RATIONALITY

And Its Implications

OSCAR JONSSON
Master's thesis

Supervisor: Associate Professor Fredrik Bynander
Examiner: Professor Jan Hallenberg

DEPARTMENT OF SECURITY, STRATEGY AND LEADERSHIP · NATIONAL DEFENCE COLLEGE · SPRING 2012

CONTENTS

4 FINIS OPERIS

TABLES

ABBREVIATIONS

CET	Central European Time
MFA	Ministry for Foreign Affairs
SOU	Statens Offentliga Utredningar *Swedish Government's Official Reports*
SRSA	Swedish Rescue Services Agency

INTRODUCTION

"BUT WE ALREADY KNOW THAT", was the comment from a seminar teacher when I told the seminar about my plans to investigate the prevalence of different rationality models in a crisis. The answer was somewhat expected; the idea that man is "boundedly" rational is today the predominant model of information processing in the social sciences (with the notable exception of economics).

However, during my years taking courses in political science I had become less and less satisfied with the arbitrarily way that the discipline used to concept of bounded rationality. Intuitively, of course the subjective perception of the situation and the actor's capabilities ought to effect information processing. But how? And in what ways? And can it make a difference if one presumes rational man or boundedly rational man? It seemed to me that political science and economics were birds of a feather, both of them presuming a model without really being concerned with the actual setting. If we do not actually investigate which model of rationality that the actors of a specific situation seems to act in accordance with, it seems somewhat arbitrary to just presume one. And since the chosen model has some implications on how we expect actors to act, it seems worthwhile knowing when an actor is rational in a fully or boundedly sense.

In the discipline of psychology, there has been some research on how information processing actually occurs in the human mind. This specific field of research, often called heuristics and biases, has put forward suggestions on how bounded man actually is, in which way and why.

By experiments in laboratory milieus, researchers have been able to reach conspicuous results.[1] These results, however, have also been criticized, for being *too* laboratory, and not really telling us anything about human behavior in real life.[2] The same can be said about the economists' model of rationality.[3] How do these findings communicate with political science?

Regarding the latter, few political scientists would say that the theory of rational choice has passed them by. The impact of rational choice on political science has been so great[4] that one should not take the concept of bounded rationality for granted. The dialogue between psychology and political science has been less marked, with a few notable exceptions. Examples to bring forward are the works of Philip Tetlock, and the field of political psychology. Notable authors in the fields of international politics that has borrowed concepts from the heuristic school are Yacoov Vertzberger[5] and Robert Jervis.[6] In this thesis, I will try to more fully incorporate the psychological findings in the concept of bounded (or procedural, see below) rationality.

Much of the debate of the different models of rationality has followed the lines of argumentation of Cohen.[7] It is a rather black or white picture, either you are for rational man or against it. However, within the boundedly rational man, I believe there is still room for fully rational processing. Likewise, it seems reasonable to expect behavior that cannot be attributed to any of the two. But the research on the different models of rationality has often taken the form of either purely theoretical deduction and macro-studies (economics) or controlled experiments in laboratory settings (psychology). How do the theories manifest themselves in real settings, on the individual level?

I suspect that some circumstances will more clearly highlight the difference between the different models of rationality. These circumstances would probably be marked by a high degree of uncertainty, and that a lot is at stake. Crises would be an example of such situations. Thus, given the very special circumstances of uncertainty that a crisis brings, how do actors behave then? And in mitigating crises (which seems a reasonable objective if interested in crises), how does models of rationality matter? This second question, which is dependent of the answer of the first, can be assessed accurately only afterwards the first question is investigated.

Alas, the purpose of this paper is to investigate how these models of rationality manifest themselves in a real crisis (the research question will follow after the next section, on page four).

---

[1] Gilovich, Thomas; Griffin, Dale W. and Kahneman, Daniel, 2002
[2] Cohen, Jonathan L., 'Can Human Irrationality Be Experimentally Demonstrated?'
[3] Simon, Herbert A., 'The Logic of Rational Decision'
[4] Cook, Karen S. and O'Brien, Jodi A., 'Comment: Individual Decision Making versus Market-Level Predictions: The Applicability of Rational Choice Theory', pg. 177
[5] Vertzberger, Yaacov, 1990
[6] Jervis, Robert, 1976
[7] Cohen, Jonathan L., 'Can Human Irrationality Be Experimentally Demonstrated?'

Case Selection and Material

The case studied must necessarily be classified as a crisis. Depending on what magnitude one attributes to a crisis, they are either quite rare or abound. Financial crises easily come to mind in relation to information processing. Financial crises are, however, difficult to delimit in time and space. It is seldom the case that there is a widespread consensus of who the most important actors of an economic crisis are, and it is even rarer that there is an authorized account of it.

To fulfill these two criteria (clear delimitations and account), the crisis investigated in this study will be the Swedish handling of the consequences of the tsunami in the Indian Ocean on December 26th 2004. It is a fairly recent crisis, where important actors easily can be delimited. There is also an authorized account, which has interviewed all key persons on why they acted the way they did.

The material analyzed is the report from the Catastrophe Commission of 2005, which surveyed the Swedish handling of the tsunami that was generated by the earthquake outside Sumatra on December 26th, 2004. The report, which is part of the Swedish Government's Official Reports ("Statens offentliga utredningar", SOU),[8] consists of two parts. The first is the general report from the Commission, and the second consists of expert reports. In the latter one, only the part which analyzes the Government Offices, written by Dan Hansén, is used.

The reasons for only using one source are plentiful. Firstly, the source enables the thesis to investigate if it is meaningful to clarify how actors processed information in a certain case. Can different kinds of information processing models contribute to the understanding of why an actor behaved as it did? Here it is important to use the same material as the original researchers, to see if it is possible to draw other conclusions from the same data if one looks for something else. Secondly, since the SOU also state recommendations, the result of the investigation may also have implications for the recommendations. Which kind of actor do the recommendations presume, and does it have bearing on the case? By using further sources, this second part would prove scientifically unfair, since it does not exclusively tells us that models of rationality matters, but only that different conclusions could be reached by using additional information. Thirdly, by using a thoroughly (over-)studied case, it is possible to see if the theories and method applied are important in understanding crisis management, or if it is superfluous.

This naturally has some implications. The generalizability of the results can be considered limited, since the case studied is quite limited. However, what this thesis sets out to try to do is to illustrate that it is important which kind of information processing model one chooses, and why it is important (how it affects the understanding of the case). I believe it is of some value not only to know which model of rationality is present in the case, but also face what consequences a pre-

[8] The specific number of the report is SOU 2005:104

sumption has on how we can expect actors to behave, and when we can expect them to behave in a certain way.

To delimitate the study I have decided to focus on the actions of the Government Offices in general, and the Ministry for Foreign Affairs (MFA) in particular. The reason for this is that most focus of the handling of the crisis was on how the Government Offices acted, and within the Government Offices the Ministry for Foreign Affairs had the leading role. The advantage of this is that it serves us with a vertical line of actors: individuals, sections within ministries, and across the ministries of the Government Offices. There is obviously an analytical disadvantage of investigating actors on different levels of abstraction (individual-organization), since it can be argued that they act by different intentions and purposes. However, as will show in the theory section, the different models of rationality do assume that the same rules (in general) apply to both individuals and organizations. Therefore, to be able to make a more holistic analysis of the events within the Government Offices, this study gives equal weight to individuals and organizations as objects of analysis. The study is furthered narrowed by only investigating the first 30 hours of the crisis. The reasons for this is that we can expect the first phase of a crisis to be the one marked by most uncertainty, thus allowing for clear examples of different information processing models. The first phase ends with a meeting at the Ministry for Foreign Affairs at 1000 AM on December 27th, approximately 30 hours after the tsunami. This meeting is according to the SOU the turning point for how the situation is perceived, and the actions (or inactions) before this point is what has been most criticized.[9, 10]

The disadvantage of such a limited case is that it hardly suffices to explain the total Swedish handling of the tsunami catastrophe. However, the purpose of the case is not to develop a full explanation of the course of events; rather, the case is used as a vehicle for the theories. For that reason, the part of the crisis that supposedly provides the best means for doing so is chosen for analysis. Hopefully, it will also help to focus the analysis. Again, this hampers generalizability, but hopefully it will provide a robust investigation of the part studied.

The SOU also has the advantage of being readily accessible for interested readers, thus making it very easy to form independent judgments on the conclusions reached in this thesis.[11]

This discussion of the material used leads up to the research question. The research question for this thesis can be formulated as: *Which model of rationality can best explain the handling of the tsunami crisis in the Government Offices? How does this affect the recommendations of the SOU?*

[9] Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 71
[10] Statens offentliga utredningar, 2005a, pg. 148
[11] The whole SOU is available at http://www.regeringen.se/sb/d/5266/a/54279 as of 2012-05-08

The Proceeding of the Thesis

By this study, I hope to contribute to the discussion of rationality models by applying it to a setting were results can be expected to be quite clear, a situation of crisis. I also hope to be able to suggest that conceptions used in psychology can prove to be adequate for explaining actors' behavior in crisis, as for example Vertzberger has illustrated vividly in international politics. This thesis thereby relates to the sense making-part of crisis management studies,[12] but hopes to complement it with a discussion of what the different models of rationality implies for explaining behavior, focusing more on individual actors than organizations as a whole (even if organizational actors also are included in the analysis) and from a rationality point of view.

The thesis will proceed as follows. Firstly, the different theories of rationality will be elaborated. These are, as indicated above: substantive rationality (full rationality), procedural rationality (bounded rationality) and nonrationality. The theories will then be the anchors to the methodological chapter, which will conclude with the model by which the case is analyzed. The case study follows afterwards. The results from the study will then serve as a departing point for a discussion of the implications of the results for the policy recommendations of the SOU. The thesis will then finish with a general conclusion of the findings.

[12] Boin, Arjen; 't Hart, Paul; Stern, Eric K. and Sundelius, Bengt, 2005

THEORY

BEFORE INCORPORATING THE DIFFERENT MODELS of rationality in a comprehensive model for assessing the case, the concepts are more closely investigated below. This section will start with the classical theory of rationality, as it is brought forward by rational choice. After, the modified form, which originates from the workings of Simon on bounded rationality, is presented. Simon's ideas are then complemented by the research on heuristics in psychology. This part will then finish with suggestions of what examples of nonrational processing and behavior could be.

Substantive Rationality

Few theories about human behavior have had a bigger explanatory value in social sciences than the theory of rationality, and it accordingly occupies a fundamental role in the discipline.[13] The theory of rational choice has been successfully used to explain and predict analyses ranging from the family to labor markets and politics.[14] Even though the notion of rationality today is heavily associated with economics, it also has a long history also within sociology, with Max Weber as a prominent

[13] Almond, Gabriel A., 'Rational Choice Theory and the Social Sciences', pg. 40
[14] Cook, Karen S. and O'Brien, Jodi A., 'Comment: Individual Decision Making versus Market-Level Predictions: The Applicability of Rational Choice Theory', pg. 177

figure.[15] This section makes no claim of an exhaustive elaboration of such a technical notion as full rationality, but will rather modestly lay out the broad and general foundations of the conception.

In recent decades the strictly instrumental notion of rationality has been under heavy scrutiny. It has been accused of not being realistic and overly theoretical. This has been somewhat problematic (although not to the extent as one could suspect), since one of its most notable contributors, the Chicago economist Milton Friedman, famously wrote that "complete 'realism' is clearly unattainable, and the question whether it is realistic 'enough' can be settled only by seeing whether it yields predictions that are good enough for the purpose at hand or that are better predictions from alternative theories"[16]. And generally, the theory has been good at explaining macrophenomena. For example has it been stated that experts of stock markets must make rational predictions and avoid systematic bias or becoming driven out of business.[17] In the same manner it has been deducted that people generally make correct predictions and apply appropriate statistical principles to problems.[18]

The idea of rationality beyond its use in economics is often conceptualized in the theory of rational choice. Rational choice originates intellectually from utilitarianism, neoclassical economics, and more recently game theory. From the philosophy of utilitarianism the goal of attaining overall welfare is drawn, from neoclassical economics the theoretical model and the methodology of investigation is derived, and from game theory strategic behavior is added.[19] Rational choice can be seen as a dualistic theory: there is both a normative stance and a predicting or descriptive bearing. Normatively, it provides a model for how to best achieve an objective. For empirical research, it also claims to be able to explain human action.[20] These two stands are often separated, but there are instances when researchers try to combine them. Cohen claims that when investigating reasoning normatively and normative disputes, one cannot proceed empirically.[21] However, Cohen continues, most theories of natural sciences are derived in the same manner – first one theorizes what should happen in perfect conditions and idealized entities, and then one makes sufficient adjustments of one's axioms in the face of reality to see if one's hypotheses stand.[22]

Generally, four axioms make up the core of rational choice. These are cancellation, transitivity, dominance and invariance (the von Neumann-Morgenstern axioms). Dominance and invariance are accepted by most theorists in the field, while cancellation and transitivity are seen as

---

[15] Weber, Max, (1922) 1983
[16] Almond, Gabriel A., 'Rational Choice Theory and the Social Sciences', pg. 39
[17] De Bondt, Werner F. M. and Thaler, Richard H., 'Do Analysts Overreact?', pg. 678
[18] Nisbett, Richard E; Krantz, David H; Jepson, Christopher and Kunda, Ziva, 'The Use of Statistical Heuristics in Everyday Inductive Reasoning', pg. 510
[19] Monroe, Kristen R., and Downs, Anthony, 1991, pg. 2
[20] Monroe, Kristen R., and Downs, Anthony, 1991, pg. 15
[21] Cohen, Jonathan L., 'Can Human Irrationality Be Experimentally Demonstrated?', pg. 320
[22] Cohen, Jonathan L., 'Can Human Irrationality Be Experimentally Demonstrated?', pg. 321

more doubtful.[23] *Cancellation* (or consistency) refers to that one option that is preferred before another should always be chosen when there is no difference in outcome if they do not come true.[24] *Transitivity* simply implies that if A is preferred to B and B to C, A should be preferred to C.[25] *Dominance* means that if A is better than B in one respect and as least as good in all other aspects, A should be preferred over B.[26] The last, and most strongly held, axiom is *invariance*: "different representations of the same choice problem should yield the same preferences. /.../ Two characterizations that the decision maker would view as alternative descriptions of the same problem should lead to the same choice"[27]. In practice, it has been shown that the first two axioms are often violated. Thus, when applied as a descriptive or predicting theory, often only the last two principles are adhered to.[28]

What we need to know to be able to deduce if an actor is acting rationally is the actor's goals and the objective characterization of the condition. No further information is actually needed, nor would it make any difference since rationality should not be affected by any other conditions.[29] All kinds of rationalities presuppose the ontology of an objective reality. The difference between substantive and procedural rationality rather lays in epistemology: where substantive rationality assumes that actors can correctly perceive objective conditions, procedural rationality does not. Under uncertain conditions, the actor would choose the alternative with the highest utility function, computed by the average utility for all outcomes and the probability of each outcome to actually happen.[30] The difference between choosing under certainty and uncertainty is often referred to as the act of utility maximization and expected utility maximization.[31]

In other words, for any given goal, a rational action is characterized by collecting the right amount of evidence, forming the most well-founded decision from the collected evidence and then choosing the best action for the given decision.[32] There is some dispute of which kind of optimizing path that should be followed: the maximizing material self-interest or the maximizing of any kind of goal. Traditionally, the selfishness has been the most commonly acknowledge principle.[33] Today, the latter seem to generally be distinguished as the more rational of the two.[34] Another way

