



# **Making operational decisions in humanitarian response:**

**A literature review**

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## Contents

Acknowledgements	3
Abbreviations and acronyms	6
Section 1: Introduction	7
1.1 The purpose of the literature review	
1.2 What is decision-making? What is a decision?	
Section 2: Methodology	10
2.1 Research question	
2.2 Literature review	
2.3 Evaluation review	
2.4 Scope of the research	
Section 3: What operational decisions do humanitarians make?	13
Section 4: What do humanitarians consider when making decisions?	15
Section 5: The context for operational humanitarian decision-making	17
5.1 Decision density	
5.2 Urgency	
5.3 Uncertainty	
5.4 Potential significant negative consequences	
Section 6: How the humanitarian context influences humanitarian decision-makers	25
6.1 How decision-makers respond to the context	
6.1.1 How decision-makers respond to uncertainty	
6.1.2 How decision-makers respond to urgency	
6.1.3 How decision-makers respond to stress	
6.2 The influence of the humanitarian context on key decision-making activities	
6.2.1 Understanding the situation	
6.2.2 Individual bias and making the 'right' decision	

Section 7: Approaches to decision-making	38
7.1 Classical/ analytical decision-making	
7.2 Procedures and protocols	
7.3 Naturalistic decision-making	
7.4 Sensemaking	
Section 8: How appropriate are these approaches in operational humanitarian contexts?	48
8.1 Classical/ analytical decision-making	
8.2 Procedures and protocols	
8.2 Naturalistic decision-making	
8.4 Sensemaking	
Section 9: Conclusion and next steps	57
Bibliography	60
Endnotes	72

## Abbreviations and acronyms

ALNAP	Active Learning Network for Accountability and Performance in Humanitarian Action
CBA	Cost-benefit analysis
DFID	Department for International Development
DRC	Democratic Republic of the Congo
IASC	Inter-Agency Standing Committee
IFRC	International Federation of Red Cross and Red Crescent Societies
NDM	Naturalistic decision-making
NRC	Norwegian Refugee Council
oPT	occupied Palestinian Territory
RM	Recognition/metacognition
RPD	Recognition-primed decision-making
SARS	Severe Acute Respiratory Syndrome
SOPs	Standard operating procedures
STEP	Story, Test, Evaluate, Plan
UNHCR	United Nations Refugee Agency
UNICEF	United Nations Children's Fund
UNRWA	United Nations Relief and Works Agency for Palestine Refugees in the Near East
WASH	Water, Sanitation and Hygiene
WFP	World Food Programme

## Section 1: Introduction

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The importance of good decision-making has emerged as a theme in ALNAP’s previous work on humanitarian leadership and coordination.

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### 1.1 The purpose of the literature review

Decision-making lies at the heart of effective humanitarian action. During a response, humanitarian staff are required to make a stream of decisions: whether, when and how to intervene; how to address technical, logistical, political and security constraints; and when and how to cease operations. It is no exaggeration to say that lives depend on these decisions. It is unsurprising, then, that the importance of good decision-making has emerged as a theme in ALNAP’s previous work on humanitarian leadership (Knox Clarke, 2014) and coordination (Knox Clarke, 2016; Knox Clarke and Campbell, 2015).

It is more surprising – and concerning – that humanitarian evaluations suggest that there is significant room to improve in this area. Decision-making is often slow (Darcy, 2016a; Adams et al., 2015; Agulhas Applied Knowledge, 2015; Murray et al., 2015; Quasami, 2015; Sanderson et al., 2015; UNICEF, 2015); disassociated from strategy (Hayles, 2010); opaque (Ambroso et al., 2016; Murray et al., 2015); and unaccountable (Darcy, 2016b; Agulhas Applied Knowledge, 2015; Clarke et al., 2015). Overall, humanitarian decision-making has been characterised as ‘informal, emergent, ad-hoc and reactive’ (Comes, 2016: 2; see also Maxwell et al., 2013).

Despite these reported failures, relatively little academic attention has been given to decision-making in humanitarian response. Much of the work that does exist points to gaps in our understanding: lack of knowledge about what decisions are made, by whom and how (D’Onofrio, 2016; Maxwell et al., 2013; Hayles, 2010); the conditions in which decisions are made and what influence these have on the decision-making process (Heyse, 2013); and the extent to which decision-making evolves throughout a response (Comes, 2016; Hobbs et al., 2012).

Far more consideration, however, has been given to decision-making in other emergency contexts,<sup>1</sup> particularly in fire services, emergency management, and response to emergencies in hazardous environments such as oil rigs.

Given the importance of decision-making for humanitarian response, the recognised gaps in existing understanding, and the relative wealth of knowledge on this topic outside the humanitarian response literature, this literature review attempts to gather existing knowledge, further clarify gaps in understanding and identify potential areas for further research.

## 1.2 What is decision-making? What is a decision?

There is some disagreement about what constitutes a decision. Many authors see a decision as a choice made between a number of options (Hobbs et al., 2012; Aldunate et al., 2005; Kowalski-Trakofler and Vaught, 2003), which commits one ‘to a certain course of action’ (Lipshitz et al., 2001: 331). Decision-making thus involves identifying the differences between these courses of action and a process of evaluating and choosing an option (Kalra et al., 2014). Others regard decision-making more broadly, as a way of thinking which leads to certain actions, but do not agree that this way of thinking necessarily involves choosing between different options (Patel et al., 2002). At its broadest, decision-making can be seen as ‘synonymous with thinking’ (ibid.: 5).

Different approaches to decision-making have tended to understand decisions in different ways. The classical/analytical approach (see Section 7.1), for example, tends to see a decision as a one-off event which occurs in an individual’s mind, where the aim is to identify the course of action that will create the most value (Danielsson and Ohlsson, 1999). As such, it concentrates on the ‘choosing between options’ process: establishing a set of structured options and choosing between them. Information is gathered, options analysed, and a decision is made according to which choice best meets the objective.



Different approaches to decision-making have tended to understand decisions in different ways.





Others see decisions as more of a process of problem-solving (Gralla et al., 2016; Ortuño et al., 2013; Mendonca et al., 2001), taking place within specific contexts. Critically, they dismiss the idea that decision-makers weigh up a number of different options to make decisions, suggesting instead a process whereby a single action emerges as the decision-maker perceives and understands the situation. These approaches – which broadly include naturalistic decision-making (NDM) (see Section 7.3) and sensemaking (see Section 7.4) – tend to situate each process in the social, political and temporal environment in which it takes place. As Patel et al. (2002: 22) put it: ‘decision makers are not solitary thinkers, but live in a social world thick with artefacts and populated by other agents who jointly determine the decision processes and outcomes’. This ‘process’ orientation to decision-making tends to be based on descriptive research, which outlines what decision-makers actually do. The classical/analytical approach, in contrast, tends to be more prescriptive, outlining what decision-makers ought to do in order to achieve the best outcome.

These approaches to decision-making, and to decisions, are so different that it can be tempting to ask whether they are actually looking at the same phenomenon at all (Patel et al., 2002). In writing this review, we decided not to use a predetermined definition of ‘decision’, as this would have seriously limited the enquiry. Rather, we considered a number of sources that concerned themselves with decisions and decision-making in emergency contexts, recognising that this opened the review to a variety of definitions.

## Section 2: Methodology

### 2.1 Research question

This literature review aims to understand, through the available literature, the following issues:

- What sorts of operational<sup>2</sup> decisions do humanitarians make?
- Are there elements of the humanitarian context that place specific demands or requirements on the process of decision-making?
- What challenges do these elements pose for decision-making in operational humanitarian response?
- What approaches to decision-making are proposed in the literature, and how relevant are they for operational humanitarian response, given the challenges of the humanitarian context?

In addressing these topics, the literature review aims to improve understanding of operational humanitarian decision-making and provide the foundation for potential further research on this topic by identifying any gaps in current understanding.

### 2.2 Literature review

This document is primarily based on a literature review of decision-making in humanitarian and emergency contexts. In order to identify the most relevant literature to the topic, documents were identified in the following ways:

- A search of Google Scholar using the search criteria ‘decision-making humanitarian OR emergency OR disaster’, with the top 150 results reviewed for inclusion, of which 22 met the inclusion criteria (see Section 2.4).
- Five expert informants were asked to recommend relevant documents, which resulted in 14 further additions for review.

- A review of ALNAP researchers' own libraries of relevant literature, which added 10 documents to the review.
- Several additional documents were identified from the bibliographies of the original set of documents (snowballing).

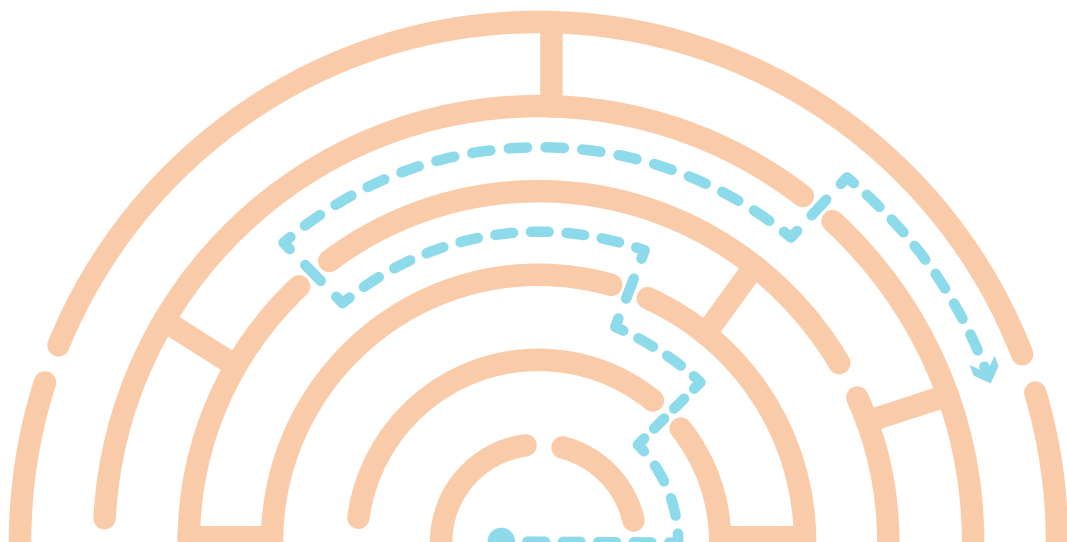
Documents which met the criteria for inclusion were then coded using MAXQDA software. The authors used an inductive approach (Bandara et al., 2015) to coding, building up the coding metrics used from the contents of the literature itself.

The authors reviewed the coded segments in the literature to form an outline for the paper's arguments. Points which are noted in the review were highlighted across a number of sources. Where these points are contested, the alternative arguments are also included.

## 2.3 Evaluation review

In order to complement the literature review, we also undertook a review of recent humanitarian evaluations. Utilising a set of 60 evaluations identified for the 2018 State of the Humanitarian System report as being of high quality, 40 were selected based on their relevance to this review (operational focus; evaluations of programming rather than of coordination or process; mention of decisions in text). All of the evaluations were published between 2015 and 2017 and represented humanitarian response across 29 countries.

Each of the 40 evaluations was then reviewed and each decision identified in an evaluation added to an Excel matrix, which identified the decision made, the factors considered in the decision (where identified) and any relevant quotations from the evaluation document. In total, 368 individual decisions were identified.



## 2.4 Scope of the research

This literature review focuses on decision-making in operational humanitarian response. It has included/excluded material based on the following areas:

- We included documents about decision-making in a crisis environment (i.e. a humanitarian crisis or an emergency incident) where lives were at stake. Decision-making which did not address a response in such a crisis (i.e. in a business context) was excluded.
- We included documents that considered the provision of aid/responding to a crisis for large numbers of people (i.e. a flood or fire). Documents that focused on decisions about one specific individual (i.e. clinical decisions about a specific patient) or that focused on other, non-lifesaving activities in a crisis environment (e.g. policing or warfare) were excluded.
- We included documents that looked at operational decisions (i.e. decisions about a specific humanitarian activity, normally taken at country level rather than at headquarter (HQ) level, around issues such as whether to do/not do something, what to do and where, etc.). Documents that focused on decisions around strategic issues (i.e. decisions about the structure/governance of humanitarian organisations) or around broader policy issues (i.e. decisions to set up a global network) were excluded.

