A Structured Approach to Extract Strategic Objective Categories from Textual Sources

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Abstract: This paper employs a structured approach to extract strategic decision maker objectives from textual sources as part of a problem structuring activity for constructing decision-aiding models based on historical decisions. It focuses on textual sources as access to original decision makers cannot be guaranteed. The approach combines multiple methods to first identify a comprehensive set of possible decision maker objectives for historical decisions and then map them to a smaller and more manageable set of objective categories. The usefulness and consistency of these objective categories is tested by applying them to an analysis of Australian post-cold war strategic decisions regarding the employment of military force. These objective categories provide an auditable and useful means to structure interviews with decision makers that will inform the modelling process. Objectives were first identified in primary source texts using a method based on directed content analysis (DCA). These objectives were then vetted for possible redundancy using a similarity measure based on Euclidean distance. Next these objectives were structured using *value focused thinking* into a manageable set of objective categories. Finally, the usefulness and consistency of these objective categories was assessed by comparing analyses using these categories of two Australian strategic decisions using two data sources.

This initial problem structuring activity builds on a previous analysis of strategic decisions on East Timor during 1999 (Coutts, 2010) and will be followed by more detailed studies that will include interviews that lead to detailed modelling of the objectives, influences and reasoning behind these decisions. Such decisions are studied by analysts in order to understand the implications of different strategies, improve strategic models and thus better inform future decisions (Auerswald, 2004; Fredrickson and Mitchell, 1984). Employing a structured approach to study these decisions will complement existing research conducted through the political science and international relations disciplines through the concept of methodological triangulation (Webb et al., 1966).

However, challenges exist in structuring a study of historical strategic decisions. When structuring a current decision support problem, analysts can rely on reasonable access to stakeholders and/or decision makers due to the perceived immediacy of the benefits of participation. However such access is often more constrained for historical decisions where there is no immediate pressure on the decision maker to participate and instead the analytical challenge is to structure the study through other means. Of particular concern is the need to structure, and provide rigour to, the design of rare interviews with busy strategic decision makers. Hence the intent of this paper is to produce a manageable and defendable set of objective categories to inform interview design.

Keywords: *Euclidean distance, Value Focused Thinking, problem structuring, historical decision analysis*

1. INTRODUCTION

As part of a problem structuring activity[1], the intent of this paper is to employ a structured approach to elicit decision maker objectives for past strategic decisions and map them to a more manageable set of objective categories. A structured approach provides a transparent, auditable and repeatable means to investigate historical strategic decisions. Such an approach will support more consistent comparisons across a number of similar studies to a higher degree of fidelity and with greater confidence in the results[2]. Structured methodologies such as the analytical heirarchical process (AHP) have been used on a number of occassions to investigate historic military strategic decisions (T. Saaty, 2005; T. L. Saaty, 2008; T. L. Saaty et al., 1982).

Support for a structured analytical approach can also be found in the international relations and political science literature. Wasserman (2008) recognised the trend in international relations to turn to other diciplines to better understand strategic decisions. Hickman (2008) identified the need for strategic analysts to adopt systems based methodologies, such as problem structuring methods (PSMs), to address complex decision problems involving multiple stakeholders and perspectives. Indeed the value of structured and systems based approaches in supporting business and societal strategic decisions has long been acknowledged (Coyle, 2004; Mingers et al., 2004). This trend has also been successfully extended to multi-methodological studies. For example, soft systems methodology (SSM) (Checkland and Poulter, 2006) was combined with *value focused thinking* (Keeney, 1996) in order to construct a multi-criteria decision model of decisions on energy infrastructure across multiple stakeholders (Neves et al., 2009).

This problem structuring study requires that a number of historical decisions be reviewed, without access to the relevant strategic decision makers, in order to inform the design of model building interviews. Analytical methods are therefore required that can provide a relatively broad analysis of a number of decisions and are capable of using textual sources as the sole inputs in the place of access to the decision makers. In this case, the fidelity of a method can be traded-off against its ability to provide greater analytical breadth as well as its suitability for analysing textual data sources.

Two structured methods were identified in the literature as having been used in historical studies: the analytical heirarchy process (AHP) and the soft systems methodology (SSM). The strength of the AHP approach is its ability to elicit consistent decision maker judgements on the importance of different attributes within a multi-attribute decision model (T. L. Saaty, 2008). However the method does not provide a structured means to elicit objectives without substantial access to the decision makers (T. L. Saaty et al., 1982). Similarly, SSM involves building conceptual system models based on different stakeholder worldviews (Checkland et al., 2006) which again requires substantial access to the decision makers. While it is possible to establish a rigorous approach to use these methods in the absence of stakeholders, for example the authors' use of SSM to study an historical strategic decision (Coutts, 2010), this requires substantial time and effort per analysed decision which will constrain the analytical breadth of this study. As a result, both the AHP and SSM approaches outlined earlier are considered not suitable for this exploratory study and other methods are required.

2. METHODOLOGY

The multi-method analytical approach selected for this problem structuring activity is based on two key realities encountered in studying historical decisions. First, the level of access to the decision maker cannot be guaranteed, either because the decision occurred too far in the past or the decision makers have little time available for interviews. Consequently problem structuring is conducted primarily using textual sources and the approach must effectively interrogate textual data sources to **elicit** decision maker objectives and **structure** these objectives into objective categories. These categories will provide a more viable basis[3] for structuring interviews with relevant decision makers and provide a basis to structure modelling of these decisions. Second, due to this lack of access to decision makers, there may be no opportunity to gain direct feedback on the resulting categories and hence, the **usefulness of the categories** may be in question.