---

[23] Tversky, Amos, and Kahneman, Daniel, 'Rational Choice and the Framing of Decisions', pg. 61
[24] Miljkovic, Dragan, 'Rational choice and irrational individuals or simply an irrational theory: A critical review of the hypothesis of perfect rationality', pg. 624
[25] Miljkovic, Dragan, 'Rational choice and irrational individuals or simply an irrational theory: A critical review of the hypothesis of perfect rationality', pg. 624
[26] Miljkovic, Dragan, 'Rational choice and irrational individuals or simply an irrational theory: A critical review of the hypothesis of perfect rationality', pg. 625
[27] Miljkovic, Dragan, 'Rational choice and irrational individuals or simply an irrational theory: A critical review of the hypothesis of perfect rationality', pg. 625
[28] Tversky, Amos and Kahneman, Daniel, 'Rational Choice and the Framing of Decisions', pg. 63
[29] Simon, Herbert A., 'Human nature in politics: The dialogue of psychology with political science', pg. 294
[30] Simon, Herbert A., 'Human nature in politics: The dialogue of psychology with political science', pg. 296
[31] Heath, Anthony, 'The rational model of man', pg. 185
[32] Elster, Jon, 'When Rationality Fails', pg. 21
[33] Almond, Gabriel A., 'Rational Choice Theory and the Social Sciences', pg. 41
[34] Almond, Gabriel A., 'Rational Choice Theory and the Social Sciences', pg. 41

of phrasing it is to maximize utility. So even if utility sometimes seems to slide into monetary profit (mainly among economists), today most agree that the notion of utility in itself is more appropriate when discussing rationality. One optimizes by reaching for the action that gives the highest utility.[35] Thus, utility is highly individual, as is one's goals. One is not rational *per se* by automatically adopting actions that yields the highest profit or wealth.[36]

So, generically, a rational action is one which is well, or optimally, adopted to reach stated goals.[37] Naturally, the goal will decide the scope of the different steps in rational actions. The more important the goal is, the more evidence (and the more diagnostic evidence in particular, see below[38]) one should collect, for example.[39] This can of course be manipulated in the aftermath of unsuccessful handling: One can easily rationalize unrational behavior by inventing new goals or preferences afterwards.[40]

Procedural Rationality

Information processing is interesting insofar that it is the step leading up to a decision. Of course, the psychological process is in itself fascinating even for a political scientist, but not in the focal way as in psychology. The decision making process is essentially made up of three steps: formulating a goal, figuring out alternatives to reach that goal and finally choosing among those alternatives. As we will see below, information processing is vital to steps two and three of this equation. Traditionally, both psychologists and economists have taken interest in the final step. But since the mid-twentieth century, psychology have started studying the second step as well, which have led to a questioning of the predominant model of step three; the rational actor.[41] As described above, a substantively rational actor judges all the outcome probabilities of alternatives and their respective utilities and chooses most optimal combination of these two assessments. People may make mistakes, but only unsystematically.[42]

One of the earliest critics of this view on the mental capabilities of actors was Herbert Simon. Simon claimed that the notion of the rational actor was not impaired by low reliability, but rather with dubious validity. Actors may choose rationally (in the meaning of the means used being well-suited for the stated goals[43]), but they are ultimately constrained by their environment

---

[35] Simon, Herbert A., 'Decision Making: Rational, Nonrational, and Irrational', pg. 396
[36] Brennan, Geoffrey, 'Comment: What Might Rationality Fail to Do?', pg. 55
[37] Simon, Herbert A., 'Decision Making: Rational, Nonrational, and Irrational', pg. 393
[38] George, Roger Z. and Bruce, James B., 2008, pg. 262
[39] Elster, Jon, 'When Rationality Fails', pg. 31
[40] Heath, Anthony, 'The rational model of man', pg. 203
[41] Simon, Herbert A., 'Decision Making: Rational, Nonrational, and Irrational', pg. 393*ff*
[42] Gilovich, Thomas; Griffin, Dale W. and Kahneman, Daniel, 2002, pg. 1
[43] Simon, Herbert A., 'Decision Making: Rational, Nonrational, and Irrational', pg. 393

and computational skills. This is the essence of the notion of *bounded* (or procedural as Simon prefers to call it) rationality.[44]

Instead of optimizing as substantive rational theory would have it, psychological findings point to that actors satisfice, Simon claimed in 1956.[45] Thus, the structure of the actor and the environment will decide when an actor is satisfied in the pursuit of alternatives, rather than seeking out all possibilities.[46] This in turn makes it crucial to understand how an actor perceives the environment, and how the structure (or capabilities) affects the actor. These processes becomes central in the psychological theory of rationality, hence the term procedural rationality (in contrast to substantive rationality, where the action is considered in terms of how well it achieved its goals).[47]

An actor is satisficed when an alternative reaches the aspirational level of the actor.[48] Thus, instead of searching through for all possible alternatives and choose the one with the greatest utility, an actor typically stops searching and chooses the first alternative which reaches a certain aspirational level. The actor satisfices rather than optimizes. And since the actor's attention span of reality typically is fairly narrow, a satisficing option can differ quite a great extent from an optimal option.[49] Simon's suggestion that people normally consider quite few alternatives coincided quite nicely with another finding (published in the same issue of the *Psychological Review* in 1956), where Miller reported the very firm limitations on the human short-time memory ("the magical number 7±2").[50]

The theory of procedural or bounded rationality has had a great impact on information processing and decision making; indeed, Janis and Mann call it the "most influential hypothesis" already in 1977.[51] They point out four characteristics of satisficing: the number of requirements that needs to be met are few, the alternatives are generated serially (this process is terminated when an alternative is seen as satisfactory), retesting of earlier alternatives is not done and there is a utility cutting point which alternatives either can match or fail to do so.[52]

The theory of the procedural or boundedly rational actor does not only apply on human actors. Bryan Jones has studied organizational decision making, and found out that, in principal, the same mechanism are at work organizationally as individually.[53]

To further unravel the cognitive functions of procedural rationality one has to study how the alternatives come about.[54] What processes are at place, which seems to function in a similar

---

[44] Gilovich, Thomas; Griffin, Dale W. and Kahneman, Daniel, 2002, pg. 2
[45] Simon, Herbert A., 'Rational choice and the structure of the environment.', pg. 129
[46] Simon, Herbert A., 'Rational choice and the structure of the environment.', pg. 130
[47] Simon, Herbert A., 'Decision Making: Rational, Nonrational, and Irrational', pg. 395
[48] Simon, Herbert A., 'Decision Making: Rational, Nonrational, and Irrational', pg. 396
[49] Simon, Herbert A., 'Human nature in politics: The dialogue of psychology with political science', pg. 302
[50] Miller, George A., 'The magical number seven, plus or minus two: some limits on our capacity for processing information.'
[51] Janis, Irving L. and Mann, Leon, 1977, pg. 25
[52] Janis, Irving L. and Mann, Leon, 1977, pg. 29*f*
[53] Jones, Bryan D., 2001

manner in spite of differing environments (thus hindering the actor to consider the restraints of the situation in a Bayesian manner (Bayesian here relates to Bayes' theorem, simply postulating that the probability of an event should be affected by new evidence relevant for the initial judgment))? Here, heuristic processing steps into the equation.[55]

This part will continue with an elaboration on the most important findings within the heuristics tradition, for a fuller understanding of how procedural rationality actually works. A common seen occurrence is that the idea of bounded rationality is often used as unproblematic within the social sciences as substantive rationality is in economics. To a certain extent, this bad habit in social science can be regarded even worse than the correspondent in economics, since the idea with procedural rationality is that there is something more to it than just objective means to reach a well-stated goal (the black box of information processing, judgment, choice and decision making). To counteract this often-seen pitfall when dealing with bounded rationality (which seems to have become a garbage can within certain fields of the social sciences; a term where almost any empirical finding can be fitted), the thesis will provide the heuristic research which has the most bearing on the phenomena studied: information processing within actors. Thereby, we will be able to make a much surer judgment on if we are seeing procedural, substantive or nonrationality in the case studied.

Heuristics

Inspired by the debate of bounded rationality, Amos Tversky and Daniel Kahneman started researching on information processing and judgment in the 1960s and -70s. The hypothesis outlined by Tversky and Kahneman was not just that the human mind was simpler than supposed by substantive rationality, but that it worked in a decidedly different manner. They set out to test this in a series of path breaking experiments, leading to the identification of three general heuristics: availability, representativeness and anchoring and adjustment.[56] There are many more heuristics than these three outlined here. However, these three has had the greatest impact on the discipline, and are both broad and general; they encompass several features of information processing. Heuristics works in the way of mental shortcuts, often providing fairly accurate and sophisticated judgments of information.

A critique against the heuristics-approach to information processing claims that these mental shortcuts can be eliminated in favor for rational processing if incentives are raised. This is true to a certain extent. Information processing can (under certain circumstances) be enhanced by increasing incentives, however it has been difficult to prove that rationality violations would become

---

[54] Simon, Herbert A., 'Decision Making: Rational, Nonrational, and Irrational', pg. 302
[55] Simon, Herbert A., 'The Logic of Rational Decision', pg. 183
[56] Gilovich, Thomas; Griffin, Dale W. and Kahneman, Daniel, 2002, pg. 3

fully absent just by raising incentives.[57] There has also been a critique that the laboratory-design experiments only reflected the difficulty for lay-men to understand the "word problems" of the researchers.[58]

Hence, it should be acknowledged that the heuristics tradition always have been afflicted with debate, especially concerning how the experiments are done and what inferences one can actually draw from the results.[59] There is no overall consensus that heuristics solely can explain the workings of procedural rationality. Questions have also been raised how universal heuristics really are. Tversky acknowledged that performance of statistical reasoning improved the more acquainted the subject was with the axioms, thus minimizing the use of heuristics.[60] In experiments of their own, Stanovich *et al* concluded that individual capabilities decided the level of substantive and procedural rationality.[61]

In addition to this debate, the question of which way of processing information which is preferable has also been evoked. Under certain circumstances, it may be rational to take a decision derived by heuristic processing (if stakes are low, time is limited and cognitive capabilities are strained or straitened). Intuitively, Bayesian reasoning should provide the most accurate assessments of reality. However, after testing the results of different heuristic and statistical methods on processing information, Gigerenzer *et al* concluded that in many cases fast and frugal heuristics performed perfectly satisfactory results.[62] Jervis proceeds along a similar line of thought when he states that those who are right "are rarely distinguished from those who are wrong by their superior ability to judge specific bits of information"[63], and continues that it is rather a question of applying the right cognitive biases in the right time at the right place.

This section will proceed by outlining the main findings within the heuristics approach. Since Tversky and Kahneman's path-breaking article in 1974,[64] many new insights in the cognitive mind has been discovered. One of the most important findings in relation to this paper is the theory of two simultaneously operating cognitive systems (see below). However, the three main heuristics – representativeness, availability and anchoring – outlined by Tversky and Kahneman's original article still proves to provide explanation for many of man's rational information processing and decisional mistakes.

---

[57] Gilovich, Thomas; Griffin, Dale W. and Kahneman, Daniel, 2002, pg. 4
[58] Gilovich, Thomas; Griffin, Dale W. and Kahneman, Daniel, 2002, pg. 11
[59] Cohen, Jonathan L., 'Can Human Irrationality Be Experimentally Demonstrated?'
[60] Stanovich, Keith E. and West, Richard F. 'Individual Differences in Reasoning: Implications for the Rationality Debate?'
[61] Stanovich, Keith E. and West, Richard F. 'Individual Differences in Reasoning: Implications for the Rationality Debate?'
[62] Gigerenzer, Gerd; Czerlinski, Jean and Martignon, Laura, 'How Good Are Fast and Frugal Heuristics?'
[63] Jervis, Robert, 1976, pg. 179
[64] Tversky, Amos and Kahneman, Daniel, 'Judgment under Uncertainty: Heuristics and Biases'

System 1 and 2 in cognitive reasoning

That the mind is made up of two parts, intuition and reason, is an ancient idea. This theory is in our time referred to as dual-process theories, wherein the theory of system 1 and system 2 also can be found.[65] These systems or not independent from each other, rather they are featured by which stimuli they react to, at which speed and controllability. One example on how these systems cooperate is how complex processing capabilities flow from the more intricate system 2 to system 1 when skill is attained. The typical example is the chess master, who has learned to instantly recognize patterns of chess and their respective strengths and weaknesses, allowing the chess master to see possible outcomes several steps ahead.[66] System 1 always makes the first assessment of a situation. This assessment can then be overruled by the more analytical and calculating system 2. However, since system 2 involves costly procedures, the initial judgment of system 1 often prevails.[67]

System 1 is often perceived as an associative system, which structures clues in to clusters by their features of similarity.[68] It provides quick intuitive answers and processes in a parallel fashion. It is governed by affection but also by the concrete and prototypes.[69] System 2 is rule-based and arithmetic. It deals with the abstract and can draw causal inferences.[70] Rules can be both normative and descriptive, and processes information in relation to the nature of a certain rule (e.g. logic, appropriate behavior in a social context).[71]

Clearly, we see that system 2 is heavily influenced by cultural values and education, and should differ heavily between different contexts and individuals. Freud pointed out these distinctions nearly a hundred years ago, when he noticed the distinction between the need for gratification and avoidance of pain vis-à-vis cultural norms of delayed gratification. There is a conflict between fantasy and purposive activity.[72] The two systems are also the foundation of theories of coherence.[73]

The two systems are present in the heuristics outlined below. In system 1 reasoning, we have the automatic heuristics (representativeness, availability, anchoring), whereas in system 2 reasoning we find the more deliberate choice heuristics ("rational" heuristics, such as elimination

---

[65] Kahneman, Daniel and Frederick, Shane, 'Representativeness Revisited: Attribute Substitution in Intuitive Judgment'
[66] Kahneman, Daniel and Frederick, Shane, 'Representativeness Revisited: Attribute Substitution in Intuitive Judgment', pg. 51
[67] Sloman, Steven A, 'Two Systems of Reasoning', pg. 391
[68] Sloman, Steven A, 'Two Systems of Reasoning', pg. 381
[69] Kahneman, Daniel and Frederick, Shane, 'Representativeness Revisited: Attribute Substitution in Intuitive Judgment', pg. 51
[70] Sloman, Steven A, 'Two Systems of Reasoning', pg. 381
[71] Sloman, Steven A, 'Two Systems of Reasoning', pg. 382*f*
[72] Sloman, Steven A, 'Two Systems of Reasoning', pg. 395
[73] Sloman, Steven A, 'Two Systems of Reasoning', pg. 396

by aspects).[74] By starting off with the theory of dual-processing, we have come one step closer to Simon's call for a fuller understanding on how choices actually are made instead of just presuming by axioms.[75] The two systems approach helps us understand how clues can be perceived differently by different persons, and the following section will discuss by which processes a clue can be judged.