## Section 3: What operational decisions do humanitarians make?

Operational humanitarian decisions can be categorised in several ways.

For example, decisions can be grouped depending on:

- Whether they are more or less urgent
- Whether they are more or less stressful
- Whether they lead to smaller or larger consequences
- Whether they are made quickly or over a longer period of time
- Whether they are made by one person or jointly, by many
- The degree of uncertainty around them
- Whether they are routine to the decision-maker and relate to previous experience or are completely new or unique situations.

Decisions can also be categorised by their content. A review of 40 humanitarian evaluations conducted for this literature review identified the following types of decisions made by humanitarians. While it is likely that other kinds of decisions are also made in humanitarian response that are not reflected in the evaluations, the following list is fairly comprehensive, representing the range of operational decisions identified in prior research (Gralla et al., 2013).

**Decisions about response options:** Decisions about how to respond to a particular problem, the delivery method (e.g. cash transfers or in-kind aid), location of the response, and type of response intervention (e.g. water trucking or shelter construction).

For example, the United Nations Refugee Agency (UNHCR) in Jordan decided to switch from paper and in-kind voucher delivery to e-vouchers and ATM (automated teller machine) cards (Hidalgo et al., 2015a), and in Somalia, the World Food Programme (WFP) decided to prioritise lifesaving activities over livelihood and resilience-building activities (Poulsen et al., 2015).

**Decisions about targeting:** Decisions as to who will receive assistance (e.g. women, children, people in a certain geographical area, etc.), how these criteria are determined, and how the individuals/households are identified (e.g. risk to communities or absence from school).

For example, in Afghanistan, WFP decided to target children aged 6-59 months and pregnant and lactating women for a supplementary feeding programme (Coombs et al., 2016). In Jordan, the Norwegian Refugee Council (NRC) targeted larger families for its shelter response (Aiken and Dewast, 2015).

**Decisions about information:** Decisions to obtain (or not obtain) more information, to do (or not do) analysis or conduct an assessment.

For example, in Uganda UNHCR decided to do a participatory assessment to understand the priorities of crises-affected people from South Sudan (Ambroso et al., 2016). Gender assessments were carried out by CARE and Oxfam in Nepal to contribute to more gender-sensitive responses (Sanderson et al., 2015).

**Decisions about working together:** Decisions to work with, or not work with, another actor, and the nature of that relationship (information-sharing, alignment, partnership, etc.).

For example, Oxfam decided to develop formal partnerships with a range of local health care actors in the Ebola response (Adams et al., 2015) whereas in several responses, an evaluation suggests that WFP staff have a 'tendency to go it alone' and not work with other organisations (Betts et al., 2015: i).

**Decisions about go/no go and the scale of response:** Decisions to start, end, scale up or scale down a response (e.g. to increase available funds, add a new dimension to a response programme or exit the country).

For example, in Syria, the United Nations Children's Fund (UNICEF) scaled down its Water, Sanitation and Hygiene (WASH) programme (Darcy, 2016a) and in the Democratic Republic of the Congo (DRC), after identifying a protection concern, World Vision had to decide whether to start an individual response immediately or wait for an inter-agency initiative to begin (Clements and Thompson, 2009).

**Staffing/resource allocation:** Decisions about staff numbers, allocation to certain projects, to use specific skill sets/roles, to hire national staff or bring in international staff, to open new roles or apply for surge staff.

For example, in Serbia, World Vision hired additional staff as refugee numbers increased (Sunwoo and Cascioli Sharp, 2015), and in the Ebola response, Oxfam decided to bring in an international emergency response team to better coordinate activities in affected countries (Adams et al., 2015).



## Section 4: What do humanitarians consider when making decisions?

As noted in Section 1.1, little academic work has focused on humanitarian decision-making in sufficient detail. Humanitarian evaluations – while referencing, for example, slow decision-making as a contributing factor to the performance of a response – provide little information about the decision-making process: which approach was used, the influence of the context, and so on. However, evaluations do shed light on one aspect of humanitarian decision-making, as they sometimes (though not always, and not thoroughly) note the sorts of things decision-makers are weighing up when they make decisions. A review of 40 evaluations identified the following factors.

**Threats:** Decision-makers weighed up a number of potential threats, including threats to affected communities, staff or the response programme as a whole. For example, in Liberia and Sierra Leone, Oxfam’s decision-making was shaped largely by concern for the safety of staff (Adams et al., 2015). In Haiti, following several implementation delays, the British Red Cross decided to extend the project timeframe to avoid possible reputational damage from failing to fulfil the commitments made to affected communities (Advisem Services, 2016).

**Capacity and funding:** When making a decision, decision-makers considered organisational capacity (their own and their partners’), internal structure, and funds/resources available. In Uganda, UNHCR decided to implement directly when partners had limited capacity at the start of the response to the South Sudan refugee crisis (Ambroso et al., 2016). In Iraq, the decision to switch the type of food parcels was made in part to achieve cost efficiency (Duncalf et al., 2016). In Afghanistan, some activities were closed down due to funding shortfalls (Coombs et al., 2016).

**Strategy and sustainability:** Consideration was also often given to the strategic goals of an organisation, or of the response. For example, UNHCR decided to introduce strategic programming to strengthen self-reliance and resilience of refugees in Uganda after noting a lack of sustainability in prior programming approaches (Ambroso et al., 2016). In the occupied Palestinian Territory (oPT), senior WFP leadership in-country decided that all staff would receive gender sensitisation training in line with WFP policy, despite the challenges of taking a ‘gender-proactive’ stance in that context (Turner et al., 2016: 42).



**Participation and accountability:** Decision-makers considered the perspectives of crisis-affected people and considered accountability when making a decision. For example, in Iraq, WFP undertook interviews with affected people before deciding on cash as a delivery modality, over vouchers or food distribution (Duncalf et al., 2016). Several evaluations also noted where it was not possible to include these perspectives in decision-making. For example, in South Sudan, Clarke et al. (2015: 52) noted that ‘the participation of affected people in the response and in decision-making was a challenge, as was the involvement of affected people in the design, monitoring and evaluation of programme objectives’.

These imperatives were often compared to one another during the decision-making process. For example, in Haiti, the British Red Cross reportedly weighed up potential risk to staff with the desire to ‘foster greater links, transparency and accountability with the community’ (Advisem Services, 2016: 3) when it decided that the entire project team would be based within the community itself. Combined, this ‘multitude of potentially conflicting factors’ (Clarival and Biller-Andorno, 2014: 2) could be taken into account or prioritised differently depending on the decision-maker(s) and their approach.

It is likely that other aspects were considered in each of these decisions, but these were not identified in the evaluations. Maxwell et al. (2013) identified a number of additional factors considered when making decisions specifically about response options, which included situation assessment, feasibility (capacity, seasonality, access, etc.), organisational considerations (mandate, skill set, etc.) and appropriateness (including ‘risk’, value for money, preferences of affected people, etc.).

Further primary research on operational humanitarian decision-making would be required to better understand these and other aspects.



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Humanitarian crises are, by definition, unique and unpredictable events.

In such circumstances, the rules may not apply, capacities are not sufficient to meet demand, resources are overwhelmed and the situation will most likely change rapidly and even escalate.

”

## Section 5: The context for operational humanitarian decision-making

Humanitarian contexts are operationally challenging. Humanitarian crises are, by definition, unique and unpredictable events. In such circumstances, the rules may not apply, capacities are not sufficient to meet demand, resources are overwhelmed and the situation will most likely change rapidly and even escalate (White and Turoff, 2010). In these ways and others, humanitarian contexts pose the overlapping challenges of large numbers of decisions being required, high levels of uncertainty, significant time pressures and high stakes, which play out differently across the response (Comes, 2016).

### 5.1 Decision density

Humanitarian emergencies require an exceptional number of decisions to be made, from small and trivial to incredibly complex (Cosgrave, 1996). Decisions have to be made on a constant basis, with no reprieve for those responsible for making them. This density of decision-making (Comes, 2016) is a recognised phenomenon of emergency decision-making (Cosgrave, 1996) which requires prioritisation of decisions (Hidalgo et al., 2015a) and makes each decision-making process more difficult.

### 5.2 Urgency

In a humanitarian response, many decisions must be taken under enormous time pressure (Oxford Policy Management, 2016; UNICEF, 2015; Zhang et al., 2002; Cosgrave, 1996) – a condition similar to those in emergency management situations (Kapucu and Garayev, 2011; Yu and Lai, 2011; Mendonca et al., 2001). This urgency requires ‘fast and frugal’ decision-making (Leigh, 2016: 5), which requires decision-makers to think and act differently than they would otherwise (Hayles, 2010), such as with ‘partial or incomplete information’ (Yu and Lai, 2011: 307; see also Darcy, 2016b), ‘before completely understanding the problem they face’ (Gralla et al., 2016: 22) in order to save lives (Cosgrave, 1996).

However, not all humanitarian decisions face these time constraints. Many of the crises humanitarians respond to are slow onset or protracted. So, urgency will vary considerably from one response to the next (Ortuño et al., 2013) and even within the same response, as the situation shifts between periods of urgency and periods of calm. Humanitarians must therefore shift between urgent and non-urgent decisions, and be able to know the difference.

### 5.3 Uncertainty

Humanitarian crises are dynamic, complex, unpredictable and unstable situations characterised by uncertainty (Hobbs et al., 2012; Metcalfe et al., 2011). Broadly speaking, uncertainty can be characterised as ‘a sense of doubt that blocks or delays action’ (Lipshitz et al., 2001: 337). As an umbrella term, ‘uncertainty’ can be characterised as any number of things. Sorensen and Mileti (1987), for example, identified 19 different types of uncertainty, and various other typologies have been proposed<sup>3</sup> (Lu, 2017; Klein, 2009; Lipshitz et al., 2001).

For the purposes of this review, we have used a simple typology, and broken uncertainty down into two distinct categories, discussed in more detail below:

- Uncertainty about the current situation, at any given point in time (when you do not know what is happening).
- Uncertainty about the future situation – how the event will unfold, or how a response might work (when you do not know what is going to happen, in terms of the ‘external’ circumstances, or the consequences that your own actions will have).

#### 1. Uncertainty about the current situation

Uncertainty about the current situation is generally due to a lack of sufficient information. In emergency situations, Danielsson and Ohlsson (1999) argued that the problem can be threefold: information availability, information reliability, and information relevance.

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Most literature focuses on information availability, suggesting that often, too little information is available for humanitarian decision-makers (Van de Walle and Comes, 2015; Darcy et al., 2012; Hobbs et al., 2012; King, 2005; Cosgrave, 1996). Or information may exist, but be dispersed across the system, in lots of different places, and not shared due to incompatible formats (Zhang et al., 2002), security considerations (Van de Walle and Comes, 2015) or competition. A combination of relatively weak monitoring systems and a rapidly changing environment also means that, even if humanitarians do have information on the situation, it will rapidly cease to be accurate and will not necessarily be updated.

Information reliability is also a problem. Information might be available, but of poor quality (Van de Walle and Comes, 2015; Cosgrave, 1996), low credibility (Van de Walle and Comes, 2015) or contradictory (King, 2005). For example, during the Somalia famine (2010 to 2012), some decision-makers had reports of steep food price inflation, increasing animal and child mortality, and hence increased need for assistance, whereas others received information that the situation was not necessarily worsening (Hobbs et al., 2012). This contradictory information contributed to a sense of uncertainty, which resulted in a delayed response to the ‘catastrophic conditions’ (ibid.: 53).

Finally, there are often large volumes of information collected in a humanitarian crisis – but much of this will not be relevant for a particular decision (Zhang et al., 2002), or can quickly become out of date as the situation changes (Hobbs et al., 2012; King, 2005; Zhang et al., 2002). The volume of information can be overwhelming, and it can be difficult to assess which information might be relevant (Sorensen and Mileti, 1987). This is compounded by the fact that different organisations, different decision-makers and different decisions will require different information<sup>4</sup> (King, 2005).

## **2. Uncertainty about the future situation**

There is also often uncertainty about the future situation – how things might develop, or the consequences that actions might have (Hobbs et al., 2012). This can again be a result of lack of information – for example, because evidence of ‘what works’ either does not exist, or is not accessible (Knox Clarke and Darcy, 2014; Hayles, 2010).