[1] This is based on the understanding that the complexity and uniqueness of investigating the motivations and influences regarding historical national security decisions defies their categorisation as problems solvable by purely analytical techniques. Instead they should be seen as problem situations that require structuring, or managing, in order to identify problems to solve (Mingers and Rosenhead, 2004).

[2] Within this paper, the terms OR and systems are used interchangeably to describe structured analytical methodologies used for decision analysis.

[3] Than the than the much larger set of objectives.

Based on these observations, a three-stage analytical approach was identified to meet the aims of this study: Elicitation; Structuring; and Assessing Usefulness. This is similar to the three-step approach identified by Neves et al. (2009) and used to construct a multi-criteria decision model of decisions on energy infrastructure, albiet without access to key stakeholders. These stages are discussed in the following paragraphs.

Stage 1 will review primary textual sources, identify decision maker objectives as themes in the text and map them to an objective from the provisional set of objectives. The provisional set of objectives is initially based on a preliminary set of objectives developed by the author (Coutts, 2010) but is added to as new objectives are identified. As part of the coding process, the frequency of the mention of each objective is recorded and this frequency data is used to identify possible redundant objectives. Additionally it is recorded whether the objective was cited as a reason for or against deploying. In Stage 2, these objectives are structured via *value focused thinking* (Keeney, 1996) into a manageable set of decision maker objective categories. In Stage 3 the usefulness and consistency of the objective categories, and hence their suitability to inform the design of follow on studies, is assessed by applying them to analyse the impact of objectives cited in both primary and secondary sources on decisions to deploy. These stages, as well as previous research used in the study, are described in greater detail in the following paragraphs.

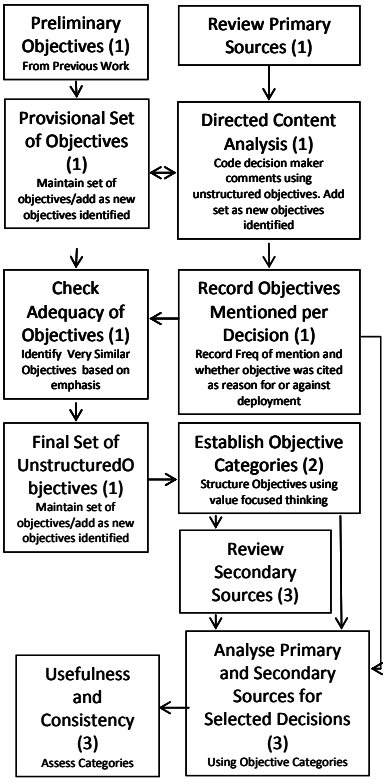

Figure 1 Three Stage Process to Establish Objective Categories

Previous Work

A preliminary study (Coutts, 2010) employed soft systems methodology to understand the Australian strategic decisions on East Timor during 1999. In particular, the study investigated "who were the key stakeholders involved in the decision, how they viewed the problem and what factors influenced their decision" (Coutts, 2010, p. iii) using a wide range of primary source material. The study identified twelve objectives that were evident in statements on the decision process. These objectives are listed in Table 1 with a brief description[4].

Table 1 Preliminary Set of Objectives

Objective	Definition
Australian Economy	Avoid negative economic impact of deployment.
Multi-Lateral Support	Increase the level of international support for the proposed deployment.
Indonesian Relationship	Decrease negative impact of proposed deployment on the relationship with Indonesia.
Public Pressure	Increase positive impact of public opinion arising from a proposed deployment.
Military Capability	Minimise the impact of the proposed deployment on ADF capability.
Historical Obligations	Increase the level to which Australia repays perceived historical debts[5].
Australian Reputation	Minimise impact of proposed deployment on Australia's international reputation.
Promoting Democracy	Maximise support to democracy through proposed deployment.
International Expectations	Increase the level to which Australia meets international expectations.
Avoid Armed Conflict	Avoid the risk of unintended armed conflict arising from a proposed deployment.
Long Term Stability	Minimise impact of proposed deployment on the long term stability of host country.
Humanitarian Concerns	Maximise the positive impact on human rights.

Stage 1 – Eliciting Objectives

A characteristic of this study is a reliance on primary textual sources that record statements by the decision makers at the time of the decision[6]. It may be argued that "reading someone's mail is not the same as reading their mind" (Keegan, 2004, p. 4). That is, decision makers make public only what they want you to know. However, the same doubts also exist regarding decision maker statements made after the event. It is therefore

[4] Note some themes that are directly related to specific aspects of conducting operations during the proposed deployment to East Timor in 1999 have been omitted from this list.

[5] For example, the perceived debt that some world war 2 veterans, and by extension the wider community felt towards the East Timorese for protecting them from the Japanese in 1942.

[6] In this paper, **primary sources** are defined as "original materials…from the time period involved [which] have not been filtered through interpretation or evaluation" (University of Maryland, 2001). **Secondary sources** are defined as "accounts written after the fact with the benefit of hindsight... [t]hey are interpretations and evaluations of primary sources" ("Primary, Secondary and Tertiary Sources.," 2001).

reasonable to conduct this exploratory study using primary textual sources in the understanding that the resulting data and insights will be contrasted and verified against interviews and secondary sources in later studies.