Representativeness

Few people consider ordinary events by exhaustive lists of possibilities and their aggregated probabilities on a daily basis. Instead they turn to simple heuristics, such as similarity and representativeness.[76] Typical questions of representativeness are: what is the probability that object A belongs to class B, that event A originates from process B or that process B will generate event A?[77] In other words, "representativeness is an assessment of the degree of correspondence between a sample and a population, an instance and a category, an act and an actor or, more generally, an outcome and a model".[78]

Representativeness tend to be very strong when the model and outcome are described along the same lines of characteristics: if a sample corresponds in a certain manner with the stereotype feature of the population, representativeness is high: if a person is described as having a background within Women's voters, she is believed to be more likely to be a feminist bank teller than just a bank teller, even though this is a violation of the conjunction rule.[79] However, representativeness can also manifest itself in causal and correlational beliefs (to label someone as hysteric is more likely if the person is a worried woman than a worried man) and frequency (a representative winter day is cold). But representativeness can also be diagnostic even if its frequency as an attribute may be low (a typical criminal is often seen as someone with foreign features, even though it is acknowledged that foreign criminals are a minority among the total population of criminals). Alas, representativeness is not exclusively determined by frequency, similarity or class inclusion, but can be.[80] As seen above, the representative heuristic has many similarities with the phenomenon of schemas.

The problem of accurately applying information of base-rates is a common representativeness heuristic. The diagnostic variable (see below) is prominent in this case. Hence the probability

---

[74] Frederick, Shane, 'Automated Choice Heuristics', pg. 549
[75] Frederick, Shane, 'Automated Choice Heuristics', pg. 548
[76] Tversky, Amos, and Kahneman, Daniel, 'Extensional versus Intuitive Reasoning: The Conjunction Fallacy in Probability Judgment' , pg. 20
[77] Tversky, Amos and Kahneman, Daniel, 'Judgment under Uncertainty: Heuristics and Biases', pg. 1124
[78] Tversky, Amos, and Kahneman, Daniel, 'Extensional versus Intuitive Reasoning: The Conjunction Fallacy in Probability Judgment' , pg. 22
[79] Tversky, Amos, and Kahneman, Daniel, 'Extensional versus Intuitive Reasoning: The Conjunction Fallacy in Probability Judgment' , pg. 22*ff*
[80] Tversky, Amos, and Kahneman, Daniel, 'Extensional versus Intuitive Reasoning: The Conjunction Fallacy in Probability Judgment' , pg. 22

that there will be more casualties from a natural disaster in a densely populated area that is well developed than in an area which is under-developed but poorly populated is higher, but this is seldom recognized since the relative rate of casualties in the second case is expected to be much higher. The failure to adjust predictions for additional information in accordance with Bayes' rule is common.[81]

The failure to adhere to Bayes' rule is also evident in the misconceptions of incremental change. Incremental change can lead to a shift in a certain characteristic, rendering the outcome not representative of the model any longer. Small changes in discrepant information are easily overlooked, which can lead to a major shift in the end which in effect has gone unnoticed. This is because each conflicting bit can be fitted into the held belief, but when seen holistically they cannot.[82] An important subcategory to the phenomenon above in politics relates the confusion of goals and subgoals. Subgoals are often established to serve the higher end, the goal, and by reaching for the subgoals the ultimate goal can subsequently be fulfilled. However, when circumstances change the subgoals and goal may no longer stand in accordance to each other. But, since the subgoals have become representatives of the goal, it can be hard to change perception on the matter, which can have devastating consequences.[83]

The representative heuristic can also work in a neglecting fashion: information that contradicts firmly held beliefs about a model is ignored. Information or cues that contradict a belief are more easily disregarded than information that confirms the belief. The more strongly a belief is held, the harder it is for contradicting information to reach through, and when it does, is often processed selectively (picking out pieces that fits the prevailed belief) and easily disregarded again. Consistent information is to the contrary stored readily available.[84] Discrepant information is sometimes not noticed at all, even in the form of clear visible proof in full daylight. We see what we expect to see.[85]

The list of types of representativeness can be made much longer, but this will suffice for this thesis since the mechanism driving this heuristic has hopefully been illuminated. The examples brought up are those with the most bearing on the study at hand, as is the case with the examples raised in the following two heuristics: availability and anchoring.

Availability

The availability heuristic is used when the frequency of a class or the probability of an event is being assessed. The assessment is made by how easy recalled content comes to mind. For example,

---

[81] Tversky, Amos and Kahneman, Daniel, 'Judgment under Uncertainty: Heuristics and Biases', pg. 1124
[82] Jervis, Robert, 1976, pg. 308
[83] Jervis, Robert, 1976, pg. 412
[84] Vertzberger, Yaacov, 1990, pg. 60
[85] Jervis, Robert, 1976, pg. 143*ff*

since it is easier to recall words that begin with a letter than recalling words where the same letter has the third position, people usually assess that there are more words with the letter in the first position than there are words with the letter in the third position. Similarly, people will judge it more likely that one will be struck by a fatal disease when visiting a developing country than being killed in a traffic accident, since one often hear about the dangers of water- or airborne diseases.[86]

In experiments, it has been shown that there are some differences between ease of recall and recall of content as foundation for judgment. When personal stakes are low, judgments are done by ease of recall. When they are high, recalled content is more important (which is in line with system 1 and 2).[87] Thus, we can predict that an actor's judgment of a situation will be based on how easy a similar event can be brought to mind when individual incentives are low, and that the judgment of the situation will be based on the most proper instance that comes to mind when stakes are high.

One's own self picture is important in relation to availability. People who perceive themselves as an expert in a certain field are more prone to rely on the availability heuristic. When people know that they are less knowledgeable in a certain area, they are more skeptical to the validity of their inferences drawn from the ease of recall.[88]

A well-known instance of the availability heuristic in politics in general (and maybe in international politics in particular) is the use of analogies. As shown by Khong,[89] analogies can be crucial in determining courses of action. Brändström and Bynander have also demonstrated the importance of analogies when assessing the situation at hand.[90] As indicated above, different individuals will draw different analogies from the same information (recall by ease or by content). Khong outlined this when he highlighted the importance of age when choosing different analogies: those who had experienced an old war in during a formative age were more prone to draw analogies from those wars than older or younger persons.[91] This is in line with Tversky and Kahneman's original finding that personal salience is detrimental in which judgments are drawn on the ease of recall.[92]

The availability heuristic can thus partly be seen as a psychological explanation over the way that history is used in politics. Vertzberger has devoted much research on the importance of

---

[86] Tversky, Amos and Kahneman, Daniel, 'Judgment under Uncertainty: Heuristics and Biases', pg. 1127*ff*
[87] Schwarz, Norbert and Vaughn, Leigh Ann, 'The Availability Heuristic Revisited: Ease of Recall and Content of Recall as Distinct Sources of Information', pg. 118
[88] Schwarz, Norbert and Vaughn, Leigh Ann, 'The Availability Heuristic Revisited: Ease of Recall and Content of Recall as Distinct Sources of Information', pg. 110*f*
[89] Khong, Yuen Foong, 1992
[90] Brändström, Annika; Bynander, Fredrik and t' Hart, Paul, 'Governing by looking back: Historical analogies and crisis management'
[91] Khong, Yuen Foong, 1992
[92] Tversky, Amos and Kahneman, Daniel, 'Judgment under Uncertainty: Heuristics and Biases', pg. 1127

history in political decision making.[93] The availability heuristic probably can have a part in all of Vertzberger's *history's four building blocks of information processing*,[94] although it is probably most important in defining the situation, since availability by ease of recall is instant, in line with system 1. However, when a perception of a situation is done, it can be hard to alter,[95] as the anchoring heuristic predicts.

Anchoring

A person's mindset to a problem tends to form quickly, but is often very resistant to change.[96] A Bayesian type of information processing would be receptive to new information and assimilate this to the overall judgment of the problem. However, the human mind rather incorporates new information into existing perceptions: the initial perception transforms new information in relation to it rather than the other way around.[97] And this happens even if the initial perception is ambiguous or more or less irrelevant for the problem at hand, and new accurate and adequate information is provided.[98]

These human tendencies are summarized in the heuristic of anchoring. Naturally, to make an estimate one must often depart from some point of value, such as a half-done computation or the formulation of the problem. The problem is that the subsequent adjustment afterwards in the face of new information tends to be incomplete, at best. This leads to different points of departure which in turn leads to different estimates of the same problem, biased towards the initial value.[99]

Anchoring takes place when a certain amount of attention is devoted to the anchor before the initial judgment is done. The anchor must be vivid enough to be instantly recalled (see the availability heuristic above) for it to have an anchoring effect.[100] However, the anchor does not have to be relevant to the problem at hand for it to provide for an anchoring effect, as numerous studies have shown.[101] The anchor and the problem do not even have to be on the same scale for an anchoring effect to take place, but the outcome becomes more salient if it is.[102]

These effects become problematic in the face of the fact that adjustment is effortful. Adjustment tends to end too early, producing a final answer to close to the anchor. The effects be-

---

[93] Vertzberger, Yaacov, 1990, pg. 296*ff*
[94] Vertzberger, Yaacov, 1990, pg. 298
[95] Heuer, Richards J., 1999, pg. 7*ff*
[96] Heuer, Richards J., 1999, pg. 10
[97] Heuer, Richards J., 1999, pg. 11
[98] Heuer, Richards J., 1999, pg. 13
[99] Tversky, Amos and Kahneman, Daniel, 'Judgment under Uncertainty: Heuristics and Biases', pg. 1128
[100] Chapman, Gretchen B. and Johnson, Eric J., 'Incorporating the Irrelevant: Anchors in Judgments of Belief and Value', pg. 123
[101] Chapman, Gretchen B. and Johnson, Eric J., 'Incorporating the Irrelevant: Anchors in Judgments of Belief and Value', pg. 124
[102] Chapman, Gretchen B. and Johnson, Eric J., 'Incorporating the Irrelevant: Anchors in Judgments of Belief and Value', pg. 126

come even more evident when the cognitive burden or situational stress is high.[103] Even if the person is aware of the danger of an anchoring effect, it is difficult to avoid. Even when incentives where present (in the form of money) to produce a result apart from the anchor, anchoring still took place.[104] This renders the need for avoiding early closure,[105] and the use of multiple hypotheses.

After anchoring, the mind tends to look for consistent information and incorporate information as if it were consistent.[106] This phenomenon, which is a kind of confirmation bias leads to specific way of seeking information: "The conformation bias is similar to our proposed model of anchoring in that decision makers examine evidence expected to confirm the hypothesis rather than evidence that could disconfirm the hypothesis"[107]. Spinoza outlined this theory already in 1672, in relation to his idea that understanding and believing is the same process: we tend to believe the hypothesis we are testing, thus rendering a confirmatory strategy.[108]

Jervis maintains that this may not be irrational behaviour in relation to collected evidence.[109] It is a given constant that people need to have a predefined picture of the world. Otherwise, we would not be able to recognize familiar objects at all: it is equally dangerous to be too open-minded as close-minded, according to Jervis.[110] Or stated even more promptly: "an open mind is as dysfunctional as an empty mind"[111]. Scientific inquiry is characterized by the scepticism towards new, contradictory evidence: it must survive very tough tests to be accepted.[112] Obviously, one should be sceptic about information that fully contradicts a pre-defined picture of the world. However, the point is that the quest should be to *refute* it rather than *confirm* it, which is often the case when it comes to the prevailing picture.

An obvious danger when trying to confirm a hypothesis rather than refute it is that people tend to have problems with diagnostic evidence. Evidence that confirms one hypothesis may very well confirm an alternative hypothesis as well.[113] And since we tend to be overly optimistic in how we perceive a problem (that we tend to judge the most favourable outcome too probably), the best-

---

[103] Chapman, Gretchen B. and Johnson, Eric J., 'Incorporating the Irrelevant: Anchors in Judgments of Belief and Value', pg. 127
[104] Chapman, Gretchen B. and Johnson, Eric J., 'Incorporating the Irrelevant: Anchors in Judgments of Belief and Value', pg. 125
[105] Bar–Joseph, Uri and Kruglanski, Arie W., 'Intelligence Failure and Need for Cognitive Closure: On the Psychology of the Yom Kippur Surprise'
[106] Chapman, Gretchen B. and Johnson, Eric J., 'Incorporating the Irrelevant: Anchors in Judgments of Belief and Value', pg. 132
[107] Chapman, Gretchen B. and Johnson, Eric J., 'Incorporating the Irrelevant: Anchors in Judgments of Belief and Value', pg. 133
[108] Gilbert, Daniel T., 'Inferential Correction', pg. 183
[109] Jervis, Robert, 1976, pg. 143
[110] Jervis, Robert, 1976, pg. 154
[111] George, Roger Z. and Bruce, James B., 2008, pg. 160
[112] Jervis, Robert, 1976, pg. 156*ff*
[113] Griffin, Dale W. and Tversky, Amos, 'The Weighing of Evidence and the Determinants of Confidence', pg. 238

guesses tend to be too optimistic. This tendency persists even if multiple hypotheses are available.[114] By critically trying to refute the hypotheses in the face of new evidence, this version of the anchoring heuristic can hopefully be minimized.

Since anchoring is a common process that is hard to control and counteract, a principle of caution in decision-making is often appropriate.[115] It is often better to err on the safe side. This becomes even more important in the face of the optimistic bias outlined above. Experts often show overconfidence in their predictions when the predictability is low.[116] Experts also tend to withhold to their prior judgments in the face of contradictory evidence.[117] Indeed, overwhelming evidence can even render experts to even more firmly believe their prior hypothesis, a phenomena called "the boomerang effect".[118]

An important note to the concept of bounded rationality is that the environment effects information processing systematically. These heuristics of system 1 should be more readily visible under tough environmental constraints, such as a high degree of cognitive burden.[119] Stress should lead to a more vivid use of system 1 to the disadvantage of system 2.

Another point to be made is the obvious hindsight bias when discussing heuristics and ways of mitigating them. It should be pointed out that these acts of misperceptions *become* mistakes. When they take place, they are perceived to be right. To understand a mistake in its becoming, one has to understand its future implications.[120] To counteract this, one will have to plan in advance. Thus, misperceptions can be unavoidable, but some mistakes may not be.

Nonrational

If the research question would be statistically investigated by an ordinary hypothesis test, the two conceptions of rationality outlined above would be this thesis' null-hypothesis, this last section would be the alternative hypothesis. If rationality is posed as well-adapted means to a specified goal, a nonrational behavior could, but must not, be examples of opposite acts: extremely poor means to an end or means to an unspecified end.

If one emanates from Simon's simple scheme of decision making, where first a problem is identified, then ways of solving the problem is figured out and finally one of those alternatives is

---

[114] Buehler, Roger; Griffin, Dale W. and Ross, Michael 'Inside the Planning Fallacy: The Causes and Consequences of Optimistic Time', pg. 269
[115] Jervis, Robert, 1976, pg. 424
[116] Griffin, Dale W. and Tversky, Amos, 'The Weighing of Evidence and the Determinants of Confidence' , pg. 247
[117] George, Roger Z. and Bruce, James B., 2008, pg. 160
[118] Jervis, Robert, 1976, pg. 404
[119] Chapman, Gretchen B. and Johnson, Eric J., 'Incorporating the Irrelevant: Anchors in Judgments of Belief and Value', pg. 127
[120] Weick, Karl E.; Sutcliffe, Kathleen M. and Obstfeld, Daniel, 'Organizing and the process of sensemaking', pg. 412

chosen, the goal itself can be said to be nonrational (so far they are not sub-goals for an even higher end). These goals and the way they are generated are one example of nonrationality.[121] There is nothing intrinsically rational if I, *ceteris peribus*, prefer red instead of blue. And if there is no contextual constraint such as having to wear a blue uniform, it is neither irrational to prefer a red shirt to a blue.