## Box 1: Working with and around the decisions of others

One type of uncertainty noted frequently in evaluations of humanitarian response is the decisions of other organisations. Humanitarian crises are, by nature, extreme events, requiring response from a number of different organisations who must work together in order to be effective (Ortuño et al., 2013). Humanitarian decision-makers may struggle to make decisions without knowing ‘what others were doing or planning’ (Hobbs et al., 2012: 54). Similar challenges exist in emergency response more generally (Pollock and Coles, 2015; Kapucu and Garayev, 2011; Mendonca et al., 2001).

In crises situations, ‘Organizations that rarely work together in normal times may have to break with their professional rules of operation and standard routines in order to work together effectively, which creates new uncertainties’ (Lu, 2017: 4). It may not be clear, or agreed, as to who has the responsibility, or ability, to take certain decisions, particularly where the decisions are not about everyday occurrences (Quarantelli, 1988). Also, organisations may understand the situation, and so frame the response, in different ways (Muhren and Van de Walle, 2009), perhaps seeing it from a uniquely sectoral perspective (food or health, for example) or from the viewpoint of only one population group (refugees or children).

Even if different organisations understand the situation in the same way, they may not share exactly the same objectives. In a humanitarian context, when governments take decisions about provision and resettlement of displaced people (for example), their framing of the situation and objectives (Pollock and Coles, 2015) may be different from those of international humanitarian actors. But the decisions they take shape the possibilities for humanitarian organisations. In one example, UNHCR had to accept the decision made by government not to offer an alternative site for refugees, despite the threat of flooding (Ambroso et al., 2016).

In other cases, humanitarian organisations may agree to make joint decisions, such as about procurement, but struggle to make this work in practice. In Pakistan, the resulting decision-making process – and subsequently the delivery of food aid to affected communities – was delayed due to a lack of ‘clear understanding’ (Quasami, 2015: 21).

However, uncertainty about the future is also due to the large numbers of variables which are interacting. Humanitarian crises are complex situations, where so many things are interconnected in countless ways. While this is arguably a problem of lack of information, it is not one that can be solved by more information. This is because all of the information we could possibly gather still would not be enough. In emergency situations, this ‘deep uncertainty’ (Kalra et al., 2014: i) will always be present; no amount of information would ever be able to give the ‘answer’ (Lu, 2017: 105). More information, in such cases, can actually make the situation worse, by giving a false sense of certainty (Gigerenzer, 2014) to those who may think there is so much information available, the answers must be there.

Unlike risk, which is based on estimations of probability and impact (see Box 2), the nature of uncertainty is that the information required simply does not exist. There would be no way, as Lu (2017: 2) points out, ‘of weighing the pros and cons of 40 alternatives and their consequences’. It would be impossible to identify or ‘model’ (Lee and Preston, 2012: 17) all the different possibilities of what may happen next, or the probability of them occurring, with any accuracy.

The impossibility of these calculations or models is highlighted by examples from emergency management. The Exxon Valdez oil spill in 1989,<sup>5</sup> for example, illustrated the likelihood that response plans based on estimated potential impacts and courses of action ‘can rarely be executed as expected’, highlighting the need for more flexible approaches (Mendonca et al., 2001: 31). More broadly, researchers have noted that ‘although climate change is widely expected to bring serious negative impacts, the specific nature, frequency and location of climate-related extreme climate events (such as flooding, high temperatures and rainfall volatility) cannot be predicted accurately’ (Lee and Preston, 2012: 3; see also Kalra et al., 2014; Mendonca et al., 2001). The fact that emergency managers can often identify a rising threat but still fail to prevent a negative consequence (Lu, 2017) also illustrates this difficulty. The consequences of this are profound. While it may be tempting to try to address future uncertainty by gathering more information, this approach will almost never be successful. Alternative decision-making methods are required which accept, rather than attempt to decrease, this uncertainty.

## 5.4 Potential significant negative consequences

In a humanitarian response, many decisions have the potential for extreme – and often extremely bad – consequences (Cosgrave, 1996). The lifesaving nature of humanitarian response, and the volatility and instability of contexts where response happens, increase the significance of decisions (ibid.). Again, these conditions mirror those in emergency contexts more broadly (Yu and Lai, 2011; Weick, 1993), where it has been noted that decisions taken early on can continue to impact the entire response (Kowalski-Trakofler and Vaught, 2003). Equally, not making a decision – or not making it in sufficient time – can also have significant consequences (ibid.).

### Box 2: Threats, risk and uncertainty

The term ‘risk’ is often used in the humanitarian sector as a synonym for ‘negative consequences’. For example, Metcalfe et al. (2011: 2) argue that ‘humanitarian action is defined by risk – the high levels of risks to civilian populations inherent in crisis contexts are the rationale for humanitarian intervention, and are also the predominant consideration for how, when and what interventions are made’. Decisions are (incorrectly) described as ‘risky’ whenever they involve ‘high uncertainty or extreme outcomes’ (Sitkin and Weingart, 1995: 1575).

However, this use of ‘risk’ – as being synonymous with ‘threat’ or ‘uncertainty’ is misleading. The distinctions are important when it comes to the process of decision-making and consideration of decision-making approaches.

A ‘threat’ is an event or situation which could occur, and if it occurred would lead to a negative outcome: for example, a fire, loss of data, or exclusion error. When we talk about a threat, we are making a general statement, but we are not saying anything about how likely it is to happen, or what the consequence would be.

When we talk about a ‘risk’, on the other hand, we are being more precise. Risk, in decision-making terms, is the chance of that event or outcome actually happening, combined with an assessment of what the impact would be if it did happen. So, risk = probability x impact of the threat.

So, you could describe the fire, loss of data or exclusion error as a risk – but only if you were able to quantify the likelihood and consequence of it occurring. Otherwise, it remains a threat – something you would want to avoid, but not something you could truly understand, quantify or measure.

When people talk about ‘risk aversion’, what they mean is often actually ‘threat aversion’ – the tendency to avoid potentially bad things. And when humanitarians talk about risk management, they are often talking about uncertainty management: managing a situation where a threat exists, but where the likelihood of it happening, or the consequences if it happens, are not known – and probably cannot be known, or even estimated. But, unknown threats and risks are different things, and would be dealt with in different ways (see Table 1).

When addressing risks, organisations are able to assess their probability and severity of impact, develop and then carry out an appropriate response, and monitor and evaluate these actions. This is called ‘risk management’ (Metcalf et al., 2011: 2) and relies on statistical thinking skills and logic (Gigerenzer, 2014). Risk is central to professions such as insurance and engineering, where decisions are based on data. Insurance brokers, for example, can quantify the risk of a crashed car by looking at data about road traffic accidents, statistical models of drivers, the value of the car, and numerous other variables. They use this calculation to set a price for their services which accounts for the level of risk.

Uncertainty, on the other hand, cannot be managed this way. Probability and severity of impact is not known (or else this would be categorised as risk). And, despite the (quite understandable) human desire for certainty<sup>6</sup>, the reality is that the world we live in contains quite a lot of uncertainty (ibid), particularly so in humanitarian contexts.

Again, this is important to acknowledge because ‘the best decision under risk is not the best decision under uncertainty’ (ibid).

**Table 1: Certainty vs risk vs uncertainty**

Type of risk	Certainty (no risk)	Risk (known risk)	Uncertainty (unknown risk)
Description	All possible information is known; outcomes are certain	Potential outcomes and probability are quantifiable/ measurable using statistics and modelling (e.g. the lottery, games of chance)	Either the outcome is known but the probability is not known (‘Knightian uncertainty’ – Meder et al., 2013), or both the possible outcomes and their probability are not known (‘radical uncertainty’ – ibid.) (e.g. earthquakes, shocks, health, romance)
Approach required		Ability to understand what predictions mean  Logic  Statistical analysis	Ability to recognise when something cannot be known  Intuition  Heuristics

Source: Information adapted from Gigerenzer, 2014; Meder et al., 2013.



Working in such an environment means that humanitarian decision-makers are confronted with a variety of threats (real or perceived) that the wrong decision will result in negative outcomes. For example, in oPT, the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA) was faced with potential social conflict among Bedouin communities if assistance was targeted during a time of high food insecurity. The decision to use a blanket targeting approach in this situation was taken to reduce the likelihood of this potential consequence (Turner et al., 2016).

In some cases, the consequences may be for crises-affected people, for humanitarian staff or for the humanitarian organisation itself. One decision may have one set of significant consequences for an organisation, and another significant, but different, set of consequences for crises-affected people.

The potential outbreak of conflict, the failure of the state, security problems for staff, or a negative impact on the economy due to oversaturation of relief items – these would all be near impossible threats to quantify in terms of their probability and severity. But emergency decision-makers may still be expected to weigh up potential negative consequences (White and Turoff, 2010).

Situations of uncertainty, as discussed in Section 5.3, contain multiple threats, many of which could potentially have extreme consequences, although to what extent is unknown. Knowing that there is the potential for significant negative consequences, but that these possibilities and their probabilities are unknown, makes decision-making very difficult. It makes some approaches (which require finding and weighing up information) untenable. This uncertainty calls for decision-making approaches that do not rely on information about probability at the point of making a decision – such as iterative approaches like ‘no regrets’ decisions (keeping options on the table).

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Knowing that there is the potential for significant negative consequences, but that these possibilities and their probabilities are unknown, makes decision-making very difficult.

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## Section 6: How the humanitarian context influences humanitarian decision-makers

Humanitarian contexts, then, generally exhibit certain conditions that have a direct impact on decisions and how they are made: the urgency of many situations, for example, means that decisions have to be made quickly. But – equally importantly – these conditions also have physiological and psychological effects on the people making decisions (the urgency of the situation may cause the decision-maker to become stressed, and this stress may mean that they do not go through prescribed decision steps, for example). Where the humanitarian context influences the decision-maker's mental state, and this goes on to influence the decision, we might say that the crisis has had an indirect impact on the decision.

In this section, we focus on these 'indirect' impacts, and look at what the literature review reveals about the impact of humanitarian conditions on decision-makers – in general terms, and at two important points of the decision-making process.

### 6.1 How decision-makers respond to the context

While each crisis context is unique, most operational humanitarian environments involve high levels of urgency and uncertainty. Decision-makers have to wade through a large volume of information, much of which will not be relevant. They may be required to make a large number of decisions, many of which have life or death consequences. All of these conditions are likely to affect the mental state, and behaviour, of the decision-maker. This section explores what is known about the effects of specific conditions on people's ability to make decisions.

### 6.1.1 How decision-makers respond to uncertainty

As discussed in Section 5.3, uncertainty is often due to a lack of information or understanding. Some of this may be due to the availability, reliability and relevance of information, while in other cases there is a lack of knowing because it would be simply impossible to know (see Box 2). The literature suggests that uncertainty will influence individuals in different ways, and different individual decision-makers will use different tactics as a result (Lu, 2017), which will impact on decision quality.

Some decision-makers will communicate less, in an attempt to cover up their lack of understanding. Decision-makers in China, for example, made public declarations that Severe Acute Respiratory Syndrome (SARS) was under control in the country in 2003, when in fact ‘nobody knew what the disease named SARS actually was and how such an unknown disease could be controlled’ (Lu, 2017: 6).

Some decision-makers will try to fill gaps in their understanding by using assumptions drawn from their previous experience. This can be successful, to the degree that their previous experience matches the current situation; however, that will not always be the case. There are several examples from evaluations of the 2014-15 West African Ebola response which suggest that, where situations are unfamiliar and there is uncertainty, decision-makers freeze, unable to find previous experiences that match, and so make decisions as quickly as an effective response would require (Adams et al., 2015; Murray et al., 2015). Similarly, in Syria, organisations struggled with a ‘lack of understanding of how to respond to a crisis like Syria’ (UNICEF, 2015: 47).

Alternatively, decision-makers may assume something is not significant because ‘that never caused any damage or problems before and they may refuse to take further measures’ to deal with it (Lu, 2017: 6). And, perhaps most worryingly, decision-makers may be subject to ‘path dependence’<sup>7</sup> (Darcy et al., 2013) and assume that the situation they are facing is ‘like’ previous situations when, in fact, it is very different, and so arrive at wrong (and potentially dangerous) conclusions. This has been well documented. For example, in the case of the Mann Gulch fire in Montana, the United States, in 1949, where the responding smokejumpers initially understood the situation to be of a manageable scale, similar to situations they had faced before – an understanding that proved incorrect, with deadly consequences (Weick, 1993).