A rigorous qualitative method was therefore required to analyse these textual sources and elicit objectives. Three postulates have been suggested as necessary in establishing rigor in qualitative research (Schutz, 1973 in Fereday and Muir-Cochrane, 2006):

1. The postulate of logical consistency.
2. The postulate of subjective interpretation.
3. The postulate of adequacy.

The first postulate requires that the conceptual framework and methods adopted for the research be clear and logical. The second requires that subjective interpretation is grounded in the context of the action or event under study. Finally the third postulate requires that interpretations and constructs based on the data must be consistent with the experience of those involved in the events under study.

Fereday et. al. (2006, p. 91) demonstrated how a method that "involves a balance of deductive coding[7] (derived from the philosophical framework) and inductive coding (themes emerging from [the data])" can be applied to address these postulates in a way "that demonstrates rigor within a qualitative research study". The key aspects of their approach included: establishing and managing a list of codes; using those codes to label themes in the data to capture "the qualitative richness of the phenomenon" (Fereday et al., 2006, p. 83) and testing the reliability of the coding process. While the authors were primarily interested in the existence of themes in the analysis rather than detailed content, the principles of their approach are readily adapted to a more structured content analysis.

Content analysis is used to develop knowledge of a phenomenon under study by the "subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns" (Hsieh and Shannon, 2005, p. 1278). Coding is used to map large amounts of text into a smaller set of categories. Categories here "are patterns or themes that are directly expressed in the text or are derived from them through analysis" (Hsieh et al., 2005, p. 1285). Different content analysis approaches are available to suit the analytical context. A DCA uses existing research to establish an initial coding scheme to analyse the text (Kyngäs and Vanhanen, 1999). The coding scheme is revised and additional codes may be developed as analysis proceeds.

Based on these insights, this study employed DCA for Stage 1 of the process. Existing decision objectives that were developed from a previous relevant study (Coutts, 2010) were used as a starting point for the coding scheme. The primary textual sources were reviewed for each decision and coded using the coding scheme. This involved maintaining a record that linked a passage in the text containing a theme of interest with an objective from a provisional set of objectives. The number of times that an objective was identified in the text and coded for each decision was therefore able to be determined and used as an indicator of the decision maker's emphasis of that objective for each decision. While it is acknowledged that the frequency at which a concept is mentioned is not always an accurate reflection of qualitative emphasis (Wenestam and Wass, 1987), it is used here in a limited fashion only, to identify similarities between objectives. Follow on studies will increase the validity of the objectives used through contrast with other data sources.

As new objectives were identified, they were defined and added to the coding scheme. This process resulted in a table of unstructured objectives applicable generally to Australian decisions on the employment of military force during the period of interest and is illustrated in **Error! Reference source not found.**. Applying this process to each of the primary textual sources produced a record of decision maker emphasis for that objective in each decision, whether the objective was cited as a reason for or against the deployment and an audit trail linking each occurrence of an objective to the original textual passage.

This process addressed the first two postulates for establishing rigour in qualitative studies. However, in order to address the third postulate (adequacy), some verification of the coding process was necessary. While ideally this should involve review by subject matter experts (decision makers and/or strategic analysts), it was outside the scope of this initial structuring study and will be addressed in later studies. Instead, adequacy

[7] Deductive coding here refers to the qualitative process of identifying an important or relevant piece of information or theme (seeing) in the text, then "encoding it (seeing it as something) prior to a process of interpretation"(Fereday et al., 2006). Encoding here is achieved here by mapping a key word (tag) to relevant piece of information to facilitate later retrieval and analysis (Denzin and Lincoln, 2000). Hence where Figure 1 refers to "Code decision maker comments" it implies linking a piece of information in the text and associating it with a code which in this case is an objective.

in this study focuses on identifying and reducing redundancy in the codes (objectives). That is, establishing a level of confidence that the set of objectives are a reasonable and efficient set of variables to describe the various influences on these decisions. Possible redundancy between objectives was assessed by first measuring the level of similarity between objectives for each decision. This assessment relied on the frequency data (equated here to decision maker emphasis[8]) that was produced through the coding process[9]. The definitions of objectives that were found to be very similar through this process were then reviewed and compared to determine if they were actually redundant objectives.

A ten dimensional space (representing the ten decisions considered) was constructed on which each objective $P = \{P_1, P_2,..P_n\}$ was plotted using a frequency value based on the number of times the objective was mentioned in the text for each decision (see Figure 1). The frequency value was calculated by dividing the number of mentions for an objective in a given decision by the total number of mentions for all objectives for that decision. This resulted in any element of P, for each dimension, having a value ranging from 0 to 1. The ten dimensional space is defined in Equation 1 below.

$$\boldsymbol{D} = [\mathbf{0}, \mathbf{1}]^{\mathbf{10}} \subset \mathbb{R}^{\mathbf{10}}, \boldsymbol{P_i} \in \boldsymbol{D} \qquad (1)$$

In Equation 1, i ranges in value from 1 to n, where n is the maximum number of objectives identified in Stage 1.

Each objective can then be placed in the multi-dimensional space. The smaller the distance between objectives plotted in this space, the more similar they are in terms of decision maker emphasis. As this similarity between objectives increases, there is an increasing possibility that objectives may represent essentially the same decision maker goal and are therefore redundant objectives.