But even the two last steps in Simon's decision scheme as well as behavior can be nonrational. A typical example, which is maybe more frequently seen in some of our lives than in others, is the role of passion and emotion. How much have not been written of hopeless love and deeds committed in the heat of the moment? The importance of emotion in explaining and predicting human behavior is evident also in law, where emotions are taken into consideration when assigning penalty and makes a difference between deliberate action and impulsive acts.[122]

The dichotomy between reason and emotion has historical roots that go a long way back. At least since the days of Kant, philosophers have taken different stands on which way to follow: the mind or the heart.[123] Crawford concludes that emotion should be particularly effecting in regard to cognitive processes such as information processing. Emotional arousal may affect how we perceive reality and act upon it,[124] without considering any rational-analytic information processes. Emotions may also have specific affects upon group dynamics such as concurrence seeking.[125]

Concurrence seeking and its meta-phenomenon of groupthink is another example of nonrationality (not always, as groupthink can serve ends in a rational way[126]). t' Hart *et al* suggests that it may be the case that small groups in themselves can render certain policies. These small groups (which can be found in commissions, cabinets and sections of departments) may in themselves produce outcomes that cannot be explained by standard rational choice models.[127] It may likewise be the case that the concept of procedural rationality outlined above does not fully captures the characteristics of these processes either.

The acting of individuals can often seem completely nonrational. In international politics, Saddam Hussein is often pointed out as a prominent example. Many commentators, and indeed analysts, had a hard time understand to invasion of Kuwait 1991. And why did Hussein not cooperate with the weapons inspectors of the UN even if the weapons of mass-destruction (WMD) had been phased out after Operation Desert Storm?[128] Not even the generals of Iraq knew that the

---

[121] Simon, Herbert A., 'Decision Making: Rational, Nonrational, and Irrational', pg. 393*f*
[122] Simon, Herbert A., 'Human nature in politics: The dialogue of psychology with political science', pg. 301
[123] Crawford, Neta C., 'The passion of world politics: Propositions on emotion and emotional relationships' pg. 117, note
[124] Crawford, Neta C., 'The passion of world politics: Propositions on emotion and emotional relationships' pg. 137
[125] Crawford, Neta C., 'The passion of world politics: Propositions on emotion and emotional relationships' pg. 140
[126] 't Hart, Paul; Stern, Eric K. and Sundelius, Bengt, 1997
[127] 't Hart, Paul; Stern, Eric K. and Sundelius, Bengt, 1997, pg. 5
[128] Agrell, Wilhelm, 2009, pg. 124

program had been suspended, and were very surprised when Hussein told them in 2003. A couple of months later Saddam Hussein twice tried to infuse courage in them by insinuating that the country did possess WMD.[129] By this not said that the actions of Hussein were nonrational – they could have been, if more circumstances around these events were known – but it should be acknowledged that people can be driven by nonrationality (such as emotions, as outlined by Crawford). The point to be made is that one cannot take rationality for granted.

There are many more examples of nonrationality than presented above. Indeed, they should be viewed as mere illustrations for those who are not familiar with the statistical reasoning this section started with. In this thesis, nonrationality should truly be considered as an alternative hypothesis in the statistical sense: all instances which cannot be attributed to any definition of rationality will be regarded as nonrational. And as with procedural rationality, we can expect to see more examples of nonrationality (such as the impact of emotions) in situations of stress and crisis.[130]

After this exposé of different ways of information processing, the theories above will lay the foundation to the analytical model by which the case is assessed. Parts of this theory chapter will also be incorporated methodologically. The risk of confirmation bias and the psychological phenomenon of searching for consistent information will attempted to be counteracted by aiming to refute rather than confirm hypotheses.

[129] Agrell, Wilhelm, 2009, pg. 142
[130] Crawford, Neta C., 'The passion of world politics: Propositions on emotion and emotional relationships' pg. 130

METHOD

THIS SECTION WILL START BY SURVEYING the general methodological pitfalls when conducting a case study on acts that ultimately takes place inside the minds of the actors. Some words on the nature of a case study follow, before hypotheses are identified and a model for assessing the case is operationalized.

General Outlines

This thesis is concerned with information processing. The thesis aims at investigating how actors handle incoming information, but also how these processes can be enhanced. When it comes to theories of information processing, the old maxim "there is nothing handier than a good theory" seems as true as ever. However, to illustrate the workings of minds, it will employ a modest case study. The case makes no claims of being exhaustive or fully substantiated. By illustrating the theories with the help of a thoroughly (over-)studied case, it will be easier to perceive how these abstract conflicting theories manifest themselves. Hopefully, albeit less probably, the theories will also shed some new light on old facts.

The case is an instance of information processing in crisis. The theories employed in this thesis are principally theories of how information is processed within actors. These actors are individuals or collectives made up of individuals. Of interest is decision making bodies, who will

take decisions upon how information is (mis-)perceived. To embark on an endeavor like this necessitates a fair amount of humbleness. How can one possibly know what goes on in a decisionmaker's head, especially if these processes are unconscious? A study like this will always be encumbered with doubts of validity. The question is if it is possible to measure information processing in a systematically successful way.[131] To survey the motifs of an actor is notoriously difficult from a methodological point of view, since *motifs* very well may differ from *motivations*.[132] To be able to make a case for true motifs behind an action one can embark on difficult research methods as those used by Khong (which still, as a critical reader of *Analogies at War* will argue, is not a clear cut case of success).[133] One could proceed in the ways of Hadenius. Hadenius sketches on how to avoid the tautological pitfall of a closed circle, where an action is motivated by the desire of performing the very same action. This leaves an outside observer without information about why the action was desired, that is what the incentives were.[134] Hadenius suggests that this obstacle can be circumvented by taking the context in which the action has been performed into consideration. By applying this logic, the motifs of an action is drawn from facts of the context and thereby detached from the action itself.[135] However, even if context matters (in the way of stimuli) in this study, it is the black box that is interesting in information processing. It is by uncovering the intervening processes one proceeds from the general and abstract of correlations between start and end to a more sophisticated theory of cause. This can be done in several ways.

Firstly, the theories employed give some guidance to how these processes unfold themselves. They will specify which type of information that will be acted upon and what will be neglected. Secondly, accounts from the actors themselves may prove some guidance. As a matter of course, these statements can be seen as rationalizations, constructed afterwards to justify certain decisions. Nevertheless, in the discipline of social psychology a common and recognized way of studying information processing is by having the subjects speak aloud as they perform experiments,[136] thus statements uttered in direct connection to the events may have some bearing (naturally, this kind of data has to be thoroughly valued when analyzed) on the workings of the mind in process. Thirdly, by adhering to context in the way of stimuli (as outlined above), it becomes possible to appreciate which kind of information that was adhered to and what was not, which in turn can be analyzed through the theories to provide probable processes. Finally, by adopting the Popperian principle of falsifiability, it will be possible to refute certain propositions. Even if we cannot know

[131] Teorell, Jan and Svensson, Torsten, 2007, pg. 57*ff*
[132] Esaiasson, Peter, Gilljam, Mikael; Oscarsson, Henrik and Wängnerud, Lena, 2007, pg. 329
[133] Khong, Yuen Foong, 1992
[134] Hadenius, Axel, 1984: 'Att belägga motiv', pg. 153
[135] Hadenius, Axel, 1984: 'Att belägga motiv', pg. 154f
[136] Simon, Herbert A., 'Human nature in politics: The dialogue of psychology with political science', pg. 295

if non-refuted hypotheses are actually true,[137] we can reasonably believe so until disproven, which will suffice in a limited study such as this.

In line with the modest claim of truth and total exhaustively of the case as the criterion of falsifiability imply, this study only investigates a mere piece of the case in question, information processing within a limited body of decision making. By this narrow outlook, the study will remain focused.[138] Since the case is used as a vehicle for the understanding of the theories and how they perform in explaining the information processes of the case, the case study can best be characterized as a plausibility probe. A plausibility probe can be used to assess if a theory is worth testing, or in this case, that certain theories are worth considering in explaining a case (or give existing explanations firmer foundations).[139] However, it should be pointed out that framing a study as a plausibility probe does not entitle a lowering of academic standards.[140] By using a well-developed analytical model (see below) as well as adhering to the scientific standard of advancing compatible hypotheses and try to refuse them, I hope the quality of evidence and inference will be upheld.

Studies of this kind and limits, which try to investigate the mental processes of actors, are difficult to design in other ways than plausibility probes. It is extremely difficult to reach such firm results so that one can state "this is what happened". Instead, what this study aims to is to be able to give a fair and well-grounded judgment to state "this probably did not happen". From this, more modest claim, of results we can hopefully give a reasonable suggestion of what can be a plausible version of what happened, derived from what most probably did not take place.

Irrespective of type of case study, there is an immanent danger that variables crucial for the validity are overlooked. To combat this, it is of paramount importance to formulate multiple hypotheses.[141] There are many reasons for this. One is mentioned above, multiple hypotheses reduces the danger of missing out variables. Another is Popper's outlook of scientific inquiry, where hypotheses should be sought to be refuted rather than confirmed. Further, when seeking to confirm a single hypothesis there is always the danger that the evidence doing so may as well confirm other hypotheses likewise.[142] The strongest reason for refuting rather than confirming hypotheses, in my view, is provided by findings in social psychology. The mind tends to interpret information in accordance to a prevailing view (see above). Thus, by seeking to confirm a hypothesis, the mind can twist stimuli to become perceived as corroborant or disregard information which contradict the favored hypothesis.[143] To counteract these unconscious mental processes, it is better to try to

[137] 'Criterion of falsifiability (philosophy of science) -- Britannica Online Encyclopedia'
[138] George, Alexander L. and Bennett, Andrew, 2005, pg. 70
[139] Eckstein, Harry, 'Case Study and Theory in Political Science', pg. 28
[140] George, Alexander L. and Bennett, Andrew, 2005, pg. 75
[141] George, Alexander L. and Bennett, Andrew, 2005, pg. 80
[142] Heuer, Richards J., 1999, pg. 45
[143] Heuer, Richards J., 1999, pg. 46

refute hypotheses rather than confirm them, although this proceeding is by no means a guarantee for total objectivity.

The hypotheses, in turn, should be posed the same questions (in the way of "structured comparison"[144]). The researcher can then question oneself what answers could be expected if the hypothesis were true. What evidence is inconsistent with the hypothesis, and in turn which hypotheses are consistent with certain evidence? And which evidence can we expect to see and which can we reasonably expect not to see? Evidence that is not present may also be consistent or inconsistent with some hypotheses.[145] Of special interest is diagnostic evidence – evidence that solely confirms or disconfirms only one of the hypotheses. This helps determine the relative likelihood of the hypotheses. It may turn out that one piece of evidence, which seemed very important in confirming a hypothesis, may have a low diagnostic value when realized that it is also consistent with other hypotheses.[146]

A Model for Assessing Information Processing

To be able to analyze the case through the theories by the help of the means outlined above, the thesis will take help of a method that closely resembles Heuer's *Analysis of Competing Hypotheses*.[147] The model sketched here will be less elaborative than the original,[148] as it is adjusted and refined for the purpose of the research question. Combining the elements discussed above, it is relatively straight-forward:

I. Hypotheses are generated.
II. Structured questions are generated, whose answers can either refute or confirm a hypothesis.
III. The questions are posed to the empirical material.
IV. The answers are analyzed: do they have any diagnostic value? How reliable are the sources?
V. A tentative conclusion is drawn of the validity of the hypotheses.
VI. A reconsideration of the evidence is made. Is there absent evidence, which could be expected to be present if a hypothesis was false or true? How certain are the diagnostic evidence? Are the tentative conclusions sensitive to a few critical items of evidence? What is needed for an opposite conclusion to take place?
VII. Refute unlikely hypotheses. State why.

The hypotheses (and in a larger picture; information processing as a whole in the case) can be seen as the dependent variables in this study. They can either be refuted or not by the evidence gathered from the structured questions, which thus takes the form of independent variables. The theories presented above/below can be transformed into hypotheses regarding how information

[144] George, Alexander L. and Bennett, Andrew, 2005, pg. 69
[145] Heuer, Richards J., 1999, pg. 45
[146] George, Roger Z. and Bruce, James B., 2008, pg. 256
[147] George, Roger Z. and Bruce, James B., 2008, pg. 252*ff*; Heuer, Richards J., 1999, pg. 95 *ff*
[148] Heuer, Richards J., 1999, pg. 97

processing takes place within an actor. Originating from the theory of fully rational actors, hypothesis 1 can be stated as substantive rational information processing. Hypothesis 2 derives from the theory of procedural rationality and the use of heuristics. The last hypothesis (3) refutes all signs of rationality and the use of heuristics, where no coherent information processing can be detected.

There is, as stated, an inherent problem with case studies since important variables can easily be over-looked or missed. This could be the case here as well. The questions posed here are just a few (although they cover much of the information processing process), since there is a trade-off with focus. The results will show if these questions are enough in refuting one or more hypotheses, or if they are deemed insufficient.

An important note to this model is that the hypotheses are treated as Weberian "ideal types"[149]. In reality, the different types of rationalities are rather seen as gradual scales. However, this is hard to measure in a case study: "case studies remain much stronger at assessing *whether* and *how* a variable mattered to the outcome than assessing *how much* it mattered"[150] (emphasis in original). A second note is that these hypotheses are not treated normatively in the study. This so avoid the analytical bias of having 20/20 hindsight. Rather, the aim is to, as objectively as possible, try to establish the prevalence or absence of the hypotheses.

The questions are generated by looking at the aspects brought forward by the different versions of information processing above. I have tried to capture the most essential parts of the theoretical exposition, the central concept to which the three different theories deliver distinctly different answers. These central concept are goals, means how to reach those goals, how information of the situation is handled and how the actors behave. These can all be derived from Simon's explanation of decision making: a goal is set (or problem identified), different means of solving the problem are generated, an appropriate mean is chosen given the situation and lastly the preferred solution is implemented.[151]

The first question asked regards goals. Are there any predefined goals? Are the goals consistent among actors? The second question treats the connection between goals and means. Is it clear? Is there a defined goal, and a thought of how to reach it? The third question regards the assessment of the situation at hand, in relation to the available means. How do the actors estimate their chances of success in relation to goals and means? Does the assessment have bearing on the facts available? The fourth question regards the handling of information. How is information handled? Is it incorporated in a Bayesian manner or not? The fifth question reflects how consistent the actors are: do they perceive the same situation differently or not?

The model is summarized in table 1.