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A sense of urgency can mean compromises and can reduce the potential options available to decision-makers.

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Other decision-makers may fall back on the ‘rules’ to make decisions. Again, this may be successful, depending on how relevant those rules are to the current situation. However, relying on past experience and the rules or procedures – if those experiences and rules are not relevant – can lead to inappropriate decisions being made.

As noted in the previous section, decision-makers may attempt to gain more information to decrease the uncertainty. However, in humanitarian situations where there are also time pressures (Gralla et al., 2016), this can be somewhat self-defeating, because the requirement for analysis can be overwhelming and puts pressure on information management systems (Comes, 2016; Kowalski-Trakofler and Vaught, 2003; Quarantelli, 1988) – leading to ‘analysis paralysis’<sup>8</sup> (Aldunate et al., 2005: 29), where important decisions are not made. Rather than recognising that the ideal set of information would be impossible to obtain (see Section 5.4), decision-makers may seek superfluous information and become distracted by irrelevant information (Kapucu and Garayev, 2011).

### 6.1.2 How decision-makers respond to urgency

The time pressure of humanitarian crises influences humanitarian decision-making. For decision-makers, ‘the faster a decision has to be made, the less time the information processing system has to convert or gather enough accurate information to convert assumptions to facts’ (White and Turoff, 2010: 30). In an evaluation of the Department for International Development’s (DFID) Syria response, staff described the impact of the urgent time pressures as a ‘lack of brain space’ (Agulhas Applied Knowledge, 2015: 8). This sense of urgency can mean compromises – for example, less participatory decision-making (Adams et al., 2015) and can reduce the potential options available to decision-makers (Advisem Services, 2016; Béné et al., 2016; Lawday et al., 2016; Hidalgo et al., 2015b). In Haiti, the British Red Cross chose to work with existing zonal committees in part due to the urgency of the situation, choosing this approach with the assumption that they were representative bodies, rather than identifying other options for community engagement (Advisem Services, 2016). Time pressure may also make group decision-making more difficult, as decision-makers make the false assumption (Vroom, cited in Cosgrave, 1996; Knox Clarke, 2014) that group decision-making will take longer.

Urgency may also intensify some of the biases which are said to distort ‘rational’ decision-making, such as immediacy bias<sup>9</sup> (Huber et al., 2011). The literature suggests that, in urgent situations, most decision-makers cease to consider the range of possible options and rather rely on mental ‘shortcuts’, including heuristics and biases (White and Turoff, 2010; Leigh, 2016; Gralla et al., 2016). These shortcuts ‘reduce the mental effort and time required for problem solving’ (Gralla et al., 2016: 23). The role of humanitarian conditions in accentuating biases is considered in more detail in the next section.

### 6.1.3 How decision-makers respond to stress

The urgency, uncertainty and pressure of making lots of decisions with high potential but unknown consequences can all lead to stress (Kapucu and Garayev, 2011). Decision-makers working in emotionally difficult situations, or physiologically suffering from stress, can have an emotional response to that environment which influences their behaviour – including decision-making (Huber et al., 2011).

There are a number of ways to define ‘stress’. Kowalski-Trakofler and Vaught (2003) and White and Turoff (2010) suggest that the most appropriate definition in a crisis context is the one given by Salas et al. (1996: 6): stress ‘is a process by which certain work demands evoke an appraisal process in which perceived demands exceed resources and result in undesirable physiological, emotional, cognitive and social changes’. They argue that in emergency situations, ‘demand exceeding resource’ is a critical factor, at the level of both the individual decision-maker, who has a lot to deal with at once, and the overall management of the emergency, where the impact on each individual accumulates. In these contexts, needs may exceed available resource, information may exceed capacity to understand (and hence information becomes overwhelming, as noted earlier), and number of decisions may exceed ability to make decisions.

Salas et al.’s definition importantly highlights both physiological and cognitive elements. It is useful to emphasise how much impact physiological issues (sleep, nutrition, etc.) can have when considering how stress influences decision-making (White and Turoff, 2010). Evaluations note the ‘burden of demands’ placed on humanitarian decision-makers (Murray et al., 2015: 34) and the emotional stress, in some cases leading to ‘sleeping and eating problems... reducing operating efficiency’ (Coombs et al., 2016: 33). These conditions are exacerbated given ‘the strong tendency on the part of key officials in positions of authority to continue working too long’, even to the point where they ‘collapse from exhaustion or become inefficient in their decision-making and other areas of responsibility’ (Quarantelli, 1988: 380).

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Decision-makers working in emotionally difficult situations, or physiologically suffering from stress, can have an emotional response to that environment which influences their behaviour – including decision-making.

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**Table 2: How stress can influence decision-making**

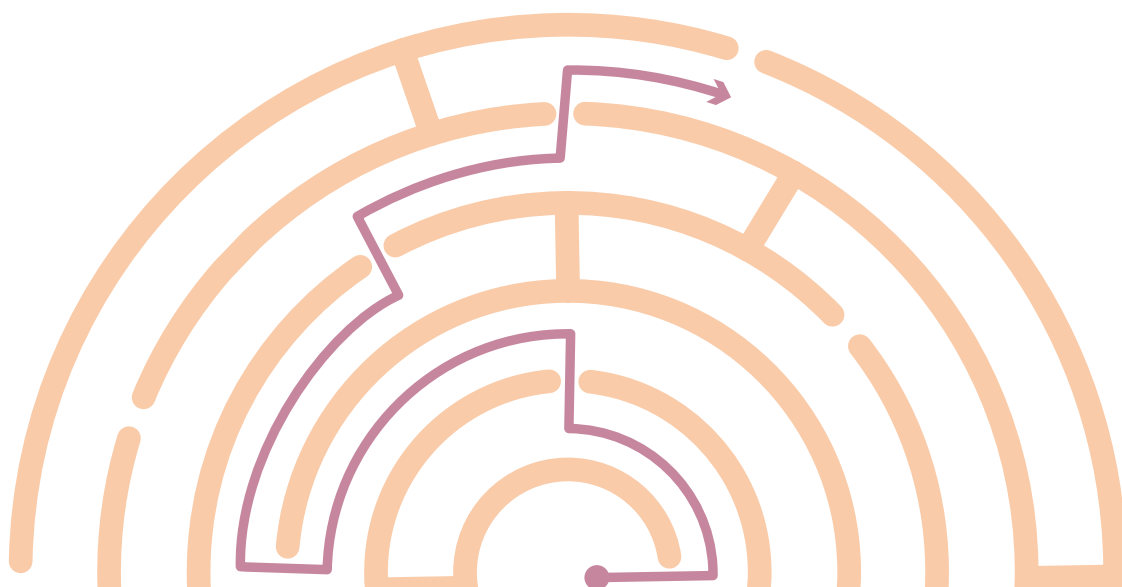
Area affected	Impact of stress	Questions this raises for humanitarian decision-making
Focus/ perception	Stressed individuals may not take in information, narrowing their focus of attention <sup>10</sup> or ‘oversimplifying’ (Leigh, 2016: 5; Kowalski-Trakofler and Vaught, 2003) as they struggle ‘to effectively manage all of the ongoing events simultaneously during an extreme event’ (White and Turoff, 2010: 27)	Will stressed humanitarian decision-makers lack sufficient situation awareness? Will they look for and take in the information they need? Will decisions be made prematurely? (White and Turoff, 2010)
Memory	Stress decreases ability to remember (Kowalski-Trakofler and Vaught, 2003; Weick, 1993)	If memory skills are weakened, to what degree will learning from past experiences be feasible/a good strategy?
Risk appetite	Stress may lead people to avoid risk (Kowalski-Trakofler and Vaught, 2003) and risk appetite affects decision-making (Sitkin and Weingart, 1995)	Will stressed decision-makers choose different (more risk averse) options than if they were not stressed?
Problem-solving	Under stress, people may forgo a methodical consideration of all possible choices (White and Turoff, 2010; Kowalski-Trakofler and Vaught, 2003) and revert to ‘habituated’ ways of responding (Gralla et al., 2016; Weick, 1993: 633)	Can decision-makers be made to structure decisions more carefully? If not, are other decision-making approaches (that do not rely on consideration of choice) more appropriate?
Openmindedness and flexibility	In extreme stress, individuals may struggle to think ‘outside of the box’ and demonstrate creativity (Weick, 1993). This can prove difficult, as some argue that humanitarian contexts require ‘a degree of creativity and innovation’ (Metcalfe et al., 2011: 6).	Are decision-makers capable of creative problem-solving in situations of stress?
Group decision-making	Stress has an impact on groups but the nature of this impact is unclear (Driskell and Salas, 1991). It may make it more difficult for groups to create a common picture of the situation (Weick, 1993). Groups may look more to a single leader (Driskell and Salas, 1991), giving authority away, while leaders may look more to groups (Flin et al., 1996; Driskell and Salas, 1991)	How does stress influence the ability to make decisions as a group in humanitarian contexts?

Stress also places cognitive demands on humanitarian decision-makers (Comes, 2016; Franklin et al., 2011; Zhang et al., 2002) who face high rates of interruption when trying to focus (Aldunate et al., 2005) and must contend with large amounts of potentially overwhelming information (see Section 6.1.1).

Stress has the potential to change behaviour in a number of ways, as outlined in Table 2. Stress is a matter of perception (Kowalski-Trakofler and Vaught, 2003), in that it is possible to be stressed about something which is not actually a big threat, and vice versa. Two decision-makers facing the same levels of uncertainty, pressure and urgency may well have different levels of stress. Many argue that stress decreases performance. On the other hand, there are arguments that, sometimes, stress may actually improve the performance of decision-makers (White and Turoff, 2010; Kowalski-Trakofler and Vaught, 2003) by driving decision-makers to a new, better and ‘simplified’ decision-making approach, which allows them ‘to focus on the critical issues’, eliminating ‘nonessential information’ (White and Turoff, 2010: 32).

## 6.2 The influence of the humanitarian context on key decision-making activities

While the psychological effects of humanitarian situations can be seen in all elements of decision-making, there are two specific activities – understanding the situation, and making a choice between decision options – which appear to be particularly influenced by the emergency context, and by the way in which humanitarian organisations have been designed to respond to these contexts.



## 6.2.1 Understanding the situation

Decision-making is a thought process which includes a number of important elements beyond the simple ‘decision point’. A key element of this process involves the decision-maker(s) developing and maintaining an understanding of the situation in which they find themselves. This understanding is the foundation for selecting appropriate action. The literature identifies a number of different schools of thought as to how this understanding of situation is achieved, and how it relates to the decision-making step of determining which action to follow. In the discussion below, we have (rather crudely) identified two broad elements of this understanding: ‘framing’, which relates to how the decision-maker determines whether decisions are required and what these decisions should be about; and ‘situational awareness’, which relates to the content of the decision.<sup>11</sup>

### **Framing**

Some authors (Gonçalves, 2009; Sitkin and Weingart, 1995) focus on ‘framing’, which considers how the problem is presented to the decision-maker, and how this influences the decision process that s/he conducts. Of particular note is whether the situation is presented as a risk or an opportunity<sup>12</sup> (Lu, 2017), and the way that this presentation interacts with specific biases, particularly loss aversion. Patel et al. (2002: 15) explain, ‘The preference for a particular course of action is different when a problem is posed in terms of potential gain rather than potential loss even though the underlying situation is identical’.

Comes (2016: 3) sees framing more broadly, as ‘how one views or structures a problem’. This understanding is notably different to some others in that the emphasis is on how the decision-maker themselves does the framing, rather than how a third party presents the situation to the decision-maker. However, it shares with these definitions a focus on the problem – on understanding the situation in order to describe and understand the decision that is required. In this, it differs from situational awareness, which – for many of the resources consulted – relates more to helping to determine the best action.

## Situational awareness

This second element, ‘situational awareness’, can perhaps best be described as ‘understanding what is going on’ (Zhang et al., 2002: 380). Situational awareness is a key aspect of decision-making, and combines:

- Knowledge of the goal to be achieved
- Knowledge from previous experience
- Information about the crisis
- Information about resources available
- Inference about how the situation might change and develop.