A number of approaches were considered to measure this multi-dimensional distance between objectives and identify possibly redundant objectives. The number of objectives was expected to be too large for reliable visual inspection. Additionally, based on the relatively low sample size, statistical correlation techniques were rejected. Data clustering, which aims to find groups of similar objects in data (Kaufman and Rousseeuw, 1990), was also considered but rejected as an overly complicated means to measure this distance.

Measuring the similarity of objects

Instead Euclidean distance, which is used in some data clustering algorithms to measure the distance between objects in an 'n' dimensional space (Kaufman et al., 1990), was selected as a more direct measure of the distance between objectives. Euclidean distance calculates the true geometrical distance between multi-dimensional points (Kaufman et al., 1990). The Euclidean distance is calculated between pairs of objectives plotted in the ten dimensional space defined by Equation 1. This distance is used as a measure of proximity and proximity as a measure of the similarity of objectives. A normalised Euclidean distance was used and this was calculated by dividing each distance by the maximum distance calculated across all of the objectives for all decisions. Very close objectives were arbitrarily defined as those with a normalised Euclidean distance measure of less than 0.05. This arbitrary definition of "very close" is justified by the exploratory nature of the study and in particular that the method is used only to identify possible redundant objectives. These objectives will be subject to further testing and refinement through later study phases.

Objectives identified by this process as very close were then reviewed to establish whether this similarity was due to strong overlap in the objective definitions. If so, consideration was given to merging objectives and/or refining definitions. For example, a decision objective to *protect international oil* may appear very similar to an objective to *protect the Australian economy*[10]. In such a case, the *protect international oil* objective might be merged with the *protect the Australian economy* objective as the later is defined more broadly. However, it is possible that "very close" objectives may not share similar or related definitions and in these cases both objectives were retained. The output of this process was a refined list of objectives and associated definitions that could be accepted as a reasonably concise representation of the decisions.

Stage 2 – Structuring Objectives

[8] The number of times that a decision maker referred to this goal in a primary source text (objective frequency value) for a particular decision is used as an indicator of the relative importance of that goal to the decision maker for that decision.

[9] The assertion here is that if two objectives were emphasised to a similar degree by the decision maker for each of the decisions, then they may in fact be essentially the same objective despite having different labels and non-identical definitions.

[10] Throughout this paper, objectives are written in italics while objective categories are bolded.

In Stage 2 of this approach, *value focused thinking* (Keeney, 1996) principles were applied to the set of objectives identified in Stage 1 in order to produce a set of manageable objective categories that could support and structure further analysis of the decisions. Given that this further analysis will include interviews with decision makers, it was necessary to reduce the number of categories of objectives to a level that would support consistent human judgements. Consequently a target number of between five and nine categories was identified which was based on the limits of human capacity for processing information (Miller, 1956).

Value focused thinking is an approach to decision making in which fundamental values are identified as a priority in order to inform and structure thinking about alternatives. This is contrary to more mechanistic alternative focused thinking in which alternatives are identified and measures structured to compare and contrast them. The *value focused thinking* approach provides a number of devices to structure a "cloud of objectives" (Neves et al., 2009, p. 839) into a value based fundamental objective hierarchy. The resulting hierarchy will comply with a set of desirable properties: essential, controllable, complete, measurable, operational, decomposable, non-redundant, concise, and understandable.

Table 2 Category Ratings for Associated Objectives Influence on decision

Influence of objectives on decision	Category
All +	+
+ and 0	+
All 0	0
- and 0	-
All -	-
- and +	?

The primary device used to structure the "cloud of objectives" is referred to by Keeney (1996) as the "use of structuring objectives". This device requires that an initial set of objectives be clearly defined, are then related to each other and finally related to higher objectives not yet identified. This bottom up structuring is facilitated by asking of each of the unstructured objectives what objective categories they are "specific cases of" (Keeney, 1996). For example, an Australian strategic decision maker might identify that an objective on a proposed deployment was the need to *reduce the threat to international oil supplies*. To the question, "what higher category of objectives is this objective a specific case of" the answer might be to "improve Australia's long term **economic security**". This could then be assigned as a next level objective category in the hierarchy. This process was continued until all original objectives were mapped into a manageable set of between five and nine objective categories.

Stage 3 - Usefulness and Consistency

The decision categories identified in stage two were based solely on primary source data. In order to establish their suitability for structuring future research it was important to assess their usefulness and consistency in analysing other data sources. Secondary texts were selected for this purpose and the results of this analysis were contrasted with an analysis using primary source data. The results of this comparison were assessed in terms of the adequacy of the objective categories in capturing the range of objectives identified in both sources and in the consistency of both assessments regarding whether the net impact of the categories on the decision process was for or against a deployment.

The overall impact of objectives on categories from the primary source data was obtained by combining the impacts of each objective recorded in Stage 1 using'triangulation' (Webb et al., 1966). An objective has a positive impact on a category if it is cited as a reason in favour of a deployment. Conversely, an objective is seen as having a negative impact on a category if it is cited as a reason against a deployment. For example, the 1999 East Timor deployment might be influenced negatively by an objective to *minimise harm to the Indonesian relationship*. In this case the objective could be cited as having a negative impact on a higher category (e.g. **maintain regional stability**).