---

[149] Weber, Max, (1922) 1983, pg. 7, 15*f*
[150] George, Alexander L. and Bennett, Andrew, 2005, pg. 25
[151] Simon, Herbert A., 'Decision Making: Rational, Nonrational, and Irrational', pg. 394*f*

Which kind of evidence then are compatible with the different hypotheses? What would we expect to see, or not to see, in relation to the hypotheses? Starting off with the first question, both hypotheses 1 and 2 predicts that actors should have goals with their behavior. If not, the absence of goals could be compatible with hypothesis 3. Hypothesis 1 also suggests that there should be some kind of utility function present. For the second question, hypothesis 1 postulates that there should be a clear connection between goals and means, and that the optimal means will be chosen in relation to the goal. For hypothesis 2 however, the connection will still be present, albeit less clear. Here, we would expect to see a satisficing strategy instead, reaching for the lowest aspirational level. For hypothesis 3, we do not have to see any connection between goals and means, neither any rational reason why a certain course of action was chosen. Instead other incentives such as feelings and emotions should determine means and action. For question 3, hypothesis 1 suggests that the actors will make an assessment of the situation which lies in line with the objective conditions. Hypothesis 2 on the other hand would rather suggest that a subjective interpretation based on heuristic devices will take place. Hypothesis 3 is characterized by impulsivity and an unreasonable assessment of the situation at hand. In regards to question 4, hypothesis 1 suggests analytic and Bayesian information processing. The same actor should comply with the axiom of invariance. For hypothesis 2, we would expect a reliance on heuristics for information handling, and assessments being highly subjective. Hypothesis 3 implies another type of information handling, characterized by, for example, groupthink. For question 5, we can expect actors to act in a consistent way in hypothesis 1 if they share the same information. This does not have to be the case in hypothesis 2, since system 1 implies that different actors will assess the same situation differently. Hypothesis 3, on the other hand, would expect consistent actors if groupthink is present. Otherwise, we cannot expect any consistency across actors, other than by randomness.

In the case study, we will search for evidence for these different questions. Since we study many different individuals, it is highly plausible that we will see evidence that confirms and refutes all of the hypotheses. However, probably one or more of the hypotheses can be refuted as less probable than the others, even if it will have some evidence for it. Hopefully, we will also see how individual actors are consistent with one of the hypotheses. If not, this will also be an interesting finding (in relation to question 5). Some questions may not be able to answer at all with the material at hand; other questions will render more clear-cut evidence. However, in many cases we can suspect that the evidence will lie in between; in those instances a thorough motivation for the chosen interpretation must be delivered.

In the next section, we will turn to the case. The model derived in this chapter will be applied to the events as described in the SOU, to be able to identify possible evidence relevant for the hypotheses. This will proceed in line with the steps outlined on page 25. Afterwards the implications of the results are discussed.

Table 1. *Model of Information Processing*

Hypothesis / Question	**Hypothesis 1.** *Substantive Processing*	**Hypothesis 2.** *Procedural Processing*	**Hypothesis 3.** *Nonrational Processing*
Defined Goals			
Evidence			
Connection Goals-Means			
Evidence			
Assessment of Situation			
Evidence			
Handling of Information			
Evidence			
Actor Consistency			
Evidence			

Table 1. The model of information processing which is used to analyze the case. The hypotheses are derived from the three theories of rationality, and for each of the questions evidence is collected which can either refute or confirm the hypotheses.

THE CASE

STARTING OFF FROM THE THREE DIFFERENT THEORIES of human information processing and the model for assessing the same, the thesis will now proceed by applying this lens on a modest case study. The quest is to investigate if these theories can shed any light on why and how the actors behaved as they did.

As stated above, the case study applied here should be seen as a plausibility probe, to see if the theories are worth considering in explaining the case (or give existing explanations firmer foundations).[152] It makes no claim of total exhaustiveness; rather it should be seen as providing complementary explanations to already well-researched findings. Hopefully, it will also be able to offer possible explanations for some of the actors' behavior as well.

This section will proceed as follows. Firstly, a very brief sketch of the course of events will be provided. As all of the empirical material used in this thesis emanates from one second-hand source, it is easy for any supposed reader to further access the material (which is available on the web) to get a more detailed background. Secondly, the plausibility probe will follow the steps provided on page 25. The questions generated in the earlier section will be posed to the material, and evidence for different answers will be assessed. Thirdly, a tentative conclusion is suggested. Fourthly, the evidence is reevaluated to consider the strength of the tentative conclusion. Lastly, a final conclusion is drawn.

[152] Eckstein, Harry, 'Case Study and Theory in Political Science', pg. 28

The earthquake and the following tsunami

The earthquake that generated the devastating tsunami was measured at 9,0 on the Richter scale. It took place around 0800 AM (0200 AM CET+1) west of Sumatra in the Indian ocean on December 26th 2004. The following tsunami caused immense destruction, mainly in east-western direction. The first waves hit the coast of Sumatra approximately 15 minutes after the earthquake and the coast of Sri Lanka about two hours later. The west-coast of Thailand was hit at about the same time, in spite of being much closer to the epicenter than Sri Lanka (this was due the shallow waters of the Andaman Sea, which slowed down the tsunami). In Thailand, the tourist area around Phuket was heavily affected by the tsunami. At the time, it has been approximated that about 30,000 Swedes were residing in Phuket and its surroundings.[153] The tsunamis generated by the earthquake caused the death of up to 300,000 people, among them over 200,000 in the Aceh province of Indonesia.[154] Of the circa 5,400 confirmed deaths in Thailand,[155] about 10 per cent were Swedes.[156]

The first reports of the earthquake in Swedish media could be heard at 0330-0400 AM. At about the same time, rapports of the devastation in the affected areas started to reach Sweden through travel companies and private citizens. Round 0530 AM the first reports of the tsunami and its effects on Phuket were published.[157]

The Ministry for Foreign Affairs had been alerted by the Swedish embassy in Bangkok at 0440 AM. Kaarlo Laakso (of the embassy) reported to the consular officer on duty in Stockholm that there were reports of a tsunami in the Phuket area, and that there could be as many as 30,000 Swedes affected. This caused the officer on duty (based at her home), Kerstin Melén, to call her superior, Jan Nordlander (Head of the Consular office) at 0500 AM. Nordlander was in Bergslagen north of Stockholm, and Melén informed him of the situation, which she considered urgent. Melén suggested several steps to increase the capacity of the embassy in Bangkok. Nordlander agreed, and told her to contact the group leader of the Consular Office, Christina Palm.[158]

As the day was awakening, the magnitude of the crisis became evident in the media.[159] At the Government Offices in general, and the MFA in particular, the situation of effectively handling the huge amount of incoming calls soon became impossible given the organization at place; the absence of the management of the Consular Office was critical.[160] Palm arrived at 1030 AM the day

[153] Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 22
[154] 'Indian Ocean tsunami of 2004 -- Britannica Online Encyclopedia'
[155] 'Thailand: Year In Review 2005 -- Britannica Online Encyclopedia'
[156] Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 22
[157] Statens offentliga utredningar, 2005a, pg. 125
[158] Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 25*f*
[159] Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 27
[160] Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 38

after, Nordlander soon after Palm and Per Thöresson, the under-secretary of state, not until lunch on the 28th.[161]

Even though the consular dimension of the catastrophe was obvious for some involved at an early stage, many saw it as a matter of aid and relief during the first days in the Government Offices.[162] The focus was on giving aid to affected areas, mainly Sri Lanka. Despite the heavy reporting in media,[163] it was not until on the morning of Monday 27th, approximately 30 hours after the earthquake, that the management of the MFA fully understood the magnitude of Swedish losses in Thailand and that all available resources had to be acquired to handle the situation.[164] Much of the criticism of the Swedish handling of the tsunami has focused on this, since it has been seen as clear that already a couple of hours after the tsunami, the issue at stake was the situation in Thailand.[165,166] Another point of heavy criticism regards the absence of management,[167] which is believed to have delayed the Swedish response in Thailand.[168]

* * * *

This brief sketch of the course of events within the Government Offices in general and in the MFA in particular will below be supplemented by the evidence found in relation to the questions asked. This thesis will continue by posing one question after another to the material, and the evidence will then be weighed against the three hypotheses.

Question 1: Defined Goals

This is, naturally, is one of the most difficult pieces of evidence to observe empirically. As stated above, the formulation of a goal is essentially an example of a nonrational act. With this in mind, this is the question which can be said to have the least diagnostic weight in the results. However, it can be argued that it is still of importance for rationality, since some goals (not all, such as personal values and norms) are set from the perception of reality. Objectively, given the information of the severity of the situation available at an early stage of the crisis the foremost goal should have been to minimize Swedish losses in Thailand and secure the well-being of Swedish citizens

[161] Statens offentliga utredningar, 2005a, pg. 150
[162] Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 37
[163] Statens offentliga utredningar, 2005a, pg. 128
[164] Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 42
[165] Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 56
[166] Lennquist, Sten, and Timothy Hodgetts, 'Den svenska sjukvårdens ledning and funktion i samband med tsunamikatastrofen i Sydostasien 26 december 2004', pg. 178
[167] Statens offentliga utredningar, 2005a, pg. 11
[168] Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 71

in the affected areas to the highest extent possible. Thus, that should imply to ensure evacuation from tsunami-struck regions.

The spontaneous reference among some actors to the Estonia-catastrophe of 1994 (where 551 Swedish citizens drowned) indicates that the goal should be to save as many lives as possible, and that the situation was critical. This would be an example of an availability heuristic, an instance of recall by content. Noteworthy is Kerstin Melén's instant reference to Estonia in her first contact with Laakso at 0440 AM.[169] The Estonia reference also returns in her subsequent discussions with the press officer on duty and the officer on duty of the MFA.[170] However, when Melén draws the same analogy with Palm, Palm urges Melén not to be "hysteric"[171]. The inferences to be drawn from this is not that Palm's goal does not converge with Melén's, but that it is much harder to draw and state Palm's goal at that moment.

Except from Melén and a few others, the situation at hand in relation to defined goals can rather be described as an absence of clearly defined goals with the actions taken. When Laakso, for example, at an interview with Swedish media at lunchtime the 26th confirms the death of two Swedish citizens, he is criticized by the MFA as the official line was that there was no information of *confirmed* deaths (that many Swedes had died was evident at the time, however). Laakso's pronouncement was said to increase the burden on the telephone switchboard.[172] However, during that time, the goal of slightly decreasing the burden of the switchboard can hardly been prioritized in relation to correct information about the situation at hand and what the embassy in Bangkok did and knew.

As a whole, it cannot be said with certainty that a clear goal in line with the one in the beginning of this section was evident for the Government Offices as a whole until 1000 AM on Monday 27th, some 30 hours after the tsunami.[173] There seemed to be a goal within the Consular Offices to adhere to the strict laws of consular aid,[174] which indicates that any formal utility function as predicted by the substantive rationality hypothesis was not present (since rigid juridical issues hardly can have such a dignity in the face of the current events at the time and the proposed goal above). That staying within budgetary limits was seen as an important goal is further supported by the fact that both Palm and Nordlander were against a consular rescue mission by the Swedish Rescue Services Agency (SRSA),[175] since there is a tendency within the MFA that if one asks for it, one will also have to pay.[176] Palm has also states that the Consular Office is the least prioritized

[169] Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 25
[170] Statens offentliga utredningar, 2005a, pg. 143
[171] Statens offentliga utredningar, 2005a, pg. 146
[172] Statens offentliga utredningar, 2005a, pg. 202
[173] Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 70
[174] Statens offentliga utredningar, 2005a, pg. 278
[175] Statens offentliga utredningar, 2005a, pg. 152
[176] Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 49

within the MFA, which manifests itself in budget allocations.[177] Given the situation at hand, which was evident especially for the Consular Office, this seems nonrational: if this possible goal was stated out loud, it would hardly be considered adequate. Rather, it is more probable that it is an example of poor goal adjustment given the changed circumstances, rendering a behavior that seems nonrational rather than rational. It stands in particular stark contrast to substantive rationality.

Question 2: Connection Goals-Means

Answering this question should prove to be somewhat easier than the above. For hypothesis 1, an actor should choose the most optimal means from the objective situation at hand. Given the information that was available already in the early morning hours on the 26th, this would mean that all extra resources should be round up to deal with the extra-ordinary situation. However, with the exception of Melén and a few other individuals (see below), this was not the case. Melén early expressed her desire to leave her back-office at home and go to the MFA, to secure a better handling of the crisis.[178]

Noteworthy in this regard are the decisions of Thöresson, Nordlander and Palm to not immediately discontinue their recess and present themselves physically at the MFA. The absence of management in place is considered as one of the chief mishandlings of the crisis.[179] Their decisions bear a great resemblance to Simon's satisficing strategy. Even if they had been informed at a very early stage by Melén, and showed signs of comprehending the severity of the situation (Palm early contacted Stig Edqvist at the ID-commission to investigate the capacity of identifying victims[180]) they decided to not immediately leave for Stockholm and the MFA. Already at 0950 AM Melén contacted Nordlander to report that the situation at the MFA was intolerable since there were no operational management, and thereafter with Palm; the situation could be 30 times worse than Estonia and under these circumstances it was impossible to adequately perform one's duties from home. Melén was told not to be "hysteric".[181] Apparently it was seen as satisfactory to stay on leave and handle the matter by telephone: Thöresson was in Bohuslän, Nordlander in Bergslagen and Palm in Borås. It seems that the perceived magnitude of the crisis did not reach up to the aspirational levels of leaving for the capital.

However, as indicated above, there were persons and even whole sections within the MFA which tried, and in some instances succeeded, to take steps to mitigate the crisis. The response to

---

[177] Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 72
[178] Statens offentliga utredningar, 2005a, pg. 146
[179] Statens offentliga utredningar, 2005a, pg. 11, 20, 269
[180] Statens offentliga utredningar, 2005a, pg. 149
[181] Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 33

the situation in Sri Lanka (also caused by the tsunami) is reported as following the book.[182] The section handling this operation at the MFA, the Office for Global Security, also tried to get a clearance to send the SRSA to Thailand, in the morning on December 26th. What followed was a long process of pushing and hauling between the Office for Global Security and the Consular Office as well as with the Ministry of Defense (under which the SRSA is subordinate).[183] Noteworthy is that both Palm and Nordlander repeatedly contacted the SRSA to oppose to the idea of sending the agency to Thailand and make sure that this would not take place.[184]

There is less evidence for hypothesis 3. The SOU does not report of any emotional utterances, with a few exceptions. One is the incident reported above, where Palm calls Melén hysteric, and gives her a reprimand for contacting Palm's superior Nordlander before talking to Palm.[185] Thöresson gets irritated over the call from Nordlander at 0735 AM informing him of what has happened.[186] Nordlander and Palm both brought forward dissatisfaction over the fact that other offices within the MFA express their critique over the Consular Office's handling of the vast amount of incoming calls on the morning of the 26th.[187] However, these expressions of emotion can hardly be said to cause the choosing of means: they are better explained by the processes outlined above.

Question 3: Assessment of the Situation

This may be the question where we can reasonably expect to see clear examples of the differences between the two different forms of rationality. Substantive rationality leaves little room for any difference between an actor's own judgments of the situation and the objective conditions. Procedural rationality, on the other hand, does not only expect a difference between objective and subjective reality, but also outlines how and why these misperceptions occur.

As seen, Melén makes an instant referent to Estonia when she is alerted by Laakso, and that the catastrophe can be many times worse given the large number of Swedish citizens in the affected area.[188] It should be acknowledged that this came to be an accurate comparison only in absolute numbers: while Estonia and the tsunami claimed about the same number of Swedish lives, the difference in relation to the total number of Swedes in each crisis is quite different: only a few Swedes survived Estonia, while the fatality rate after the tsunami was between 1 of 40 to 1 of 60.