The relationship between framing, situational awareness and the decision-point should not, however, necessarily be seen as linear or one-way. Evolving situational awareness may change the frame, while actions taken, and their consequences, may cause decision-makers to reassess their understanding of the situation; there is continuous interaction between the various processes.

### *Understanding the situation in humanitarian response*

Framing and situational awareness are elements in all decisions. However, they are particularly challenging for humanitarians for a number of reasons.

The uncertainty inherent in emergencies means that it can be hard to see that a decision is required at a specific point (White and Turoff, 2010; Patel et al., 2002). For example, in Somalia, the ability to ‘distinguish between routine crisis conditions and those requiring a significant increase in the scale and extent of the humanitarian response were confounded by the increasing normalization of crisis’ (Hobbs et al., 2012: 50). Humanitarians, working to ‘business as usual parameters’ (ibid.: 53), did not realise that a whole new set of considerations had come into play, and that new decisions were required.

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The uncertainty inherent in emergencies means that it can be hard to see that a decision is required at a specific point.

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Similarly, uncertainty can also make it difficult to understand what the decision should be about (Gralla et al., 2016), making the framing function more important. Gralla et al. (2016: 23) explain, ‘The key characteristic of ill-defined problems is that they must be formulated as well as solved, because the goals and constraints are not well understood’. Quickly figuring out what the right problem is might be more critical than quickly solving the wrong problem (ibid.) – what Mitroff and Betz (1972: 11) call an ‘error of the third kind’.

Humanitarian organisations are bred for uncertainty. Given the nature of the contexts they work in and the needs they attempt to meet, they expect uncertainty, and have their own innate frames – understanding of crises and the problems they create – which help them to react quickly. However, these frames may also miss out important elements. Maxwell et al. (2013) explain that, due to organisational mandate and specialism, humanitarian situations are framed in a certain way even before information is sought. For example:

Agencies that already know that they will undertake nutritional programmes focus on nutritional assessments; food assistance agencies focus on current food security status, etc. Both assessment choices and the choice of objectives and modalities are often made on the basis of the agency’s organisational capacity and strongly held views about what kind of intervention is appropriate (Maxwell et al., 2013).

This framing may become particularly problematic when the agency encounters a new situation<sup>13</sup> (Ebola, for example) where the frame does not fit – as there is a danger that the organisation will look for the wrong information, in order to make irrelevant decisions.

This type of organisational framing may also make it difficult to achieve a common understanding (a common situation assessment between different humanitarian agencies), particularly if understandings contradict each other (Muhren and Van de Walle, 2009). And yet, as we have seen, emergencies are notable for the requirement that different agencies work together. At the individual level, the high turnover of international staff who move from one crisis to the next throughout their careers may contribute to the development of a framing that conflates ‘new postings’ with superficially similar (but actually very different) previous crises.

Situational awareness – that is, information about the situation which will help to lead to action – is also a real weakness in many humanitarian operations, and this is an area where the humanitarian system seems much weaker than other emergency response systems where situational awareness has played a ‘critical role’ (Salas et al., 1995: 123; see also Pollock and Coles, 2015; Patel et al., 2002). Humanitarian monitoring activities generally focus on monitoring project outputs (in order to report to donors) and are weak on monitoring either changes in the operational context, or the results (outcomes) of humanitarian activities in that context (Warner, 2017; Knox Clarke and Campbell, 2015; Knox Clarke and Darcy, 2014). Even if framing has led to the identification of the ‘right’ decision, there will, in many situations, be a serious lack of information to support the decision.

## 6.2.2 Individual bias and making the 'right' decision

Beginning with Kahneman and Tversky (1996), much academic work on decision-making has focused on biases and how they affect decision-makers. Around 60 different biases have been identified (Klein, 2009).

‘Bias’ can be defined in various ways. For instance: a systematic discrepancy between the rational ‘best’ answer and the decision-maker’s actual answer (Comes, 2016) or where ‘individual decisions for a large fraction of the population... deviate systematically from rational decisions’ (Gonçalves, 2009: 1; see also Patel et al., 2002). Bias is also described as ‘cognitive limitations that are characteristic of all human beings’ (Roberto, 2009: 102).

In general, biases are understood to be:

- General, not individual – in that they are part of the thought process of all (or large numbers of) humans.
- Demonstrated when people attempt to weigh up options to arrive at the most rational decision, but these shared thought processes prevent a systematic or ‘rational’ weighing of the options.

One example is the sunk cost fallacy, where a cost, which has already been incurred and cannot be recovered, is given undue recognition when considering future choices (Boardman et al., 2017; Comes, 2016; Leigh, 2016). A decision-maker affected by this bias will decide on a course of action in the hope of recouping their investment, even if this course of action is less likely to maximise their return (Leigh, 2016).

### Box 3: Bias vs heuristics

The terms ‘bias’ and ‘heuristics’ are both used regularly in literature about decision-making. The difference between them is not clear in the literature review; the terms seem to be used differently by different authors. Anchoring,<sup>14</sup> for example, is sometimes described as a bias and at other times described as a heuristic.

In general, ‘bias’ is used to describe systematic ways of thinking in a population, while ‘heuristics’ refer to mental shortcuts or ‘rules-of-thumb’ particular to an individual, and based on her/his individual experiences (Leigh, 2016; Gigerenzer, 2014; Gonçalves, 2009: 1).

Often the difference appears to be a matter of perspective – the way in which they understand or perceive things. So, one person’s bias can be another person’s heuristics. Heuristics are depicted as useful mental shortcuts, whereas bias is depicted as an observable mental process that leads people away from making rational decisions. Some describe bias and heuristics as two sides of the same coin; biases are the downside of using heuristics (Klein, 2009).

Another common bias is known as the gambler’s fallacy: despite the fact that, ‘when dealing with independent events, the probability of an event occurring in the future has nothing to do with whether or not it has occurred in the past’ (Hirokawa et al., 1988: 420) decision-makers who have experienced a run of good – or bad – events will expect that the situation is likely to improve or get worse, and will allow this belief to influence their decisions.

#### *How important are bias and heuristics to humanitarian decision-making?*

Bias and heuristics get a lot of attention in decision-making theory, and are not specific to emergency situations (Leigh, 2016). In fact, little research has been done on bias in emergency situations (Comes, 2016). Several authors have suggested how bias might (hypothetically) affect humanitarian decision-making (Comes, 2016; White and Turoff, 2010; Gonçalves, 2009) but only a couple of examples of bias actually observed in humanitarian action and emergency response were referenced in the literature (Hood, 2007; Weaver, 1986). Some have suggested that biases may be more relevant to humanitarians than other decision-makers, as they become more pronounced in situations of uncertainty, stress and unknown outcomes (Comes, 2016; Leigh, 2016).

However, bias is only really an important influence on humanitarian decisions to the degree that these decisions are being made on the basis of a rational choice between a number of defined options (as it is only in these circumstances that bias becomes an issue, by preventing the ‘correct’ option from being chosen). Some operational decisions may be of this type – and here we must be careful of bias. But in many, a known set of clear options does not exist, and so here, bias and heuristics are not the central problem. In some circumstances, heuristics may even be the basis of good decision-making. Section 7.3 will explore this idea in more detail.

**Table 3: Comparing decision-making approaches**

	Classical/ analytical	Procedures and protocols	Naturalistic	Sensemaking
Decisions are...	Single incidents, divorced of context	Commonly occurring generic problems	Understood within their context and within a larger process (Salas and Klein, 2001)	Moments in a continuous and constant process
Decisions are good if...	They are in line with known ‘best’ decisions	They are in line with the procedures	They are in line with the situation	They contribute to the ongoing process
Decision-making is...	A choice ‘among concurrently available alternatives’ (Lipshitz et al., 2001: 333)	Following the relevant procedures or protocols	Identifying and implementing a single course of action that matches the situation	A holistic process of noticing, understanding and interpreting
Decision-makers are...	Working rationally to select the ‘best’ option  Using analysis	Expected to identify relevant standard operating procedures (SOPs) and follow them	Using heuristics/ intuition to identify a relevant course of action based on prior experience	Trying to understand and make sense of their context – interpreting rather than evaluating choices (Comes, 2016)
Group decision-making is...	Easy as several people can contribute to option analysis and the process is transparent	Possible if specified in the protocols	Seen as a hindrance to effective decision-making and also difficult to observe	Acknowledged as an important part of reality – the group’s understanding is a critical input to the individual’s understanding

	Classical/ analytical	Procedures and protocols	Naturalistic	Sensemaking
Method	Identify the problem and several potential options, compare options to select best to meet objective	Identify the type of situation and follow the protocols and procedures that relate to that situation	Identify the type of situation, identify one course of action that matches that situation, implement this course of action, obtain feedback to test how this course of action has worked	Notice information which stands out, interpret it according to previous understanding, create new understandings (potentially pointing to action) as needed, store these if they are successful so they contribute to future understanding
Decision-making relies on...	<p>They are in line A number of potential options</p> <p>Sufficient information to compare each option</p> <p>Rational decision-makers who choose the best option</p>	<p>TEstablishing procedures in advance, dissemination and training</p> <p>A situation relevant to the procedures</p>	<p>TA decision-maker with significant experience</p> <p>Experience matching the current situation</p> <p>Heuristics or intuition</p>	<p>A constant stream of information</p> <p>Patterns used to reduce confusion</p>
Decisions made...	<p>Are the 'right' answer</p> <p>Can be tested</p>	<p>Are prescribed</p> <p>Can be repeated by anyone else following the same protocol</p>	<p>Are appropriate</p> <p>Are based on an intuitive assessment of what's relevant for that situation</p>	<p>Are plausible and sufficient</p> <p>Are iterative, and become part of the ongoing process</p>

## Section 7: Approaches to decision-making

We identified a number of decision-making approaches in the literature. They can be broadly grouped into four types: classical/analytical decision-making; procedures and protocols; naturalistic decision-making (NDM); and sensemaking. Table 3 identifies some distinguishing characteristics of each approach, and each is then explored in detail. Section 8 considers how relevant these approaches might be, given what we know about making decisions in humanitarian crises.

### 7.1 Classical/ analytical decision-making

Classical or analytical approaches to decision-making focus on the rational selection of the ‘right’ choice from a set of options, according to which best meets objectives and needs – which creates the most ‘value’ (Choo, 2002).

#### Box 4: Cost-benefit analysis

One illustrative example of classical/analytical decision-making is cost-benefit analysis (CBA). CBA involves a ‘systematic cataloguing of impacts’ (pros and cons) (Boardman et al., 2017: 1), assigning monetary value/weight to each potential impact, and then determining the net benefits of each potential decision outcome (all the pros of one decision outcome minus all the cons) (ibid). CBA aims to make decision-making more rational in the efficient allocation of resources (ibid). It can be used before a response (should resources be allocated here?), after (were resources allocated in the best way?) or during (should resources continue to be allocated as planned? (ibid.). CBA is used in the humanitarian sector – for example, to decide whether proposed projects represent an efficient use of resources (Heyse, 2013) or to understand the value of mitigation and preparedness activities pre-crisis (Kalra et al., 2014).

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‘Classical/analytical’  
decision-making  
approaches...outline  
what people should do  
as rational actors, rather  
than describing what they  
actually do.

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Classical/analytical decision-making tends to focus on one specific decision, and to focus tightly on that decision, rather than taking a broader view of the decision in a larger context, or as part of a longer process. Generally, the approach, often formalised (Leigh, 2016) is to:

- Identify and frame the problem (including the ‘value’ that the decision-maker is trying to maximise: for example, lives saved or speed of response.)
- Identify several options to address the problem.
- Evaluate these options against each other (including, what benefits and consequences will the options have?).
- Select the option which will best meet the goals/maximise values (Heyse, 2013; Lipshitz et al., 2001).

As a category, ‘classical/analytical’ decision-making approaches are largely normative (Flin et al., 1996) – they suggest the best way of making decisions, and so outline what people should do as rational actors, rather than describing what they actually do.

Because they generally work by calculating the outcome of various options (Heyse, 2013), many of these approaches are closely related to statistics and probability (Patel et al., 2002). In order to calculate outcomes, they tend to require large amounts of information about present and future conditions (Lipshitz et al., 2001). Where this information is not available, these approaches will often work on the basis of assumptions.