In applying triangulation for a given decision: if all objectives mentioned in a source for a category had a positive influence on the decision[11], the category would be considered positive (+); if all objectives were negative, the category would be considered negative (-); if no objectives were cited for a category, it would be considered as zero (**0**)[12]; and finally, if the objectives contradicted each other in their direction of influence (negative and positive) then the category would be considered conflicted (**?**). This mapping is detailed in Table 2.

The next stage was to construct a similar assessment of the importance of the objective categories for each decision using secondary textual sources. In this case, the direction of influence of lower level objectives

[11] That is, biased towards a decision to employ military force.

[12] This means that there were no mentions of any of the objectives associated with a particular category cited in the primary text source for this deployment. However objectives have to be mentioned at least in one of the ten decisions for it to be included as one of the objectives **P** in **Error! Reference source not found.**.

were directly assessed from the texts and their overall contribution to higher objective categories was determined using 'triangulation' and mapped to the appropriate symbol in Table 2.

3. STRATEGIC DECISIONS OF INTEREST

This paper focuses on post-cold war[13] Australian decisions regarding the employment of military force up until the decision to re-intervene in East Timor in 2006. As such, this period of interest includes deployment decisions from two distinct Australian governments: the Hawke-Keating Australian Labor government, with Evans as the Foreign Minister, up until 1996; and the Howard government, with Downer as the Foreign Minister from 1996. The foreign policies developed by these governments were substantially different, particularly in terms of how Australian national security interests were to be met. The Hawke–Keating government foreign policy emphasised maintaining a high level of security and and a stable strategic environment in Australia's region; "contributing to the best of our capacity to global security"; pursuing international trade, investment and economic cooperation; and making a "realistic contribution to the cause of good international citizenship" (Evans and Grant, 1991, p. 38). In essence, an approach focused primarily on regional engagement and multilateralism.

In contrast, foreign policy under Howard attempted to distance itself from the previous Labor government and instead favoured bilateralism instead of multilateralism (Firth, 2011). Consequently under Howard, deployments in support of the UN or in the cause of international citizenship were discouraged, while actions in support of our primary ally or more narrowly defined national interests were encouraged.

These foreign policies were extant throughout the period of interest of this study. During this period, ten military deployment decisions were selected for analysis, based on the following rules. Firstly, the decision must involve the possible employment of military force and not merely a deployment of military forces. This precluded deployments such as Cambodia, Bougainville and the humanitarian response to the 2004 Asian Tsunami. Secondly, the announcement of the decision must occur in the period of interest. Finally, primary sources must be available that outline the government's justification for or against a deployment. Consequently, the decision not to deploy to the Solomon Islands in 2000 is not included in the set, as no primary source documents were identified, while the decision not to deploy to East Timor prior to the 1999 elections is included as substantial documentation relevant to the implicit decision was available. The decisions included in the analysis are listed in Table 3.

Table 3 Decisions included in the study

Date	Location	Description of Proposed Deployment	Deploy?	Govt
Aug 90	Kuwait	Deploy in support of US coalition to evict Iraq from Kuwait.	Yes	Labor
Dec 92	Somalia	Deploy to promote a political settlement and aid dist.	Yes	Labor
Jun 94	Rwanda	Deploy troops to provide humanitarian assistance.	Yes	Labor
Jul/Aug 99	East Timor Pre-Elec	Deploy troops to stabilise the security prior to election.	No	Coalition
Sep 99	East Timor Post-Elec	Deploy troops to restore security in East Timor post-election	Yes	Coalition
Oct 01	Afghanistan	Deploy to support the coalition against terrorism	Yes	Coalition
June 03	Sol Islands	Deploy troops to re-establish law and order.	Yes	Coalition
Mar 03	Iraq	Deploy troops as part of the US led invasion of Iraq	Yes	Coalition
Feb 05	Iraq	Deploy to provide sec for a Japanese led reconstruction.	Yes	Coalition
May 06	East Timor	Deploy troops to stabilise security	Yes	Coalition

4. ELICITING OBJECTIVES

Implicit and explicit decision maker objectives in considering the deployments in Table 3 were obtained by applying DCA as described for Stage 1 of the method. Themes identified through DCA that were relevant to the decision process were restated as decision objectives. This produced a set of 29 objectives across the ten deployments as listed and defined in Table 4 below.

Table 4 Objectives identified through Stage 1

	Objective	Code	Definition
1	Avoid Armed Conflict	AC	Minimise the risk of major armed conflict
2	Australian Economy	AE	Improve Australian Economy
3	Australian Reputation	AR	Enhance Australian Reputation
4	Conflict with Indonesia	CI	Minimise risk of conflict with Indonesia
5	Emerging Threat	ET	Minimise future threat to Australian Interests
6	Humanitarian Concerns	HC	Minimise breaches of Human rights
7	Historical Obligations	HO	Act in accordance with Historical Obligations
8	Invited by Host Country	IH	Require invite from Host Country
9	International Law	IL	Minimise breaches of international law

[13] Nominally set to the date of the fall of the Berlin Wall, the 9th of November 1989.