---

[182] Statens offentliga utredningar, 2005a, pg. 150
[183] Statens offentliga utredningar, 2005a, pg. 151*ff*; Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 46
[184] Statens offentliga utredningar, 2005a, pg. 152; Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 46
[185] Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 33
[186] Statens offentliga utredningar, 2005a, pg. 145
[187] Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 38*f*
[188] Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 25

Given the situation at hand, it seems reasonable to err on the safe side. As outlined above, the use of Estonia as an analogy strongly resemblance an availability heuristic.

Other actors drew different analogies: the Minister of International Development Cooperation thought of the situation as analogous to the earthquake in Bam, Iran in 2003. The Prime Minister also thought of the situation in terms of the earthquake only.[189] It seems that different uses of heuristics in many ways determined how one looked upon the situation: since a poor country such as Sri Lanka was hit, it came to be seen as primarily an aid-crisis.[190] Anna Helsén, the Prime Minister's Press Officer, thought it was an aid-crisis, since no journalists called her during the 26th.[191] This would be a typical example of a representativeness heuristic: if it were a crisis with a primarily Swedish dimension, journalists would be like hordes of gnus all over her: since there were none, it must be an aid-crisis. That it was an aid-crisis is also illustrated that it was the Minister of International Development Cooperation that represented the Government in questions related to the crisis.[192] An aid-crisis prescribes action (as is illustrated by the vivid response in relation to Sri Lanka). And by framing the situation in Thailand along consular lines it implied the opposite – inaction.

The situation in Thailand suffered from being seen as a strictly consular issue. This had grave implications.[193] By seeing it as a consular matter, it prescribed a certain type of action in line with representativeness. In 2003, a unanimous Riksdag had imposed strict restrictions on economic consular aid to Swedish citizens abroad. By not adjusting to the situation at hand properly (the anchoring heuristic), the regulations came to be followed in absurdum.[194] By the initial framing of the situation in Thailand as consular rather than catastrophic, the processing by heuristics ensured inadequate action. In a conversation between Nordlander and the State Secretary for Foreign Affairs, Hans Dahlgren, Nordlander stated that the SRSA "neither can, want nor is allowed to do anything"[195]. That the SRSA should be used in consular issues was at odds with what they were thought to do: development aid and relief.

The representative heuristic may also explain why Nordlander and Palm seemed to fail to grasp the severity of the situation initially. When they were told that the tsunami had laid hotels in Phuket in ruins, they found that this fact was not alarming in itself, since they thought of hotels near the beach in Phuket as bungalows, not Swedish built hotel complexes.[196] Had hotels repre-

---

[189] Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 72
[190] Statens offentliga utredningar, 2005a, pg. 128; Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 37
[191] Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 34
[192] Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 40
[193] Statens offentliga utredningar, 2005a, pg. 149
[194] Statens offentliga utredningar, 2005a, pg. 17
[195] Statens offentliga utredningar, 2005a, pg. 152
[196] Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 33

sented firm multi floor buildings in the minds of Nordlander and Palm, it can be speculated that they would have reacted quite differently to these news.

However, it is hard to find evidence that strictly is at all odds of rationality, a totally unreasonable assessment of the situation and actions made solely on impulse. Here, one could assign the Minister of Foreign Affair's decision to visit the theatre on the evening of the 26th. However, since it cannot be established nor confirmed that she had grasped the severity of the situation at that time (indeed, few of the members of her Ministry did), it is difficult to easily term the decision nonrational.

Question 4: Handling of Information

In regards to handling information, hypothesis 1 would expect to see the axiom of invariance, one of the strongest predictions of substantive rationality. Different characterizations of the same objective situation should render the same response. It would further also expect that new information is integrated into existing assessments in a Bayesian manner. Procedural rationality rather predicts the use of heuristics, such as anchoring. Hypothesis 3 expects none of the mentioned, but rather nonrational handling such as groupthink.

As stated above, the SOU stresses that the situation in Thailand was known at a very early stage within the Government Offices.[197] Apart from this fact, new information was constantly provided the MFA as phone calls began to come from early morning on December 26th, which was not incorporated or used in any higher degree.[198] Even though one could argue that this led to an overload effect, it is difficult to consider the information handling Bayesian.

As described above, the early framing of the situation in Thailand led to a classical anchoring effect. Even as new information increasingly rendered this picture more and more unlikely, adjustment was not sufficient. The very strict and narrow interpretation of the law of consular aid became more and more obsolete in the face of the growing tragedy; still it took until the 28th until a more generous interpretation was approved by the MFA.[199]

The interpretation of information can be considered insufficient, but so can also its distribution. This was especially the case when it came to informing the higher management and the political staffing of the Government Offices.[200] Even if Melén just had informed Nordlander of the situation on the early morning of the 26th,[201] Nordlander did not pass on the worrying parts of the

[197] Statens offentliga utredningar, 2005a, pg. 184
[198] Statens offentliga utredningar, 2005a, pg. 185
[199] Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 66
[200] Statens offentliga utredningar, 2005a, pg. 20
[201] Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 26

massage to Thöresson when he called him at 0735 AM.[202] According to Nordlander, the severity of the situation came apparent to him incrementally.[203] This kind of wishful thinking[204] can be seen as a representativeness: the model cannot produce this outcome, therefore it must be false. Neither Nordlander nor Thöresson thought it important to inform Dahlgren.[205] The fact that those civil servants answering the phone calls from Thailand had a more accurate picture of the situation than the top management was due to the unwillingness from mid-level officers to pass forward this information. This in turn led to inactivity from top-level bureaucracy and ministers.[206] This hardly conforms to substantive rationality.

Also the principle of invariance was (luckily) gravely violated. As stated above, the characterization of the situation within higher management was insufficient during the 26th. However, the turning point comes at a meeting within the highest bureaucratic and political management of the MFA on the morning of the 27th, 30 hours after the tsunami.[207] When Ambassador Jonas Hafström called from a devastated Khao Lak near Phuket to give his characterization of the situation, this rendered a different response and choice of course of action than before.[208] Even if Hafström may not have had presented any new figures over lost people, this emotional account changed the perception of the situation. It seems that it was not the emotions *per se* that rendered a different response from top-management, rather that it was an account from a well-known person, given a first-hand source picture of the devastation.

To find clear examples of groupthink in the material used proves much more difficult. Thereby not said that groupthink was not prevalent; only that those instances of concurrence-seeking are harder to prove than disprove in the study at hand. One could make the case that Thöresson, Nordlander and Palm shows some signs of groupthink – but the group is (very) small and not physically together.

Question 5: Actor Consistency

If actors acted in substantive rational way, we would expect that actors faced by the same objective conditions to act uniformly. However, if actors are believed to be rational only in the procedural sense, we would reasonably expect them to act heterogeneous, since they perceive the objective conditions of the situation subjectively. Actor consistency can be compatible with nonrational

[202] Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 32
[203] Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 33
[204] Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 72
[205] Statens offentliga utredningar, 2005a, pg. 188
[206] Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 41
[207] Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 70
[208] Statens offentliga utredningar, 2005a, pg. 148

actors as well, especially if we see signs of groupthink. Otherwise, we would not expect actors to act consistently other than by randomness.

Generally, it is hard to establish that there was an overall actor consistency in the Government Offices. Different departments reacted differently on the same information, and sections within the departments acted very differently from each other (the most notable example being the MFA). While a civil servant on the Ministry of Defense piled together information from media on the situation already at 0618 AM,[209] the National Board of Health and Welfare (which organizes all medical health care in Sweden) were not alerted until 0730 PM, leaving a crucial department inactive the whole first day.[210]

Groups within the departments with essentially the same information acted differently as well. As accounted for above, the Consular Office and the Office for Global Security in the MFA acted very differently, constantly struggling for different ways to respond to the crisis.[211] The behavior within the MFA in this regard bears more resemblance to territorial struggles than actor consistency. Given the situation at hand, this could even be classified as a nonrational behavior – were the status of one's group and its mandate becomes more important than the solving the situation. This is probably the one example which has the most features of groupthink in the empirical material. However, it may be more consistent with the public choice type of bureaucratic politics.[212]

But there is also actor inconsistency in the groups, between individuals. The difference between Melén and Nordlander/Palm in the Consular Office is striking. But there were also a very different approach between different civil servants taking incoming phone calls, among whom some are reported to have had difficulties in comprehending the extreme situation of the victims and how to adequately respond given the situation at hand.[213]

Civil servants off duty also responded very differently to information in the media. Lennart Brittner of the Ministry of Defense, who compiled the information from media at six in the morning to send it forward to colleagues, was at home and not on duty.[214] Counselor Hans Gyllenhammar, who was in Sweden on vacation, called Nordlander at lunch the 26th after watching CNN to ask if help was needed. Nordlander did not call back to him as promised, so Gyllenhammar called Palm instead, who answered that he could go to the MFA if he wished. When he arrived the MFA was empty except from a few persons operating the telephone switchboard. Gyllenhammar started taking calls and did so until 0100 AM. He had repeated contact with Palm during the day,

[209] Statens offentliga utredningar, 2005a, pg. 144
[210] Statens offentliga utredningar, 2005a, pg. 154
[211] Statens offentliga utredningar, 2005a, pg. 192
[212] Verbeek, Bertjan, and Stern, Eric K., 'Conclusions: Toward a Neopluralist Approach to Bureau-Governmental Politics', pg. 24
[213] Statens offentliga utredningar, 2005a, pg. 227
[214] Statens offentliga utredningar, 2005a, pg. 144

where he urged her to call in reinforcements, and reacted when he learned that only the normal number of officers on duty would work over night.[215] From the material, it seems to have been quite random which civil officers off duty who felt that the situation demanded extra-ordinary measures to be taken from their side, such as offer their services to the management on duty.

The evidence collected in relation to the five question are summarized in table 2. The analysis of this modest case study will now continue in line with the seven steps outlined on page 25. First the diagnosticity of the evidence is considered and a short evaluation of the sources. Thereafter a tentative conclusion is drawn, followed by a reconsideration of the evidence in light of the conclusion. Unlikely hypotheses are then refuted.

Results

Proceeding in line with the foundations of the method-section, the results are firstly evaluated by their plausible diagnostic value. Evidence that seem to strongly confirm one hypothesis may turn out to be of less value than expected if it turns out that it is also compatible with alternative hypotheses. If we consider the evidence collected in table 2, about ¾ of the evidence is of diagnostic value (it only supports one of the three hypotheses). Of these 13 instances, 85 percent supports only hypothesis 2 and 15 percent exclusively supports hypothesis 3. Thus, none of the evidence found solely supports hypothesis 1, although there are two instances when evidence supports both forms of rationality (both of these regards examples where the means are properly selected in relation to the goal).

Generally, all the evidence can be considered equally (un)reliable, since the design of this study implicates that there is only one source. Thus, most evidence collected should be correspondingly reliable. Naturally, there has been disagreement between the actors over the course of events.[216] The validity of this case study is heavily dependent on the considerations of the authors of the SOU. However, much of the evidence collected here are of the character where triangulation should have been possible: thus the reliability of different statements should be satisfactory. It is hard to believe that the material has been altered in a way so that the results of this study would be tremendously different.

To validate how the actors themselves perceived the report, I contacted Dan Hansén to ask if there had been any expressions of dissatisfaction with the reports, such as claiming of being misunderstood, being misquoted or if statements had been taken out of context. According to Hansén, the record of all interviews had been revised by the interviewees, and that it was these

[215] Statens offentliga utredningar, 2005a, pg. 188
[216] Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 23, note 4

revised versions that later was used in the report. Hansén had not heard of any dissatisfaction from the actors regarding his own final report.[217]

From the results and this discussion, a tentative conclusion would be to disregard hypothesis 1, since almost all evidence collected refutes it. The likelihood of hypothesis 3 as being the best explanation of the events is also quite low: 76 percent of the evidence is not compatible with it. This leaves us with hypothesis 2 as a possible explanation for the majority of the case: only 12 percent of the evidence cannot be explained by substantive rationality. In these cases the alternative hypothesis is the only reasonable explanation.

In a reconsideration of evidence, the absence of supporting evidence for hypothesis 1 becomes even more striking. For example, given the information at hand in the media and the Government Offices, the absence of actor consistency is remarkable, given hypothesis 1. The graveness of the situation at Khao Lak was evident in media and from accounts from victims, but it took until Hafström's characterization of the same situation on the morning of December 27th until a more accurate assessment was done by top-level management. The absence of clearly defined goals with the actions taken in the MFA also render hypothesis 1 implausible. However, there was often a streak of rationality in many actions. There is not much evidence pointing to a fully nonrational behavior. There are few signs of emotions determining actions, likewise were instances of possible groupthink symptoms surprisingly few in the material. In relation to hypothesis 2, however, there was evidence for satisficing and the different types of heuristic processing as well, and in line with expectations.

Given the share of diagnostic evidence for hypothesis 2, it can be considered quite certain (or most probable until refuted). Thus, it is not at first sight particularly sensitive to a few critical items of evidence. However, the empirical material is in itself preoccupied with only a few processes. In the case of the Government Offices and the MFA, much of the material is centered around the Consular Office, the Office for Global Security, SRSA, the management of the officers on duty and their handling of the crisis. Obviously, there is a lot more to a complex organization such as this. The conclusion reached here then is (by nature of the object of study) quite narrow, and its possibility for generalization is thus strictly limited. However, with this in mind, the questions of the plausibility probe captured most of the action reported in the SOU. But in relation to the whole picture, it is not insensitive to the evidence collected (if focused on other processes within the Government Offices or outside of it, it cannot be guaranteed that the same conclusion would be reached).

For an opposite conclusion to take place, we would have to see either a much clearer connection between goals and means, or more of nonrationality and less of rationality. By that I mean that important processes (such as how to interpret the situation) would have to be more clearly

[217] Hansén, Dan, 'E-mail regarding how actors percieved SOU 2005:104', 2012-05-04

affected by emotions, or that assessments were heavily influenced by structural constraints such as groupthink. If there were no examples of any heuristics being applied, this would considerably weaken hypothesis 2. Clear examples of calculating utility functions, consistency with invariance and dominance or no signs of rational processing at all would also render it unlikely that hypothesis 2 was true.

However, given the evidence at hand, the tentative conclusion seems more reasonable than any alternative. Considering the evidence, it is more unlikely for hypotheses 1 and 3 to be true than hypothesis 2. The reason for this is that the overwhelming majority of the evidence is incompatible with hypothesis 1 (88 percent), with no diagnostic evidence supporting it. In regards to hypothesis 3, 76 percent of the evidence does not support it, and of the total evidence collected, only 12 percent is diagnostic evidence supporting it. With these figures in mind, it is more likely that hypothesis 2 is true, given it being compatible with 88 percent of the total evidence, and that 73 percent of the evidence supporting it also is diagnostic.

Table 2. *Model of Information Processing in the Government Offices*

Question \ Hypothesis	**Hypothesis 1.** *Substantive Processing*	**Hypothesis 2.** *Procedural Processing*	**Hypothesis 3.** *Nonrational Processing*
Defined Goals			
Evidence			
Estonia reference	–	+	–
Consular budget	–	–	+
Connection Goals-Means			
Evidence			
Melén's actions	+	+	–
Actions of Consular Office	–	+	–
Actions of Office of Global Security (Sri Lanka & Thailand)	+	+	–
Assessment of Situation			
Evidence			
Analogies	–	+	–
Primarily an aid-crisis	–	+	–
The situation in Thailand is considered consular	–	+	–
Severity of crisis (hotel vs. bungalow)	–	+	–
Handling of Information			
Evidence			
Phone calls	–	+	+
Consular aid	–	+	–
Distribution of information	–	+	–
Characterization of situation	–	+	–
Actor Consistency			
Evidence			
Inter-department	–	+	–
Intra-department	–	+	+
Intra-office	–	+	–
Off-duty officers	–	–	+

Table 2. The model of information processing which is used to analyze the case. The hypotheses are derived from the three theories of rationality, and for each of the questions evidence is collected (see the assessment of each question above) which can either refute (indicated by a –) or confirm (+) the hypotheses.

