017, given your availability of course.

Is your organization suitable for analysis?

The following criteria have been designed to ensure your organization is suitable for analysis as part of this research:

- Status - An IO - International Organization (Inc. NGOs)
- Scope and impact of decisions faced - The nature of your decisions is of high impact and significance: capital at stake is tens to hundreds of millions of \$/£, vast number of lives lie in the balance whether via aid or military action, vast geography and resources may be affected.
- Accessibility/willingness - The organization is reasonably accessible for purposes of securing sufficient information from primary and/or secondary sources, to allow for an analysis and understanding of their practices.

My sincere thanks for considering this. Kindly advise via email or phone if you may be interested in learning more.

Most Respectfully,

Simon M. Brightman

Bibliography

- Abbott, K.W. & Snidal, D., 1998. Why states act through formal international organizations. *The Journal of conflict resolution*, 42(1), pp.3–32.
- Barnett, M.N. & Finnemore, M., 1999. The politics, power, and pathologies of international organizations. *International organization*, 53(04), pp.699–732.
- Dacey, R. & Carlson, L.J., 2004. Traditional decision analysis and the poliheuristic theory of foreign policy decision making. *The Journal of conflict resolution*, 48(1), pp.38–55.
- Geva, N. & Mintz, A., 1997. *Decisionmaking on War and Peace: The Cognitive-rational Debate*, Lynne Rienner Publishers.
- Gigerenzer, G., 2001. Decision Making: Nonrational Theories. In *International Encyclopedia of the Social & Behavioral Sciences*. pp. 3304–3309.
- Gigerenzer, G., 2008. Why Heuristics Work. *Perspectives on psychological science: a journal of the Association for Psychological Science*, 3(1), pp.20–29.
- Hermann, M.G., 2001. How Decision Units Shape Foreign Policy: A Theoretical Framework. *International Studies Review*, 3(2), pp.47–81.
- Hermann, M.G. & Hermann, C.F., 1989. Who Makes Foreign Policy Decisions and How: An Empirical Inquiry. *International studies quarterly: a publication of the International Studies Association*, 33(4), pp.361–387.
- Jervis, R., 1992. Political Implications of Loss Aversion. *Political psychology*, 13(2), pp.187–204.
- Johnston, A.I., 2001. Treating International Institutions as Social Environments. *International studies quarterly: a publication of the International Studies Association*, 45(4), pp.487–515.
- Kahneman, D. & Tversky, A., 1979. Prospect Theory: An Analysis of Decision under Risk. *Econometrica: journal of the Econometric Society*, 47(2), pp.263–291.
- Koremenos, B., Lipson, C. & Snidal, D., 2001. The rational design of international institutions. *International organization*, 55(04), pp.761–799.

- Krasner, S.D., 1982. Structural causes and regime consequences: regimes as intervening variables. *International organization*, 36(02), pp.185–205.
- Lau, R.R. & Redlawsk, D.P., 2001. Advantages and Disadvantages of Cognitive Heuristics in Political Decision Making. *American journal of political science*, 45(4), pp.951–971.
- Levy, J.S., 2003. Applications of Prospect Theory to Political Science. *Synthese*, 135(2), pp.215–241.
- March, J.G., 1994. *A Primer on Decision Making: How Decisions Happen*, Free Press.
- McDermott, R., 2004. Prospect Theory in Political Science: Gains and Losses From the First Decade. *Political psychology*, 25(2), pp.289–312.
- McGuire, C.B., Marschak, J. & Radner, R., 1972. *Decision and organization: a volume in honor of Jacob Marschak*.
- Mintz, A., 2004. How do leaders make decisions? A poliheuristic perspective. *The Journal of conflict resolution*, 48(1), pp.3–13.
- Mintz, A. & DeRouen, K., Jr, 2010. *Understanding Foreign Policy Decision Making*, Cambridge University Press.
- Mintz, A., Geva, N. & Derouen, K., 1994. Mathematical models of foreign policy decision-making: Compensatory vs. noncompensatory. *Synthese*, 100(3), pp.441–460.
- Mohammed, S., 2001. Toward an understanding of cognitive consensus in a group decision-making context. *The Journal of applied behavioral science*, 37(4), pp.408–425.
- Mohammed, S. & Ringseis, E., 2001. Cognitive Diversity and Consensus in Group Decision Making: The Role of Inputs, Processes, and Outcomes. *Organizational behavior and human decision processes*, 85(2), pp.310–335.
- Navigator, C., International Rescue Committee. *Charity Navigator*. Available at: <https://www.charitynavigator.org/index.cfm?bay=search.summary&orgid=3898> [Accessed May 14, 2017].
- PoN, Power of Nutrition. *Power of Nutrition*. Available at: <http://www.powerofnutrition.org/who-we-are/> [Accessed May 14, 2017].
- Redd, S.B., 2002. The influence of advisers on foreign policy decision making: an experimental study. *The Journal of conflict resolution*, 46(3), pp.335–364.

- Reinalda, B. & Verbeek, B., 2004. *Decision Making Within International Organisations*, Routledge.
- Renshon, J. & Renshon, S.A., 2008. The Theory and Practice of Foreign Policy Decision Making. *Political psychology*, 29(4), pp.509–536.
- Rice, M.F., 1980. IRVING L. JANIS and LEON MANN. Decision Making: A Psychological Analysis of Conflict, Choice, and Commitment. Pp. vii, 488. New York: The Free Press, 1977. \$15.95. *The Annals of the American Academy of Political and Social Science*, 449(1), pp.202–203.
- Schafer, M. & Crichlow, S., 2010. *Groupthink Versus High-Quality Decision Making in International Relations*, Columbia University Press.
- Schwenk, C.R., 1988. The cognitive perspective on strategic decision making. *Journal of Management Studies*, 25(1), pp.41–55.
- Simon, H.A., 2013. *Administrative Behavior, 4th Edition*, Simon and Schuster.
- Simon, H.A., 1993. Decision Making: Rational, Nonrational, and Irrational. *Educational administration quarterly: EAQ*, 29(3), pp.392–411.
- Simon, H.A., 1979. Rational Decision Making in Business Organizations. *The American economic review*, 69(4), pp.493–513.
- Stern, E., 2004. Contextualizing and critiquing the poliheuristic theory. *The Journal of conflict resolution*, 48(1), pp.105–126.
- Sylvan, D.A. & Thorson, S.J., 1992. Ontologies, problem representation, and the Cuban missile crisis. *The Journal of conflict resolution*, 36(4), pp.709–732.
- Sylvan, D.A. & Voss, J.F., 1998. *Problem Representation in Foreign Policy Decision-Making*, Cambridge University Press.
- WHO, 2016. The Global Guardian of Public Health. *World Health Organization*. Available at: <http://www.who.int/about/what-we-do/global-guardian-of-public-health.pdf?ua=1> [Accessed May 14, 2017].