	Objective	Code	Definition
10	International Oil	IO	Minimise impacts on International Oil supply
11	International Relationships	IR	Improve Australia's international relationships
12	International Security	IS	Improve International Security
13	International Terror	IT	Reduce effectiveness of international terrorism
14	Long Term Stability	LS	Maximise long term stability in the host country
15	Military Capability	MC	Minimise impact on Australia's military capabilities
16	Multi-Lateral Support	ML	Maximise the level of multi-lateral support
17	Not Offensive	NO	Minimise the level of aggressive action
18	Nature of Regime	NR	Oppose corrupt and abusive regimes
19	Oppose Aggression	OA	Oppose international aggressors
20	Protect Australians	PA	Maximise the protection of Australians
21	Promoting Democracy	PD	Maximise the adoption of democratic forms of government
22	Post 911	PN	Maximise support to the USA post 911
23	Public Pressure	PP	Minimise political impact of public opinion
24	Rules of Engagement	RE	Require adequate rules of engagement
25	Indonesian Relationship	RI	Maximise the relationship with Indonesia
26	Regional Stability	RS	Minimise the impact on regional stability
27	Threat Level	TL	Minimise the threat level for the deployment
28	UN Support	UN	Maximise UN support for the mission
29	US Alliance	US	Maximise positive impact on the US alliance

As part of the process of identifying these objectives (see Figure 1), the number of times each objective was mentioned for each decision was recorded and converted to a frequency of mention[14]. Possible similarities between these objectives were then identified by first plotting each objective frequency of mention for each decision in the ten dimensional space defined by Equation 1 and then calculating the Euclidean distance between pairs of objectives as described in Stage 1 of the method. A sample of these calculations is contained in Table 5 which includes all of the 'very close' results (see Stage 1). The numbers in the table represent the normalised Euclidean distance between the cross-referenced pairs of objectives. Distance here is equated to the proximity of objectives and proximity is equated to similarity. Potentially identical objectives are indicated by a distance of zero. In Table 7, objectives are considered 'very close', and therefore possibly redundant (as indicated by bold type and shaded cells), if they have a separation distance of less than 0.05, that is less than five per cent of the maximum Euclidean distance between all of the objectives listed in Table 4. Three groupings of objectives were identified as being similar and possibly redundant in Table 5. These groups are illustrated in Figure 2, which indicates that: Group 1 consists of four similar objectives (AE, NO, NR and IO); Groups 1 and 2 are overlapped via objective IO (PN is similar to IO but not to the remainder of Group 1); and Group 3 consists of three other similar objectives (AC, CI and RI) that are not similar to any other objectives. The objectives within these groupings are discussed in the following paragraphs to determine whether they should be considered redundant.

Table 5 Normalised Euclidean distance between selected objectives

Cluster 0	AE	AR	CI	IO	NO	NR	PN	PP	RE	RI
AC	0.102	0.089	**0.000**	0.103	0.102	0.102	0.091	0.126	0.179	**0.000**
AE		0.184	0.102	**0.019**	**0.000**	**0.000**	0.053	0.102	0.163	0.102
AR			0.089	0.185	0.184	0.184	0.179	0.199	0.236	0.089
CI				0.103	0.102	0.102	0.091	0.126	0.179	**0.000**
IO					**0.019**	**0.019**	**0.049**	0.103	0.161	0.103
NO						**0.000**	0.053	0.102	0.163	0.102
NR							0.053	0.102	0.163	0.102
PN								0.091	0.154	0.091
PP									0.179	0.126
RE										0.179

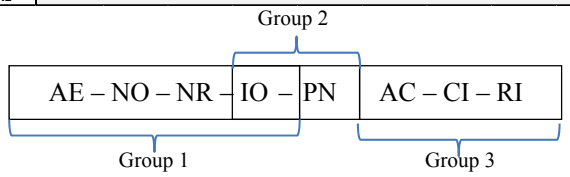

Figure 2 Overlapping groups of objectives identified by Euclidean distance calculations

Analysis of Groups of Similar Objectives AE, NO, NR and IO

Within Group 1, the definitions of objectives, AE (*Australian economy*) and IO (*international oil*) appear closely related but are not identical. They both indicate a preference to avoid negative impacts on the Australian economy but may represent separate objectives of the decision maker. Both the NO (*not offensive*)

[14] Frequency of mention is found by dividing the number of mentions of an objective for a decision by the total number of mentions across all objectives for that decision.

and NR (*nature of regime*) objectives represent humanitarian concerns influencing the decision process. However, while they are similar in this data set, they represent substantially different objectives.

In Group 2, the objectives IO (*international oil*) and PN (*post 911*) represent apparently unrelated objectives with IO indicating an objective to protect international oil supplies while PN indicates a motivation to support the USA post the "9/11" terrorist attacks.

All three of the Group 3 objectives appear related, having to do with avoiding conflict or with negative impacts on key relationships. AC (*avoid armed conflict*) indicates a preference to avoid the possibility of armed conflict with another state, CI (*conflict with Indonesia*) indicates a preference to avoid conflict specifically with Indonesia and RI (*relationship with Indonesia*) indicates a preference to avoid negative impacts on the relationship with Indonesia. While all three are identical in the data set, the definitions suggest that CI could arguably be incorporated under the RI definition while AC appears to capture a different aspect of decision maker preferences. However on closer inspection, it is clear that the original reference to avoiding armed conflict is also associated with impacts in the relationship with Indonesia.

As a result of this analysis, the decision was made to retain the IO and AE objectives, noting that they are related, and combining AC and CI into RI. PN will be retained. This resulted in a reduced list of 27 objectives in line with the goal (refer to Figure 1) of reducing the number and redundancy of the objectives thus increasing the usefulness of the objectives for further research.