The focus on a single decision, and the ability to create a single best decision on the basis of mathematical calculation (Patel et al., 2002), make classical decision-making particularly well-suited to experimental methods: any decision process can be tested to see whether or not it produces the best outcome (ibid.). This also makes classical decision-making well-suited for teams; the process is transparent and replicable, and thus allows for discussion (Klein, 2009).

One area which has been the focus of a large number of experiments, and which is particularly important in classical decision-making, is that of bias: systematic distortions of the rational process caused by the way the human mind works (Patel et al., 2002). Many classical/analytical approaches to decision-making are designed explicitly to reduce common biases.

We should be careful, however, not to oversimplify what is a very broad field of enquiry. Approaches that would broadly fall under the classical/analytical heading are widely used in public and private sector decision-making, often to make extremely weighty decisions (Kalra et al., 2014). As a result, there have been many developments, improvements and adaptations to the basic approach, particularly relating to decision-making under uncertainty (Kwakkel et al., 2016), and to the fact that decision-makers may not be perfectly rational.

One such concept is ‘bounded rationality’,<sup>15</sup> which recognises that decision-makers are not entirely rational, but are invariably bound by cognitive limitations, time pressure and lack of information (Comes, 2016; Patel et al., 2002). Another adaptation involves reducing uncertainty by agreeing on assumptions about certain current or future conditions before analysing options (Lu, 2017; Kalra et al., 2014). However, this is arguably difficult – both because of bias, and because of the nature of uncertainty – that some things ‘are difficult, if not impossible’ to predict (Kalra et al., 2014: 8).

A third adaptation is to use modelling which allows various potential decisions to be tested against a range of potential future conditions (Kwakkel et al., 2016). Rather than looking for the one best option, decision-makers look for which option would provide ‘satisfactory performance across a large range of plausible futures’ (ibid.: 169), thereby retaining the formal structure of classical decision-making (identifying several options and comparing them) but seeking ‘robust’<sup>16</sup> decisions rather than optimal ones (ibid.; Woodward et al., 2014). A fourth adaptation is around flexibility – iterative approaches (such as real options analysis), which allow decision-makers to make changes over time (delaying, switching, expanding) when new information becomes available and/or exploring the potential for several possible decision options simultaneously (Kalra et al., 2014; Woodward et al., 2014) – a ‘no regrets’ approach, which expands the time period for analysis.

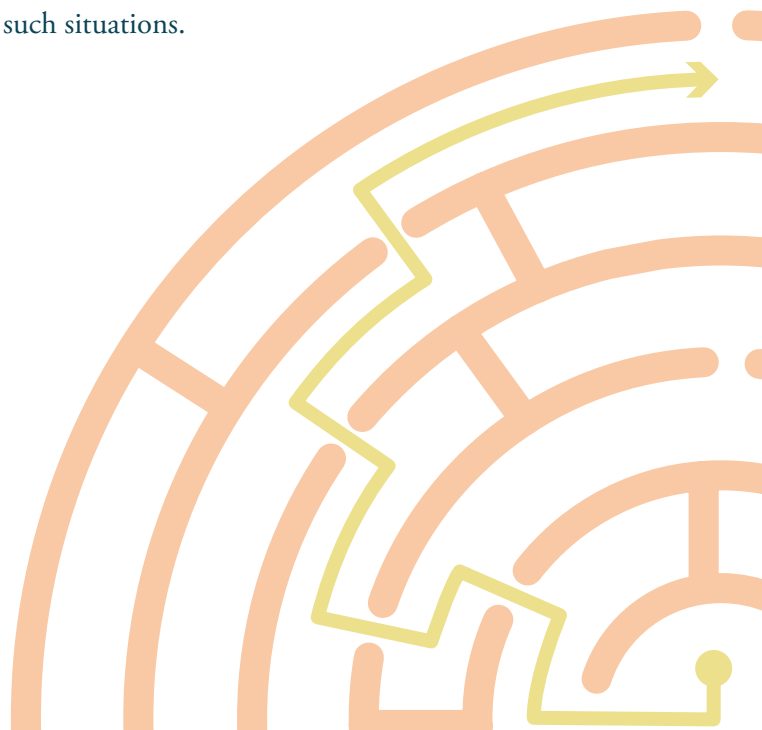


## 7.2 Procedures and protocols

Another approach to decision-making is to follow existing plans, procedures and protocols – which, in effect, make many of the decisions for the individual ‘in advance’. Plans might be oriented to a specific event in a specific place – a contingency plan for an outbreak of conflict in Gaza, for example. Or, they can be procedures which are oriented to a specific activity in a variety of places, such as standard operating procedures (SOPs) for staff evacuations or for the assessment and treatment of injured people in a specific type of disaster (Lee and Preston, 2012).

Procedures and protocols can help ensure that important things are not forgotten (Klein, 2009) and can ‘reduce the burden on decision-makers’ and so speed up decision-making (Lee and Preston, 2012: 19), in fact, one authority sees them as ‘substitutes for leadership’ (Kerr and Jermier, 1978: 380). They are particularly important in ‘highly institutionalised’ organisations (Lu, 2017: xxiv) and are helpful in situations of high turnover (Klein, 2009) and where it is important that decisions made are predictable and consistent across different decision-makers (Heyse, 2013).

Procedures and protocols tend to focus on commonly occurring situations, which have occurred in the past and can be expected to occur relatively frequently in the future (White and Turoff, 2010). Lee and Preston (2012) suggest using procedures and protocols when there is a generic response, and suggest that floods and earthquakes are such situations.



This decision-making approach is based on ‘best practice’ or ‘what works’ – not necessarily a desire to optimise utility in every specific situation. Procedures and protocols will be more difficult to use in atypical situations (and, as Quarantelli (1988) warns, many disasters are atypical) or where multiple issues intersect – for example, where flooding leads to disease outbreak (Lee and Preston, 2012). They have thus been described as having ‘a rather limited range of applicability’ (Patel et al., 2002: 31; also Leonard and Snider, 2010; Waugh and Streib, 2006). Leigh (2016: 1-2) warns that procedures and protocols should rather be ‘guides to – and not substitutes for – individual and collective thought and decision-making. Their use does not remove the need for critical thinking at all stages of their application and in the evaluation of their outputs’. Klein (2009) warns they are not for all contexts and can be dangerous if misapplied. This may be the case if, for example, it is assumed that following procedure is all that is needed (Quarantelli, 1988) and related decisions are needed, but not taken.

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Naturalistic decision-making research tends to be descriptive, and to focus on what people actually do, rather than what they should do.

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### 7.3 Naturalistic decision-making

A third group of decision-making approaches are those known as naturalistic. In contrast to classical/analytical approaches, naturalistic decision-making (NDM) research tends to be descriptive, and to focus on what people actually do, rather than what they should do (Lu, 2017; Patel et al., 2002).

The key insight of NDM is that, in situations where time is at a premium, experienced decision-makers do not make decisions by choosing between a variety of options. Instead, they use intuition and learned mental shortcuts (known as heuristics) to identify a single, relevant course of action. So NDM generally involves:

- Identifying what type of situation this is (comparing to prior known scenarios).
- Identifying a single course of action that can be expected to succeed in that situation.
- Implementing this course of action.
- Obtaining feedback to understand how well this course of action is working, relevant for future decision-making.

Identification, in this approach, largely relies on intuition rather than analysis. There is some difference of opinion in the literature and between different schools of NDM about the use of conscious analysis. For instance, in recognition-primed decision-making (RPD),<sup>17</sup> analysis becomes particularly important if intuition fails and the decision-maker cannot identify the type of situation or a useful course of action (Klein, 2009; Smith and Dowell, 2000). The degree of analysis may also depend on the context and the individual decision-maker. However, in general, the approach suggests that decision-makers rely on their experience and expertise (Lipshitz et al., 2001) by ‘pattern matching’: seeing a similarity between this situation and similar ‘types’ of known situations (Leigh, 2016; Lipshitz et al., 2001). Decision-makers are not trying to break down the situation to understand why it is happening, but grabbing something they believe to be relevant from their toolbox.

NDM approaches were developed largely in opposition to classical/analytical approaches (Patel et al., 2002). Naturalistic approaches largely rely on – and so promote – the use of heuristics, while classical/analytical approaches try to discourage the use of bias (see Box 3). As Patel and colleagues put it:

Expert strategies, which include a range of heuristics, are associated with high levels of accuracy... Interestingly, some of the expert heuristics are suggestive of biases that would be labelled as problematic according to standards of decision research. (ibid.: 28)

While classical approaches tend to focus on the point of decision, naturalistic approaches are more interested in the process by which the decision-maker understands the situation and matches this to her/his experience. As a result, NDM tends to consider the decision’s context and wider processes (Patel et al., 2002).

With origins at a 1989 conference of emergency management and academics (Lipshitz et al., 2001), NDM has been identified as the predominant approach used by decision-makers in emergency settings, including fire, military and commercial aviation (Lu, 2017; Klein, 2009; Lipshitz et al., 2001; Flin et al., 1996). It is unclear whether this method is also used in a majority of humanitarian cases, but it has been observed in humanitarian situations (Hales, 2010; Zhang et al., 2002).

## 7.4 Sensemaking

A fourth decision-making approach is that of ‘sensemaking’, which can be understood as how people and groups understand and react to their environment (Lu, 2017). Sensemaking does not focus on the decision moment, but rather the broader processes of information uptake, the degree to which organisations notice things that are not working and take action to address them.

Some authorities suggest that sensemaking is not about decision-making at all<sup>18</sup> (Weick, 1993), or stands in opposition to decision-making. However, we have included it here on the basis that it is an approach which explains how actions come about, and so addresses concerns about poor humanitarian decision-making leading to the wrong action.

Sensemaking sees decisions as moments in a continuous and constant process of understanding and action in the world (Weick et al., 2005; Choo, 2002). Individuals are faced with a constant stream of information, and within this, they determine which information they pay attention to and will respond to, on an ongoing basis (ibid.). Rather than taking one moment to weigh up options, decision-makers are constantly making sense of ‘chaotic streams of information’ by organising them into ‘meaningful patterns’ (Comes, 2016: 2; see also Choo, 2002; Weick, 1993). Weick et al. (2005: 410) described sensemaking as ‘the experience of being thrown into an ongoing unknowable, unpredictable streaming of experience in search of answers to the question ‘what’s the story?’... ‘Now what should I do?’ In this way, sensemaking is not aiming to ‘make decisions’ but to reduce confusion (Weick, 1993: 636) and in doing so, to produce an understanding which is plausible (Lu, 2017; Weick et al., 2005; Choo, 2002) and which has a level of ‘certainty that is sufficient’ (Weick, 1999: 45). Weick et al. (2005) explain that with sensemaking, decision-makers deal with ambiguity by searching for meaning, settling for plausibility and moving on. In doing so, they may take certain actions – but these actions are almost byproducts of the process of understanding, rather than being the key outcome of a decision-making process.

The process for sensemaking<sup>19</sup> is, broadly, as follows:

- Information which stands out is noticed (does not fit experience and is questionable or ambiguous) and this information is ‘bracketed off’ (Lu, 2017; Choo, 2002).
- Information is interpreted according to previous understandings which ‘worked before’ (Lu, 2017: 26) and ‘chaotic data’ is turned into ‘meaningful and actionable information’ (Comes, 2016: 2).

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The ability of groups to make sense of their environment can be severely tested in a crisis, when the environment changes.

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- If this is not possible, attempt to create a new understanding – a ‘springboard to action’ (Weick et al., 2005: 409).
- If this understanding works/is plausible, it is stored/remembered for the future (Lu, 2017).

The literature on sensemaking is not prescriptive, and tends to be more theoretical than empirical (Muhren and Van de Walle, 2009). It generally does not suggest that sensemaking ‘works’: sensemaking is a human condition, which is going on all the time in all contexts; it is not better than alternative approaches, because there are no alternative approaches. At the same time, it can be done well or badly. The ability of groups to make sense of their environment can be severely tested in a crisis, when the environment changes. A collapse of sensemaking under these conditions can be disastrous (Weick, 1993) while ‘good sensemaking drives successful action in a variety of urgent and ill-defined situations’ (Gralla et al., 2016: 24).