DISCUSSION

FROM THE RESULTS ABOVE, it renders most likely that the actors are best characterized as rational in a procedural sense. Thereby not said that there were no signs of substantive rationality or non-rationality; indeed, the processes within the Government Offices the first 30 hours after the earthquake showed examples of all three models of information processing. However, the two later proved to have a much weaker explanatory power of the course of events than the former.

That procedural rationality would be the prevalent way of information processing is hardly unexpected. As outlined earlier, anything else would have been surprising. So, what has this study shown? What has it highlighted that we did not know before? Well, firstly, it has adhered to the call to clearly unravel how these processes may have affected the outcome, instead of merely taking them for granted. Secondly, with the help of heuristics, we have a plausible explanation for some of the actions that beforehand may seem rather confusing. Thus, it is possible to say (in line with the objectives of a plausibility probe) that these findings have shed some new light on old facts. Thirdly, the result has some implications on the policy recommendations of the SOU.

A quick glance on table 2 gives at hand that it is in the assessment of the situation and the handling of information were hypothesis 2 is relatively the strongest. In these instances, it seems more reasonable to expect actors to behave in a procedural rather than in a substantive rational way. However, the policy recommendations of the SOU emanates from the notion of the substantive rational actor.

The commission behind the SOU outline several suggestions for how to improve crisis management. A central suggestion is the creation of a permanent crisis center in the Government Offices, whose coordinating mandate and expertise probably would have led to a more vivid response to crises. The SOU brings forward successful organizational examples from Italy, France and Germany.

However, many of the suggestions emanates from the need to make an accurate early estimation of the situation at hand, in spite of uncertainty.[218] The SOU specifically points to the danger of the ambition to have the full picture of the situation before taking action.[219] This is also the foundation for the principle of caution (a more elaborate discussion of this principle will follow below), which the commission recommends should become a guideline for crisis management.[220]

Seen from substantive rationality, this is not problematic at all: we can expect that actors make a reasonable assessment of the situation even under uncertainty, and if faulty it will soon be corrected with further information. However, as we have seen from the investigation above, the matter of course is not always as straight-forward as this. Not only is the initial situation perceived subjectively by actors, it is also perceived differently across actors. And adjustment to new information is often insufficient.

After the tsunami, the response within the MFA varied in adequateness. The first line of officers on duty made a correct assessment of the situation. The second line, however, failed to do so.[221] A suggestion why it was so is that the management and the staff on the floor relied on different heuristics. This in turn leads to a series of mishandlings: reinforcements are not called in; the registration process becomes faulty at best;[222] the serving of information to higher levels of management becomes insufficient; there is a physical absence of management at the MFA.[223] If the management and the Ministers misperceive the situation, the initial correctly perception by the officers on duty becomes less important. All these mishaps can be argued originates from an initial misjudgment of the situation and the insufficient corrections in the face of shrinking uncertainty. Thus, there is no guarantee that a response would be more suitable if made earlier on: given the unfolding of events in the MFA, it is hard to see why actors would act otherwise than they did, given their use of heuristics and being procedurally rational.

The importance of the misperception of the situation by the management is further emphasized by Dan Hansén in his assessment of the course of events: if management had been physically in place at the MFA, it is not unlikely that the change of how the situation was framed would

[218] Statens offentliga utredningar, 2005a, pg. 303
[219] Statens offentliga utredningar, 2005a, pg. 297
[220] Statens offentliga utredningar, 2005a, pg. 300
[221] Statens offentliga utredningar, 2005a, pg. 14
[222] Statens offentliga utredningar, 2005a, pg. 16
[223] Statens offentliga utredningar, 2005a, pg. 20

have taken place on the afternoon of the 26th, instead of taking place at the meeting on the 27th.[224] However, by pursuing a satisficing strategy and staying at home, the initial response was delayed. It is hard to see why the actors would act differently if they adhered to the principle on making early judgments in situations of uncertainty. Why would they act differently, if they perceived the situation in a similar way? From this study, it seems that it is the perception of the situation that led to inaction: not some kind of fear of taking action on little information.

The SOU actually gives credence to the processing by heuristics. It states that people seem to handle by schemas in the face of crisis. People rely on experience and analogies – a kind of availability heuristic – which helps in assessing the situation and suggest courses of action. To have had connections to Thailand (such as having friends and family in the region) led to more accurate assessments, while other analogies (Bam 2003, 9/11) resulted in less accurate judgments.[225] The SOU is clearly aware of the processes and their importance, but does not seem to fully consider the implications of them.

It should be noted that some of the recommendations are in line with procedural – and substantive – rationality. The principle of caution recommends that in cases of uncertainty, it is better to do more than less. Even if it has some implications when it is formulated as 'it is better to act than not to' (see above), it works when seen as 'it is better to do more than less'. In procedural rationality, the principle of caution would help to mitigate anchoring effects. In the case studied, the strict adherence to consular laws proved to be an anchoring effect. If the principle 'it is better to do more than less' is applied, a more forgiving stance towards consular aid would be taken initially, rendering a anchoring effect that would have proven more accurate. In relation to an overarching goal of citizen wellbeing, it must be better to initially have a more generous stance until the nature of the situation is clear. The principle of caution also is compatible with the axiom of cancelation of substantive rationality: even if it may turn out that a crisis does not unfold, it is under circumstances of uncertainty rational to choose the option which would be the best if the crisis actually took place, all else equal.

Alternative recommendations

Having identified recommendations of the SOU that are at odds with the results of the case study (as well as recommendations in line with it), how can one make use of the findings to suggest alternative recommendations? Before turning to this delicate matter, it must be stressed that this thesis does not question the recommendations on institutional change (such as the establishment of a crisis center), rather the causes why action was inadequate in this particular case. From the

[224] Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet', pg. 71
[225] Statens offentliga utredningar, 2005a, pg. 298

material analyzed, it seems more probable that it was the specific form of information processing that led to inaction than fear or a general unwillingness to do so.

If one continues from this line of reasoning, the second step would be to see how system 2 can be activated at an earlier stage of uncertainty. As described above, system 2 allows for more elaborated information processing, overruling the initial erroneous judgments made by system 1. There are several ways of ensuring dependence on system 2 instead of system 1, including a higher degree of statistical sophistication, intelligence and the use of frequency formats.[226] However, since these measures are attributed on an individual level, it is difficult to implement these findings in a general recommendation for better information processing (except when recruiting individuals for these kinds of positions). Nevertheless, a successful way of activating system 2 is by manipulating attention, a measure that can be done methodologically. By manipulating attention, the perceived importance of neglected variables can become increased in a systematic way.[227]

What is it then that our attention should be manipulated to perceive? Well, this of course differs from situation to situation. For it to be manipulated, it must also be planned in advance. Thus, we need to identify what variables that must be manipulated beforehand. This is a delicate balance, which in essence goes hand in hand with the question when a situation turns from ordinary into crisis. What can help us to determine when ordinary means are inadequate, and what variables is it that we must highlight (to manipulate attention) to be able to make an adequate judgment of the situation? This paper suggests that the notion of risk can be of assistance. This discussion will finish by an elaboration on the concept of risk, and how to practically realize this concept in models for action in relation to the case studied.

The kinds of mishaps that occur from faulty information processing regarding the phenomenon studied in this thesis are what Perrow would call "discrete accidents". These are accidents that are graspable and allow for human intervention.[228] The possibility of these mishaps to occur can be considered as risks. By identifying risks, one can (theoretically) anticipate accidents or at least identify when they are in their beginning (as is the purpose of this paper).

The importance of being able to handle risks steams from the notion that some organizations must function regardless circumstances (which can fluctuate greatly, making it hard to rely on old lessons[229]), even in the face of crisis, since both the wider system as a whole and the general public expects so.

---

[226] Kahneman, Daniel and Frederick, Shane, 'Representativeness Revisited: Attribute Substitution in Intuitive Judgment', pg. 68
[227] Kahneman, Daniel and Frederick, Shane, 'Representativeness Revisited: Attribute Substitution in Intuitive Judgment', pg. 69
[228] Perrow, Charles, 'Normal accident at three mile island', pg. 18
[229] Weick, Karl E; Sutcliffe, Kathleen M. and Obstfeld, David, 'Organizing for High Reliability: Processes of Collective Mindfulness', pg. 35

Just as with perception, risks are partially subjectively. Even though there can be such an entity as real risk, risk is not observed until it has become a perceived risk in people's minds. These two types of risk sometimes (and often do not) correlate.[230] Thus, to forestall an accident in its infancy, the risk commonly has to be recognized beforehand.

Once recognized, not all risks deserve direct action. Rather, as long as the risk stays within certain boundaries (or limits, as they will be called below), the risk is considered acceptable.[231] If one consider risk as an expectation of what could happen, handling the risk becomes more purposeful.[232] And it is by being risk conscious (or "mindful" in Weick's terms) coupled with well-thought action that an organization can deal with the never-ending occurrences of surprises and events that fall outside normal routine.[233]

By planning and defining possible problems and risks, it becomes easier to define which information that is relevant and what is not. To have done this beforehand is especially important when the adverse effects of stress in a crisis situation are considered.[234] When stakes are highly valued, the possible failure or problem is complex, planning is imperative. It is necessary for successfully handling risks, but not sufficient. And one must be aware of the risks that come with the planning itself (such as familiarity and overconfidence).[235] Vertzberger claims that there is a risk of bias if the level of risk acceptability is set before risk estimation.[236] However, I think that there is a greater danger that one misses the truly important risks if one starts with risk estimation. The probability that the most important function of an organization fails is often very small, however it still is the crucial function and the one that must never fail. By putting too much emphasis on functions that run higher risks but are less important, one can end up making devastating priority errors. Here one can bring forward the need not to confuse subgoals with endgoals. Take the example of Laakso's announcement of two dead Swedes and the critique he received for stating this, despite it being true and relevant. The MFA instead thought it more important to avoid a possible slight increase in telephone calls. Or the desire to keep expenses down in the Consular Office, instead of providing necessary aid to exposed citizens.

To be able to plan one first has to identify possible risks. What is of interest here is the crucial processes that under no circumstances may fail, functions of an organization that the general public depend on for their well-being. These can be identified by posing three straight forward questions:

---

[230] Vertzberger, Yaacov, 1990, pg. 18
[231] Vertzberger, Yaacov, 1990, pg. 18
[232] Vertzberger, Yaacov, 1990, pg. 25
[233] Weick, Karl E; Sutcliffe, Kathleen M. and Obstfeld, David, 'Organizing for High Reliability: Processes of Collective Mindfulness', pg. 34
[234] Vertzberger, Yaacov, 1990, pg. 32
[235] Vertzberger, Yaacov, 1990, pg. 49
[236] Vertzberger, Yaacov, 1990, pg. 25

I. What do people/the wider system count on?
II. What do people/the wider system expect from the things they count on?
III. In what ways can the things people/the wider system count on fail?[237]

In the case of the MFA and the Consular Office, the answers to these questions will obviously be somewhat arbitrarily, since one cannot know for sure unless one performs a general survey. However, one can make an estimate. We can reasonable expect that citizens abroad expect some kind of guarantee for their wellbeing, albeit not of the far-reaching character as they would expect at home. However, the SOU states that with the increasing internationalization, the capacity for the state to provide fundamental services abroad in crisis has to be developed.[238] It is reasonable to expect that if a crisis takes place in a region with many Swedish citizens, they will count on assistance from the Swedish State. Thus, we can presume that the general public expects some kind of relief, and given the magnitude of the tsunami crisis, it would be evacuation or help to evacuate to Sweden, to receive further treatment at home. This may become unrealizable by various reasons: evacuation and relief may be considered inadequate given the overall gains (not enough people are affected nor hurt for private initiatives not being sufficient), or that the situation is misperceived by the MFA.

After considering these risks, it ultimately comes down to the question of numbers. As long as the number of affected people is sufficiently small, there should be no problem for private travel companies to ensure the safety of their customers. This was also the initial standpoint of the government.[239] However, as soon as a large number of people are simultaneously affected these rules of procedure clearly become inadequate. This is due both the limited capacity of private corporations, but also that the number of people indirectly affected becomes vast. Melén's initial estimation was that the MFA could expect 20 phone calls per victim; given that there where at least 30,000 Swedes in the area, this would mean 600,000 phone calls to the MFA. This consequently implies that as soon as the affected number reaches certain figures, extra-ordinary measures must be taken.

In relation to the MFA, the number of Swedes residing in the same region at any given time could be the variable that should always be attended to. As soon as the number is big enough (such as 30,000 in a small area as Phuket), the situation should be more carefully watched in that specific area. To be able see these small deviations from the normal picture it is necessary to establish what is considered "normal". In intelligence analysis this is called the normal picture or normal state of affairs. By painting what is considered the normal picture of the risk studied, and thereafter carefully watch for small deviations and anoma-

[237] Weick, Karl E. and Sutcliffe, Kathleen M. 2007, pg. 51
[238] Statens offentliga utredningar, 2005a, pg. 282
[239] Statens offentliga utredningar, 2005a, pg. 130

lies,[240] it becomes easier to detect a future failure in its infancy by the guidelines above. The proposed strategies above to handle risk and avoid failure are costly in terms of cognitive capabilities, time and resources.[241] There are also limits in cognitive capabilities in how much information that can be processed at once in the individual working memory ("the magical number 7±2").[242] To structure the information searching process, it is also possible to make use of the concept of acceptable risk,[243] in the ways of establishing limiting factors.

The concept of limiting factors is a technique used to estimate possible intentions and capabilities of an adversary in intelligence, but functions just as well with other disturbances (such as natural disasters). By inductively reasoning or consulting the normal picture, one can set out limits which within the risk must be contained to be acceptable. The technique of surveillance of limiting factors is very well-suited when concerned with vast and complex structures.[244] It is also well-suited to study incremental change. It is also less sensitive to surrounding factors such as the impact of crisis and stress. Even if there may be several information processes running simultaneously in an organization, it becomes fairly easy to study changes in them if limiting factors has been set beforehand.

Thus, transformed to the settings of the MFA, by establishing limiting factors by the way of numbers of Swedish citizens in a given area, it is possible to highlight which regions in the world where possible crises of the magnitude of the tsunami can take place. Thereafter, it is enough just to surveillance deviations from the normal picture: as soon as there is a sufficient disturbance (such as a nearby earthquake), precautionary measures should be taken and a thorough surveillance of the situation set in. And this is done automatically, with as little individual judgment as possible. This also is in line with the principle of caution.

By this kind of functioning, it is possible to manipulate attention to lessen the degree of faulty information processing by heuristics. It is also a quite readily done measure, which should be able to quite easily be incorporated in the workings of the Consular Office. But foremost, the suggestions above have bearing on psychology and the findings of how information processing *actually* took place, and not only how it *should* take place.