5. STRUCTURING OBJECTIVES

The remaining 27 objectives were then used as inputs to the objective structuring stage. Applying *value focused thinking* (Keeney, 1996) as described in Stage 2 of the method resulted in the eight objective categories displayed in Figure 3.

The following example illustrates the structuring process using the *international terrorism* (IT) objective, which sought to reduce the threat of international terrorism. The question, "what is this objective a specific case of" produced the answer "a concern for Australia's physical security". This was identified as a second level objective category and labelled as **improve Australian physical security**. Similarly, the objective *protect Australians* was also identified as a specific case of the same category. This process applied to the 27 objectives identified the objective hierarchy in Figure 3.

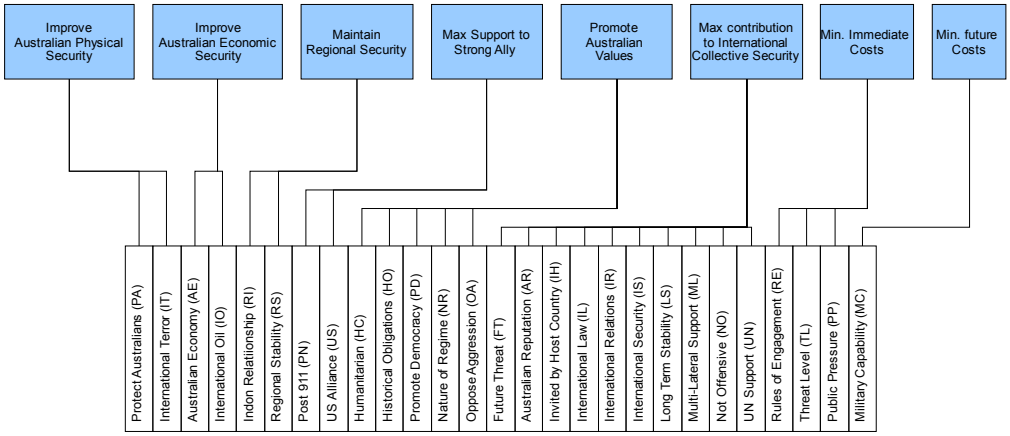

Figure 3 Hierarchical Decision Model of Australian Strategic Decisions

The eight objective categories that were identified from the lower level objectives enable decisions to be characterised in terms of what the decision makers claimed mattered. These objective categories are discussed in the following paragraphs.

The first two of these categories relate to immediate threats to Australian security. The objective category **improve Australian physical security** refers to an emphasis on countering violent threats to Australians or Australian assets. In contrast, the category **improve Australia's economic security** refers to countering threats to Australian economic and trade interests.

The next four of these objective categories focus on different strategies to improve Australia's long term security. The first of these, **maintain regional security** indicates a commitment to maintaining security amongst neighbouring nations as a means of reducing future security threats. The category **maximise support to a strong ally** refers to a long term Australian policy of supporting a strong ally in order to ensure

future support when Australia may be threatened. This policy was first applied to the UK, based on old empire loyalties, and gradually transferred to the United States of America. An alternative to this policy has been to **maximise** [Australian] **contribution to international collective security**, generally under the leadership of the UN, to solving problems with international security. The aim of this policy is to enhance Australian security by encouraging the rule of international law and building up the institutions that uphold it. The fourth of these objective categories is to **promote Australian values** in an effort to encourage the development of foreign governments based on similar principles as a means to reduce the likelihood of conflict.

The final two objective categories relate to minimising the cost of improving Australia's national security interests. This includes both the resource cost and the political cost of a proposed action. The first of these indicate a goal to **minimise immediate costs** of committing to an action, while the category **minimise future costs** refers to reducing the future costs of an action, in this case the opportunity cost of elements of the military being unavailable for other commitments.

6. USEFULNESS AND CONSISTENCY OF OBJECTIVES

The objective categories are considered useful if they are found to encompass all of the objectives identified in the secondary sources[15]. They are considered consistent if an assessment of both sources indicates that objective categories had a similar impact on the decision outcome. The Stage 3 method outlined in Section 2 (see Figure 1), was applied to primary and secondary sources for two decisions. In outline this involved: reviewing the sources to identify instances of the objectives in Table 6 or new objectives; determining (subjectively) the impact that these objectives had on the decision[16]; combining the impacts for each category using the triangulation process outlined in Table 2; and recording the result (+, - or 0) in Table 8. For example, the category **promote Australian values** is rated as "+" for the Somalia decision using primary sources (via Table 2) because one of the objectives in this category – *humanitarian concerns* – was cited as a reason to deploy (+) in the primary sources – while the remaining objectives were not cited at all (0).

Two decisions were selected for this comparison representing government policies from both sides of politics over the period of interest. The first of these was the decision to deploy to Somalia in 1992, made by the Keating led Labor government, and the second was the decision by the Howard led Coalition government to commit troops to the invasion of Iraq in 2003. Primary source data on these decisions was already available from the analysis conducted in Stage 1 (refer to Figure 1). Relevant secondary sources were then identified and analysed using the process outlined in the previous paragraph. The following paragraphs summarise the analyses of the secondary sources, contrasting them with the primary sources in Table 8 for each decision.