Iterative approaches such as sensemaking assume that, in uncertainty, we do not know what will happen next, and so need structures to be able to manage that (for example, decentralisation, coming together to improve understanding). Sensemaking is similar in many ways to NDM, and some authorities seem to consider the two approaches together (see Gralla et al., 2016). Both focus on the way in which an individual or group understands their situation (and not strictly on how they make a decision): this understanding is the basis on which action is taken. In both approaches, ‘decisions’ are seen as part of a flow, or sequence: one decision follows, and is conditioned by, those that came before it (Choo, 2002). And in both processes, actions are experimental: an action is taken, creating new conditions, and these conditions are then interrogated to better understand the action.

## Box 5: Group decision-making

Making decisions as a group (often required, and useful, in humanitarian operations) is different from decision-making by one individual. There is an enormous amount of information required to understand an emergency situation, and this cannot all be known (Zhang et al., 2002) or handled by one person – it would be ‘impossible for a single individual with the limited information processing capacity to gain control’ (Danielsson and Ohlsson, 1999: 93). It is therefore useful to have a number of people involved from the information analysis and situation assessment stage (Turoff et al., 2011).

Previous work on humanitarian leadership has identified that operational leadership is more effective where decision-making and accountability do not rest exclusively with one individual, but are dispersed throughout a team (Knox Clarke, 2014). Leadership research outside the humanitarian sector also supports this finding (ibid). However, the literature identified in this review largely focuses on decisions made solely by individuals, which is in contrast to humanitarian settings, where decision-making is a social process (Comes, 2016). This appears to be a gap, at least in the literature which forms the basis for this review, and is worth further study.

However, sensemaking and NDM also appear to differ in a number of ways. Critically, in NDM, the decision-maker exists as an independent entity, within but separate from an objective, observed reality. Sensemaking, on the other hand, does not distinguish between an ‘external’ situation and the decision-maker; instead, the situation is created by the decision-maker to make sense of their role in this (new) situation (Muhren and Van de Walle, 2009; Weick, 1993). In this way, reality is a subjective construction, existing in the mind of the ‘decision-maker’, created to help understand and rationalise what people are doing (Lu, 2017). In effect, ‘situations, organisations and environments are talked into existence’ (Weick et al., 2005: 413). By asking ‘what’s the story?’ and ‘what should I do?’ decision-makers bring the event, and its meaning, ‘into existence’ (ibid.: 410).

A second important difference concerns the role and importance of people other than the decision-maker in the process. In NDM, the focus is very much on the individual decision-maker. It is her/his experience that allows ‘pattern matching’ and the determination of an effective line of action based on what has worked in the past. NDM stresses the importance of individual intuition and heuristics, both of which rather preclude the use of group processes of consultation and discussion. In fact, where groups are discussed in NDM literature, they are often seen as a hindrance to an effective decision-making process (Klein, 2009;<sup>20</sup> Weick, 1993), with team dynamics posing challenges to decision-making, and challenges to the study of group decision-making (Lipshitz et al., 2001). Sensemaking, on the other hand, draws attention to the social nature of what is going on: in the attempt to make sense of their environment, the individual is always part of the ‘social reality’ (Muhren and Van de Walle, 2009; Weick et al., 2005). Muhren and Van de Walle (2009: 2) explained: ‘Sensemaking is influenced by the presence of others. People need social anchors and a form of social reality.’ The group’s understanding of the world is critical for the individual’s understanding.

A third difference is the role and importance of crisis and emergency in the two approaches. NDM is explicitly about emergency decision-making, and the observations of NDM are valid only in emergency-type situations. In contrast, sensemaking is a process that occurs all the time and in all situations, but which can be disrupted by crisis. So, emergencies make NDM both possible and desirable, but make sensemaking more difficult.





## Section 8: How appropriate are these approaches in operational humanitarian contexts?

Section 7 identified four broad decision-making approaches which each have their own merits and attributes. But how relevant are they in operational humanitarian contexts, given what this review has noted about the urgency, uncertainty, and high stakes of these decision-making environments? This section explores how, and how well, the different decision-making approaches address the specific decision-making conditions in humanitarian contexts.

### 8.1 Classical/ analytical decision-making

Classical/analytical approaches have a number of advantages. They use a clear analytical process, which can be used for different types of decisions. They are accountable, allowing one to see how the result was achieved. They are helpful in group decision-making, as they allow a number of people to input information and discuss options (Klein, 2009) – though can be tricky where groups do not agree on objectives (Leigh, 2016). Classical/analytical approaches look for the ‘best decision’ rather than a workable one, which is attractive. As a result, there is a widely held ‘assumption that the best decisions are rational – based on logic and factual information’ (Kowalski-Trakoffler and Vaught, 2003: 8).

However, the evidence supporting this assumption generally comes from experiments, which may not actually mirror real-world conditions. In experiments, the goal is known and clear. Potential constraints to implementation are not considered. In many cases, experiment participants are students or laypersons, not emergency professionals. For these reasons, some argue that there is limited real-world applicability of classical/analytical approaches for emergency contexts (Patel et al., 2002; Flin et al., 1996). Previous attempts to train emergency professionals in these approaches do not tend to be used or even greatly valued by the trainees (Patel et al., 2002; Flin, 1996).

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Classical/analytical approaches look for the ‘best decision’ rather than a workable one...

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Overall, the literature reviewed generally saw these rational classical/analytical approaches as poorly adapted to decisions taken in environments with high uncertainty and limited time. While there are examples of this type of decision-making being used in emergency contexts (Kowalski-Trakofler and Vaught, 2003), in general they are seen as ‘too narrow, too rigid, too consumptive in terms of resources and cognitive capacity, or simply ineffective’ (Comes, 2016: 7). There are doubts about their potential for implementation, as ‘prescriptions which are optimal... but which cannot be implemented are worthless’ (Lipshitz et al., 2001: 335).

The major shortcomings of classical/analytical approaches, particularly for emergency contexts, are as follows:

- Many applications of the approach do not look in any great depth at how decision-makers identify what to make decisions about (framing), and this can be a key determinant of decision quality (Klein, 2009).
- The approaches largely assume<sup>21</sup> that decision-makers are rational actors, but people – and particularly people in crisis – cannot be expected to behave entirely rationally.
- They were not developed for, and are not particularly useful in, situations where time is severely limited. Patel et al. (2002) found that classical approaches work well within the medical environment, in low urgency situations. Most decision errors come from using these approaches in situations of moderate urgency, where people believe that they can be used, and try to use them, but they perform badly.
- They were not developed to address situations of uncertainty. Where there is uncertainty about the current context, the analytical response is generally to collect additional information in an attempt to increase certainty. This creates a time problem, but also a problem of cognitive capacity (Patel et al., 2002; Lipshitz et al., 2001) as this information cannot be processed in emergency conditions. So, gathering more information can actually lead to worse decisions (Klein, 2009).

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The literature reviewed generally saw these rational classical/analytical approaches as poorly adapted to decisions taken in environments with high uncertainty and limited time.

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Where uncertainty is about the future, this approach relies on making assumptions (Khorram-Manesh et al., 2016) – but assumptions about crises are generally wrong, because of the unpredictability of these situations, and because there is not enough data to create accurate statistical models or predictions. Lu (2017: 14) explains, ‘Each crisis is unique in its causes, development and consequences, for which a statistical base does not exist’. Analytical approaches to uncertainty lead to ‘brittle decisions – ones that are optimal for a particular set of assumptions, but which perform poorly or even disastrously under other assumptions’ (Kalra et al., 2014: 8).

To some degree, the weaknesses of classical/analytical decision-making in terms of uncertainty can be mitigated by adaptations to classical/analytical approaches that use some of the same techniques but do not aim for a single best decision. Instead, they aim for low regret decisions (which do not give the highest value, but which are highly applicable across scenarios), reversible decisions that could maximise ‘future choice’ (Cosgrave, 1996: 32), safety margin decisions (making assumptions which are far worse than expected) or short-term decisions (Kalra et al., 2014). Smith and Dowell (2000) also suggest progressing multiple options – an approach which is not strictly classical/analytical, as it avoids making one choice, but may nevertheless be useful.

While classical/analytical approaches are not likely to be useful in extreme urgency and uncertainty, their use for operational humanitarian decision-making should not be dismissed entirely. They may be useful in ‘long and complex operations’ (with a slow tempo) (Flin, 1996: 293), for the decision-maker ‘who needs to consider the longer-term resource implications, including the political, economic and public relations aspects, as well as the immediate operational problem’ (Flin, 1996: 162).

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Assumptions about crises are generally wrong, because of the unpredictability of these situations, and because there is not enough data to create accurate statistical models or predictions.

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## 8.2 Procedures and protocols

Overall, this approach has a ‘limited range of applicability’ (Patel et al., 2002: 31) and is best used for stable and well-structured tasks (ibid.). There are numerous examples in the literature where this approach has not coped well under the conditions of uncertainty or the specificity of the context (Lee and Preston, 2012; Metcalfe et al., 2011; Mendonca et al., 2001). The main ways to adapt procedures and protocols to uncertainty are to increase their number. Over time, they become longer and longer to take account of a broader range of situations – but this can make them so long that they are no longer useful (Klein, 2009: 28). Nilsson et al. (2011: 60) point out that it would not be functional to have a ‘checklist in every situation, as disaster circumstances vary and cannot be handled with package solutions’.

At the same time, procedures can be implemented quite rapidly, and are well-suited to groups, as they ensure that people will react in the same way, while decreasing the need for communication.

In humanitarian situations, procedures and protocols should not be seen as an alternative to decision-making, but as an aid which can serve as a basis for action, a launch pad for improvisation (Leigh, 2016; Quarantelli, 1988), which should be the goal. Quarantelli (1988: 375) notes that there are always<sup>22</sup> ‘situational factors... which require specific adjustments’. Interviews with decision-makers emphasise the importance of an individual’s conscious choice to depart from the use of procedure – ‘the mandate is to be aware of when you’re deviating from the rules’ (Nilsson et al., 2011: 62).

Lu (2017) also presents a case for the utility of procedures and protocols when these are not seen as the end point of decision-making. He explains that the failure of procedures and protocols is, in itself, an important feedback loop, which helps organisations to make sense of the situation (ibid.).

Simple procedures can also be useful in extremely uncertain situations, as they can create a sort of ‘do no harm’ holding pattern, which prevents deterioration of the situation while better options are sought (Flin, 1996). For example, anaesthetists who see a patient rapidly deteriorating in vital signs with no explanation will stop all anaesthesia and maintain 100% oxygenation while they figure out next steps (Gaba, 1999). A similar approach was observed in ALNAP’s prior research on humanitarian leadership (Knox Clarke, 2014), where decision-makers used blanket approaches to food distribution in the first 48 hours of rapid onset emergencies.

While procedures may be useful in some humanitarian situations, it is important that where they are used, these procedures are regularly reviewed to ensure that they are simple, based on good practice, and complete. A number of procedures exist in the humanitarian sector – for example, the creation of Humanitarian Response Plans is highly proceduralised<sup>23</sup> – but these processes are not always regularly reviewed and updated. In the case of Humanitarian Response Plans, for example, there are questions as to whether the procedure is actually based on good practice, or more on wishful thinking (Knox Clarke and Campbell, 2015) and on whether it is complete; there certainly seems to be limited linkage between early warning and humanitarian planning processes.

## 8.2 Naturalistic decision-making

Given that NDM was developed from the emergency management world, and has focused on ‘situations marked by time pressure, vague goals, high stakes, team and organization constraints, changing conditions, and varying amounts of experience’ (Lu, 2017: 20), one would expect it to be well-adapted to crises contexts.

However, it is difficult to know how well this group of approaches works, as it is difficult to measure their success. Unlike classical/analytical decision-making, naturalistic approaches are not based on the ‘right answer’ – and so there would be no objective way of judging the quality of decisions made. ‘The approach is largely a descriptive one and does not offer a clear gold standard for evaluating the quality of decisions’ (Patel et al., 2002: 41).

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Unlike classical/analytical decision-making, naturalistic approaches are not based on the ‘right answer’ – and so there would be no objective way of judging the quality of decisions made.