---

[240] Agrell, Wilhelm, 2009, pg. 76*ff*
[241] Janis, Irving L. and Mann, Leon, 1977, pg. 22
[242] Heuer, Richards J., 1999, pg. 27
[243] Vertzberger, Yaacov, 1990, pg. 18
[244] Agrell, Wilhelm, 2009, pg. 88

CONCLUSION

THIS THESIS SET OFF TO INVESTIGATE how different models of rationality manifest themselves in crisis. The study has shown that behaviour that accounts for all three types of rationality can be identified, and that one solely model is insufficient to explain all actions. However, it also showed that one model better predicted most of the actions in the handling of the tsunami crisis in the Government Offices than the others; the procedurally rational model. This does not come as a surprise. However, instead of presuming a certain model of rationality, this thesis has set out to study it. It has tried to make clear how it can explain outcomes (by studying in what way actors process information and act upon it) and in what ways (by explaining actions that otherwise might seem difficult to understand). The thesis has also shown that by (unconsciously) adopting a certain model of rationality, it will also have bearing on what kinds of policy recommendations that one suggests. In this case, some parts of the policy recommendations may prove insufficient, since actor behaviour suggests another model of rationality than presumed. The thesis has offered an alternative recommendation, which builds on the findings of this study and is adopted to work with procedurally rational actors. The thesis has also illustrated how psychological concepts can explain actions in a crisis with political dimensions.

It should be stressed once again that information processing and ways of doing it does not alone explain a case such as this. Nevertheless, it may still prove to be contributively, offering a partial explanation. To investigate which kind of rationality which is dominant

within a certain setting can be important when setting recommendations for improving action, since the recommendations may prove ineffective if they presuppose a different model of rationality. One cannot presume that a certain model of rationality is prevalent in a certain setting. To presuppose procedural rationality may lead to a faulty understanding of actors' behaviour. As this study has shown, there may be institutional settings which promote substantive rationality. There may be structures that manipulate attention so to improve information processing. In the same manner, there may also be incentives which promote different kinds of non-rational behaviour.

Given the results of the study, and the implications thereof, the question if different models of rationality have any importance in explaining behaviour in crisis probably can be answered affirmatively. This plausibility probe indicates that it could be worthwhile making a more thorough study, using a developed version of the method of this thesis.

Concluding Remarks

In the absence of a more elaborate tool for assessing rationality, I think that the model used in this thesis proved adequate enough. It captured the most essential parts of the information processing model, clearly distinguishing between different hypotheses.

In my opinion, the most interesting part of this thesis is how the different theoretical notions of rationality can be operationalized to study real life situations. By using the model developed for this thesis, one can set out to study many other instances of actions. One could set out to investigate different historical cases, where there is a detailed account of how the actors thought when they handled. Or one can take a seemingly nonrational decision (regarding religion or emotions) and see if there is not some trace of rationality. In many cases, it may help to us to understand other people, to be able to see why they behaved in a certain way. For myself, the different heuristics presented in this paper has helped me to understand why I sometimes act as I do, and think as I think.

BIBLIOGRAPHY

ARTICLES

Bar–Joseph, Uri, and Kruglanski, Arie W., 'Intelligence Failure and Need for Cognitive Closure: On the Psychology of the Yom Kippur Surprise', *Political Psychology*, 24 (2003), 75–99

Brändström, Annika; Bynander, Fredrik and t' Hart, Paul, 'Governing by looking back: Historical analogies and crisis management', *Public Administration*, 82 (2004), 191–210

Cohen, Jonathan L., 'Can Human Irrationality Be Experimentally Demonstrated?', *The Behavioral and Brain Sciences,* 4 (1981), 317-370

Crawford, Neta C., 'The passion of world politics: Propositions on emotion and emotional relationships', *International Security*, 24 (2000), 116–156

Heath, Anthony, 'The rational model of man', *European Journal of Sociology*, 15 (1974), 184–205

Miljkovic, Dragan, 'Rational choice and irrational individuals or simply an irrational theory: A critical review of the hypothesis of perfect rationality', *Journal of Socio-Economics*, 34 (2005), 621–634

Miller, George A., 'The magical number seven, plus or minus two: some limits on our capacity for processing information.', *Psychological review*, 63 (1956), 81-97

Perrow, Charles, 'Normal accident at three mile island', *Society*, 18 (1981), 17–26

Simon, Herbert A., 'Rational choice and the structure of the environment.', *Psychological Review; Psychological Review*, 63 (1956), 129–138

---, 'The Logic of Rational Decision', *The British Journal for the Philosophy of Science*, 16 (1965), 169–186

---, 'Human nature in politics: The dialogue of psychology with political science', *The American Political Science Review*, Vol. 79, No. 2 (1985), 293–304

---, 'Decision Making: Rational, Nonrational, and Irrational', *Educational Administration Quarterly*, 29 (1993), 392–411

Tversky, Amos and Kahneman, Daniel, 'Judgment under Uncertainty: Heuristics and Biases', *Science*, New Series, 185 (1974), 1124–1131

Verbeek, Bertjan, and Stern, Eric K., 'Conclusions: Toward a Neopluralist Approach to Bureau-Governmental Politics', *Mershon International Studies Review*, 42 (1998), 240–255

Weick, Karl E.; Sutcliffe, Kathleen M. and Obstfeld, Daniel, 'Organizing and the process of sensemaking', *Organization science*, 2005, 409–421

BOOKS

Agrell, Wilhelm, 2009: *Underrättelseanalysens metoder och problem: medan klockan tickar*. Malmö: Gleerup

Almond, Gabriel A., 'Rational Choice Theory and the Social Sciences' in Monroe, Kristen R., and Anthony Downs, 1991: *The economic approach to politics : a critical reassessment of the theory of rational action.* New York, NY: HarperCollins

Boin, Arjen; 't Hart, Paul; Stern, Eric K. and Sundelius, Bengt, 2005: *The politics of crisis management: public leadership under pressure* . Cambridge: Cambridge University Press

Brennan, Geoffrey, 'Comment: What Might Rationality Fail to Do?' in Cook, Karen S., and Levi, Margaret, 1990: *The limits of rationality*. Chicago: University of Chicago Press

Buehler, Roger; Griffin, Dale W. and Ross, Michael, 'Inside the Planning Fallacy: The Causes and Consequences of Optimistic Time' in Gilovich, Thomas; Griffin, Dale W. and Kahneman, Daniel, 2002: *Heuristics and biases : the psychology of intuitive judgement*. New York: Cambridge University Press

Chapman, Gretchen B. and Johnson, Eric J., 'Incorporating the Irrelevant: Anchors in Judgments of Belief and Value' in Gilovich, Thomas; Griffin, Dale W. and Kahneman, Daniel, 2002: *Heuristics and biases : the psychology of intuitive judgement*. New York: Cambridge University Press

Cook, Karen S. and Levi, Margaret, 1990: *The limits of rationality*. Chicago: University of Chicago Press

Cook, Karen S. and O'Brien, Jodi A., 'Comment: Individual Decision Making versus Market-Level Predictions: The Applicability of Rational Choice Theory' in Cook, Karen S. and Levi, Margaret, 1990: *The limits of rationality*. Chicago: University of Chicago Press

De Bondt, Werner F. M. and Thaler, Richard H., 'Do Analysts Overreact?' in Gilovich, Thomas; Griffin, Dale W. and Kahneman, Daniel, 2002: *Heuristics and biases : the psychology of intuitive judgement*. New York: Cambridge University Press

Eckstein, Harry, 'Case Study and Theory in Political Science' (chapter 6) in Gomm, Roger; Hammersley, Martyn and Foster, Peter, 2000: *Case study method : key issues, key texts* London: SAGE

Elster, Jon, 'When Rationality Fails' in Cook, Karen S. and Levi, Margaret, 1990: *The limits of rationality*. Chicago: University of Chicago Press

Esaiasson, Peter; Gilljam, Mikael; Oscarsson, Henrik and Wängnerud, Lena, 2007: *Metodpraktikan*. Stockholm: Norstedts Juridik

Frederick, Shane, 'Automated Choice Heuristics' in Gilovich, Thomas; Griffin, Dale W. and Kahneman, Daniel, 2002: *Heuristics and biases : the psychology of intuitive judgement*. New York: Cambridge University Press

George, Alexander L. and Bennett, Andrew, 2005: *Case studies and theory development in the social sciences*. BCSIA studies in international security, Cambridge, Mass.: MIT

George, Roger Z. and Bruce, James B., 2008: *Analyzing intelligence : origins, obstacles, and innovations*. Washington, D.C.: Georgetown University Press

Gigerenzer, Gerd; Czerlinski, Jean and Martignon, Laura, 'How Good Are Fast and Frugal Heuristics?' in Gilovich, Thomas; Griffin, Dale W. and Kahneman, Daniel, 2002: *Heuristics and biases : the psychology of intuitive judgement*. New York: Cambridge University Press

Gilbert, Daniel T., 'Inferential Correction' in Gilovich, Thomas; Griffin, Dale W. and Kahneman, Daniel, 2002: *Heuristics and biases : the psychology of intuitive judgement*. New York: Cambridge University Press

Gilovich, Thomas; Griffin, Dale W. and Kahneman, Daniel, 2002: *Heuristics and biases : the psychology of intuitive judgement*. New York: Cambridge University Press

Griffin, Dale W. and Tversky, Amos, 'The Weighing of Evidence and the Determinants of Confidence' in Gilovich, Thomas; Griffin, Dale W. and Kahneman, Daniel, 2002: *Heuristics and biases : the psychology of intuitive judgement*. New York: Cambridge University Press

Hadenius, Axel, 1984: 'Att belägga motiv', in Hadenius, Axel; Henning, R. & Holmström, Barry, 1984: *Tre studier i politiskt beslutsfattande*. Uppsala: Acta Universitaris Upsaliensis

Heuer, Richards J., 1999: *Psychology of intelligence analysis*. Washington, D.C.: Center for the Study of Intelligence, Central Intelligence Agency

Janis, Irving L. and Mann, Leon, 1977: *Decision making : a psychological analysis of conflict, choice, and commitment*. New York: The Free Press

Jervis, Robert, 1976: *Perception and misperception in international politics*. Princeton, N.J.: Princeton U.P.

Jones, Bryan D., 2001: *Politics and the Architecture of Choice: Bounded Rationality and Governance*. University of Chicago Press

Kahneman, Daniel and Frederick, Shane, 'Representativeness Revisited: Attribute Substitution in Intuitive Judgment' in Gilovich, Thomas; Griffin, Dale W. and Kahneman, Daniel, 2002: *Heuristics and biases : the psychology of intuitive judgement*. New York: Cambridge University Press

Khong, Yuen Foong, 1992: *Analogies at war : Korea, Munich, Dien Bien Phu, and the Vietnam decisions of 1965*. Princeton, N.J.: Princeton University Press

Monroe, Kristen R., and Downs, Anthony, 1991: *The economic approach to politics : a critical reassessment of the theory of rational action*. New York, NY: HarperCollins

Nisbett, Richard E; Krantz, David H; Jepson, Christopher and Kunda, Ziva, 'The Use of Statistical Heuristics in Everyday Inductive Reasoning' in Gilovich, Thomas; Griffin, Dale W. and Kahneman, Daniel, 2002: *Heuristics and biases : the psychology of intuitive judgement*. New York: Cambridge University Press

Schwarz, Norbert and Vaughn, Leigh Ann, 'The Availability Heuristic Revisited: Ease of Recall and Content of Recall as Distinct Sources of Information' in Gilovich, Thomas; Griffin, Dale W. and Kahneman, Daniel, 2002: *Heuristics and biases : the psychology of intuitive judgement*. New York: Cambridge University Press

Sloman, Steven A, 'Two Systems of Reasoning' in Gilovich, Thomas; Griffin, Dale W. and Kahneman, Daniel, 2002: *Heuristics and biases : the psychology of intuitive judgement*. New York: Cambridge University Press

Stanovich, Keith E. and West, Richard F. 'Individual Differences in Reasoning: Implications for the Rationality Debate?' in Gilovich, Thomas; Griffin, Dale W. and Kahneman, Daniel, 2002: *Heuristics and biases : the psychology of intuitive judgement*. New York: Cambridge University Press

't Hart, Paul; Stern, Eric K. and Sundelius, Bengt, 1997: *Beyond groupthink : political group dynamics and foreign policy-making*. Ann Arbor, Mich.: University of Michigan Press

Teorell, Jan and Svensson, Torsten, 2007: *Att fråga and att svara : samhällsvetenskaplig metod*. Stockholm: Liber

Tversky, Amos, and Kahneman, Daniel, 'Extensional versus Intuitive Reasoning: The Conjunction Fallacy in Probability Judgment' in Gilovich, Thomas; Griffin, Dale W.

and Kahneman, Daniel, 2002: *Heuristics and biases : the psychology of intuitive judgement*. New York: Cambridge University Press

---, 'Rational Choice and the Framing of Decisions' in Cook, Karen S. and Levi, Margaret, 1990: *The limits of rationality*. Chicago: University of Chicago Press

Vertzberger, Yaacov, 1990: *The world in their minds : information processing, cognition and perception in foreign policy decisionmaking*. Stanford, Calif.: Stanford University Press

Weber, Max, (1922) 1983: *Ekonomi and samhälle: förståendesociologins grunder. 1, Sociologiska begrepp and definitioner. Ekonomi, samhällsordning and grupper*. Lund: Argos

Weick, Karl E. and Sutcliffe, Kathleen M. 2007: *Managing the unexpected : resilient performance in an age of uncertainty*. San Francisco: Jossey-Bass

Weick, Karl E; Sutcliffe, Kathleen M. and Obstfeld, David, 'Organizing for High Reliability: Processes of Collective Mindfulness' in Boin, Arjen, 2008: *Crisis management*. Los Angeles: SAGE Publications

Internet urls

'Criterion of falsifiability (philosophy of science) -- Britannica Online Encyclopedia' <http://www.britannica.com/EBchecked/topic/201091/criterion-of-falsifiability> [Accessed 12 April 2012]

'Indian Ocean tsunami of 2004 -- Britannica Online Encyclopedia' <http://www.britannica.com/EBchecked/topic/1027119/Indian-Ocean-tsunami-of-2004> [Accessed 30 April 2012]

'Thailand: Year In Review 2005 -- Britannica Online Encyclopedia' <http://www.britannica.com/EBchecked/topic/1090393/Thailand-Year-In-Review-2005?anchor=ref865277> [Accessed 30 April 2012]

Reports and personal correspondence

Hansén, Dan, 'Den svenska hanteringen av tsunamikatastrofen: fokus på Regeringskansliet' in Statens offentliga utredningar: *Sverige och tsunamin. Expertrapporter från 2005 års katastrofkommission*. Stockholm: SOU 2005:104

---, 'E-mail regarding how actors percieved SOU 2005:104', 2012-05-04

Lennquist, Sten, and Timothy Hodgetts, 'Den svenska sjukvårdens ledning and funktion i samband med tsunamikatastrofen i Sydostasien 26 december 2004' in Statens offentliga utredningar: *Sverige och tsunamin. Expertrapporter från 2005 års katastrofkommission*. Stockholm: SOU 2005:104

Statens offentliga utredningar, 2005a: *Sverige och tsunamin. Huvudrapport från 2005 års katastrofkommission*. Stockholm: SOU 2005:104

Statens offentliga utredningar, 2005b: *Sverige och tsunamin. Expertrapporter från 2005 års katastrofkommission*. Stockholm: SOU 2005:104