Table 6 Decision Model Applied to Primary and Secondary Sources for Somalia and Iraq

	Sources	**Physical Security**	**Economic Security**	**Regional Security**	**Support Strong Ally**	**Australian Values**	**Collective Security**	**Immediate Costs**	**Future Cost**
Somalia	*Primary*	0	0	0	0	+	+	-	-
	Secondary	0	0	0	0	0	+	+	0
Iraq	*Primary*	+	+	0	+	+	+	-	-
	Secondary	0	+	0	+	0	0	-	-

Somalia

The key secondary source relevant to the Somalia decision (Firth, 2011) provides an analysis of the history of Australian foreign policy, including decisions on overseas military deployments. Firth identifies that a shift in policy towards actively supporting UN peacekeeping (the *international security* objective in Figure 3) was key in the decision to deploy to Somalia (Firth, 2011, p. 117) and **collective security** is therefore rated as positive (+) in Table 6. Public opinion in favour of solving the humanitarian crisis (*public pressure* in Figure 3) is also seen as a strong reason for UN action on the crisis, and by extension Australian action, and was based on an expectation that armies could solve these problems (Firth, 2011, p. 121). Consequently **minimise immediate cost**[17] was also rated as positive. The model appears to adequately cover the breadth of objectives

[15] It is expected that the categories adequately cover the objectives raised in the primary sources as the categories were derived from these sources.

[16] An objective has a positive impact on a category if it is cited as a reason for approving a deployment. Conversely, an objective is seen as having a negative impact on a category if it is cited as a reason for not approviong a deployment.

[17] Note that immediate cost included both the economic and political costs of a deployment (see Figure 3).

identified in the secondary source, although it is clear that the primary sources identify more categories with noticeable decision maker emphasis. This suggests that primary sources may have included justifications for the decision that may not have been fundamental to the decision process.

However there is conflict in the direction of the influence of the **minimise immediate cost** category on the decision to deploy. The primary source used in Stage 1 indicated that there were underlying concerns related to the operational risk (*threat level* in Figure 3) of the deployment and therefore represented a negative influence on the decision. However, the secondary source does not comment on operational risk and instead highlights general public opinion (*public pressure* in Figure 3) in favour of UN action in Somalia. Hence the objective category of **minimising immediate cost** is seen as influencing the decision towards a deployment.

Iraq

The key secondary source identified for the Iraq war was authored by Wesley (2007) and provides a detailed overview of key Australian decisions such as participation in the invasion of Iraq. The US Government saw the Australian decision on Iraq as in support of "global priorities pursued by the United States at the time" (Wesley, 2007, p. 113). Australia's strong support of the US in committing to the Iraq war, despite the real cost of negative public opinion and a relatively large commitment of Australia's available military force, greatly enhanced Australia's reputation in Washington (Wesley, 2007, p. 114). Wesley argues that through this strong support, the Australian Government was seeking to gain US Government approval for a free trade deal as well as seeking to gain increased access to US intelligence. The preceding suggests that: the objective of enhancing the *US alliance* and hence the category of **supporting a strong ally**, positively influenced the decision (+); the objective of enhancing the *Australian economy* and hence the category of **improving Australia's economic security** also positively influenced the decision (+); while the categories of **minimising immediate costs** (via *public pressure*) and **minimising future costs** (via the commitment of a sizable portion of the ADF's *military capability*) negatively influenced the decision (-).

Assessment of Objective Category Usefulness and Consistency

The objective categories identified in Stage 2 appeared to adequately represent objectives identified in the secondary sources. An apparent exception to this was found with the Iraq decision where the secondary source suggested that a strong positive influence on the decision was to improve access to US intelligence. This suggested that a further objective category may be required. However, this is arguably an aspect of improving long term security through **supporting a strong ally** (an existing objective category) suggesting that at most an additional lower level objective may be required.

In assessing consistency, the sources were considered inconsistent for a particular category if it was rated negative by one source and positive by the other. All other combinations were considered reasonably consistent[18]. Based on this measure, there is a reasonable level of consistency between the sources regarding decision maker emphasis. An exception is with the category of **minimising immediate cost** for the Somalia decision. As discussed, this was related to different underlying objectives that were identified in the sources.

Two observations can be made from the preceding analysis for consideration in future modelling. First, no single evidential source is likely to cover the breadth of motivations and influences on the decision process and consequently future model building should seek to combine multiple sources in order to increase validity of the research. Second, a structured method will be required to consistently resolve the combination of objectives with different directions of influence into the same objective category. Finally, it should be emphasised that the intent of this paper was not to rigorously establish the reasons for these decisions. Instead it was to identify a comprehensive, manageable and defendable set of categories to structure interviews as part of a later detailed decision modelling process. The modelling of past decisions will support more confident 'what if' analyses of future decision options. The consistency and adequacy check here has provided some evidence that the resulting set of objective categories is sufficient for the intended purpose.

7. CONCLUSION

As part of wider research into Australian strategic decision making, this exploratory work has identified eight categories of objectives that capture key influences and decision maker objectives that impacted on post-cold war decisions on the employment of military force. The categories were derived solely from contemporary statements made by decision makers using a combination of content analysis and *value focused thinking*. A form of data clustering and a limited comparison with secondary sources have provided a level of verification of the adequacy and consistency of these categories. These categories will structure model building interviews with decision makers and support the development of a decision-aiding model of the objectives

[18] This is consistent with the way in which triangulation is practiced to assess evidence (Webb et al., 1966).

and influences that impact on Australian decisions to employ military force. Such a model will support "what if" analyses of the viability of future strategic options and their likely impact on the national interest.

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