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There are some reasons to be cautious:

- Research has shown that biases do affect humanitarian decision-making (Gonçalves, 2009), and so there is understandable concern about an approach which does not aim to reduce bias.
- Naturalistic approaches rely on the experience of the decision-maker, which is only as good as lessons learned (ibid.).
- It is not clear how good humanitarian organisations and decision-makers are at learning, nor how much learning is actually feasible following operational decisions – as the complexity of these situations may make it impossible to ever know the outcome of a specific decision (Danielsson and Ohlsson, 1999).
- Naturalistic approaches are not transparent, making accountability a challenge – and accountability should be central to emergency decision-making (Lee and Preston, 2012).

When considering how NDM would be expected to perform in humanitarian contexts, we should note:

- Naturalistic approaches address uncertainty about the present by ‘matching’ – making assumptions that the unknown is like prior situations, which are known. There can be danger in these assumptions (Leigh, 2016; Quarantelli, 1988). In general, humans are better at seeing similarities than differences (Leigh, 2016), which might lead to false matching. In addition, pattern matching becomes less accurate under pressure (Klein, 2008).
- NDM addresses uncertainty about the future by using responses that have worked in prior ‘matched’ situations. This identification is based on memory, which Leigh (2016: 6) reminds is ‘not an objective record of events’ – particularly in crisis events (ibid.; Weick, 1993). As ‘memories, pattern-recognition and experience are all affected by biases and are, to one extent or another, constructs [they are] not necessarily entirely true or completely accurate’ (Leigh, 2016: 12).

- NDM experts recognise the inherent difficulties in relying on heuristics and intuition – ‘if the situation is... different from what we expect, we may focus our attention on the wrong things’ (Klein, 2009: 105). Essentially, heuristics will work well where they are built on ‘repetitive tasks and valid feedback’ (Lipshitz et al., 2001: 335), where the decision-maker has built up a depth of expertise they can use to create useful models of situations and of relevant responses. This is the case in, for example, fires (as all fires follow the same physical laws, and the more events an individual attends, the better their intuition about how fires work), where much of the NDM approach was developed.

However, this approach only works if this prior experience relates directly to the current situation – as ‘experience... may not generalize from one domain to another, even experienced decision-makers may frequently encounter decision situations in which they are novices’ (Sitkin and Weingart, 1995: 1588). This problem is compounded by the fact that decision-makers often do not realise that what they ‘know’ might not be correct, and that they may need to let go of past experience. People do tend to ‘hold on to our initial explanations even in the face of contrary evidence’ (Klein, 2009: 270).

Before championing naturalistic approaches for humanitarian response, it is important to consider whether, and to what degree, humanitarian experience in one context relates directly to experience in another. Are these experiences the ‘repetitive tasks’ needed to make effective use of this approach? Are humanitarian responses essentially ‘technical’ problems (like fires) or ‘social’ ones (each one more or less unique)?

Literature appears to suggest that many humanitarian situations are unique and unpredictable events (Danielsson and Ohlsson, 1999). The evaluations reviewed for this paper noted numerous examples of situations which had never been encountered before – the Ebola outbreak in West Africa, the civil war in Syria, and so on – where prior experience had either not been at all useful, or led to a bad decision choice (for example, Adams et al., 2015; Aiken and Dewast, 2015).

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Decision-makers often do not realise that what they ‘know’ might not be correct, and that they may need to let go of past experience.

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NDM is also problematic for making decisions in groups, and for when the decisions of multiple stakeholder groups need to be considered (Klein, 2009) – which is often required in humanitarian contexts (Knox Clarke, 2014). Similarly, as naturalistic approaches are highly individual and intuitive, there is no place in this model for input from affected populations – which evaluations show is something humanitarian decision-makers aim to consider (see Section 4).

The need for team engagement, and the challenges of using an approach which depends on experience and intuition, suggest that any NDM approach used in humanitarian situations would need to include an element of analytical consideration – of the frame, of the relevance of the ‘model’ to the current situation, and of the relevance of the proposed solution. This is likely to slow down the approach, even if the ‘choose one model and implement’ aspect of NDM were retained. Several versions of NDM do include these elements – RPD variations 2 and 3, for example, test conclusions by modelling the situation or various courses of action, and Cohen et al.’s recognition/metacognition (RM) model (Cohen et al., 1996) uses critical thinking to test understanding of situation and of conclusions (Lipshitz et al., 2001). The STEP model,<sup>24</sup> where decision-makers follow a Story, Test, Evaluate, Plan formula for dealing with uncertainty (ibid.), may be of interest to humanitarian decision-makers.

## 8.4 Sensemaking

The literature on sensemaking suggests that this is a natural thought process that occurs all the time, so unlike NDM, it is not specific to a crisis environment. As with naturalistic approaches, sensemaking provides more of a description of what people are doing than what they should be doing, so we cannot necessarily look to the approach for ideas about how humanitarians should behave. In an emergency, the sensemaking task becomes harder as the ‘crisis marks an ecological change, which requires organizations to make sense of the equivocal/uncertain information’ (Lu, 2017: 9). This new information may not fit with previous understandings of the world, the place of the organisation in the world, and the actions that should be taken. In some cases, the situation may be so extreme that sensemaking becomes impossible – and ‘can actually worsen the response through information overload and faulty judgement’ (Comes, 2016: 4).

Sensemaking is interesting, however, because it deals with the group element of decision-making, and because of how it deals with uncertainty. Sensemaking suggests that time pressure, uncertainty and stress can either lead to a complete collapse of the ability to act, and a reversion to ‘primitive tendencies of flight’ (Weick, 1993: 638), or they can lead to individuals and teams using skills in improvisation and the development of a wide range of skills – known as ‘bricolage’. Those able to do so:

... remain creative under pressure, precisely because they routinely act in chaotic conditions and pull order out of them... Thus, when situations unravel, this is simply normal, natural trouble for bricoleurs, and they proceed with whatever materials are at hand. Knowing these materials intimately, they then are able, usually in the company of other similarly skilled people, to form the materials or insights into novel combinations. (Weick, 1993: 639)

One conclusion that we can draw from this is the importance of becoming ‘bricoleurs’: seeing chaotic situations as the normal working environment, developing behavioural flexibility and the ability to bring a variety of skills together in different combinations.

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Sensemaking suggests that time pressure, uncertainty and stress can either lead to a complete collapse of the ability to act, and a reversion to ‘primitive tendencies of flight’, or they can lead to individuals and teams using skills in improvisation and the development of a wide range of skills.

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## Section 9: Conclusion and next steps

The urgency and uncertainty of contexts where much humanitarian action takes place, and the high stakes of many of the decisions which need to be made in operational response, pose a number of challenges for humanitarian decision-makers.

There are a number of potential approaches for making decisions in these contexts, including: classical/analytical, procedures and protocols, naturalistic, and sensemaking. Each approach has its own advantages and disadvantages. However, previous work that touches on humanitarian decision-making appears to have made assumptions based on classical/analytical decision-making (Maxwell et al., 2013; Hobbs et al., 2012; Metcalfe et al., 2011), which is understandable, given the primacy of the approach in most areas of business and public policy. The humanitarian sector does not seem, as yet, to have engaged with alternatives, and particularly with those coming from the emergency management sector. A better understanding of the various ‘good practice’ options, along with a reassessment of some assumptions (about the desirability of attempting to get more and better information before decisions are made, or about the ‘danger’ of bias, for example) is overdue.

Humanitarians should not, in principle, be looking for the one best approach. One thing that is clear from the review is that different decision-making approaches are appropriate for different contexts, with varying degrees of uncertainty and timing (Lu, 2017) and that analytical reasoning and intuition are both valuable skills for decision-makers to cultivate (Gigerenzer, 2014).

Several authors highlight the potential advantages of combining approaches (Leigh, 2016; Kapucu and Garayev, 2011). Cosgrave (1996) argued that it would be foolish to assume that one single decision-making approach would be appropriate for all decision-making in emergencies. Rather, effective decision-makers tailor their decision style to the specifics of the context (Flin, 1996).

If the choice of approach depends on the nature and context of the decision, then one shortcoming that has been exposed by this review is that there is little or no documentation on exactly what sorts of decisions operational humanitarian actors make, and with what frequency. Are most humanitarian decisions on the ground taken in situations of time pressure? Are humanitarians generally addressing totally new situations, or are most humanitarian situations essentially repeats of previous crises? A better understanding of the decisions that humanitarians are actually making would enable a better understanding of the most effective decision-making process(es) to use, or combine.

The review also draws attention to the need to understand decision-making as a process which involves activities beyond simply ‘making decisions’. In particular, effective decision-making rests on an understanding of the situation. Further work should consider how decision-makers can best achieve this understanding in various humanitarian contexts. In particular, it should look at the relative importance of new contextual information, existing knowledge and experience, and feedback on completed actions in creating a basis for action. It should also identify how these various functions can be enhanced to support better decisions.

Another intriguing element in the decision-making process that is hinted at in the literature is the importance of ‘improvisation’. This involves using existing skills to implement new and unprecedented actions, and then testing their utility, rather than deciding to implement one of a set of known options. Improvisation is particularly interesting, given previous ALNAP findings that many humanitarians have a working culture of ‘building it while playing it’ (Knox Clarke, 2017a). It would be worth considering further the value and potential of this approach in an operational humanitarian context.

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Finally, elements of the literature review challenge ALNAP's previous work on leadership. ALNAP's research has provided strong evidence that operational humanitarian leadership is best conducted by groups, rather than by individuals acting alone (Knox Clarke, 2014). The NDM approach to decisions in emergencies, however, emphasises the importance of the individual: it is the individual's intuition and experience which are the basis of effective decision-making. While the other approaches considered here all allow for a group element in decision-making, the contradiction between ALNAP's work on leadership and the NDM model appears to be stark, and to deserve further exploration.

In considering the various approaches to decision-making that appear in the literature, this review has aimed to broaden our understanding of the possibilities and their relative merits, and challenged some assumptions that may have existed in the humanitarian world. In order to create effective recommendations and guidance, however, further research is required. This research – focusing on the nature of decisions that humanitarians are making on the ground and on the factors which make their decisions effective – will form the next stage of ALNAP's work in this area.



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## Endnotes

<sup>1</sup> See for example: Flin, 1996; Flin et al., 1996; Kapucu and Garayev, 2011; Khorram-Manesh et al., 2016; Kowalski-Trakofler and Vaught, 2003; Lu, 2017; Smith and Dowell, 2000; Turoff et al., 2011; Weick, 1993; White and Turoff, 2010; Aldunate et al., 2005; Patel et al., 2002; Quarantelli, 1988.

<sup>2</sup> By operational, we differentiate from strategic decisions. Strategic decisions explore the goals and priorities for the response, while operational decisions would look at how those aims and priorities can be implemented. Strategic decisions would cover the whole response, the entire duration of the response, whereas operational would look at a shorter time period and a specific part of the response (an area, a sector, etc.). Strategic decisions focus on planning, anticipating and financing whereas operational decisions focus on the everyday work, the core activities of response (Knox Clarke, 2017b).

<sup>3</sup> Lu (2017: 3) identifies the following types of uncertainty: ‘unknown causes and nature of a crisis (what and why), unknown involvement of stakeholders (who), unknown scope (where) and duration (when) of crisis impacts’.

Lipshitz et al. (2001: 338) identified three forms of uncertainty: ‘inadequate understanding (a sense of having an insufficiently coherent situation awareness), lack of information (a sense of having incomplete, ambiguous or unreliable information) and conflicted alternatives (a sense that available alternatives are insufficiently differentiated)’.

<sup>4</sup> See also the work of the Decision Makers Needs Community, <http://digitalhumanitarians.com/content/decision-makers-needs>

<sup>5</sup> The Exxon Valdez oil spill, one of the largest oil spills in United States (US) history, occurred off the coast of Alaska in March 1989 and caused considerable environmental damage due to the remote location of the spill (Skinner and Reilly, 1989) and delays in decision-making. A number of assumptions made during the response planning proved incorrect, while the influence of several ‘unanticipated events’ (Harrald et al., 1992: 200) and complexity around the multiple government and corporate actors involved thus ‘hampered decision-making’ (ibid.: 203).

<sup>6</sup> Gigerenzer (2014) notes that, because of our desire for certainty, we can fall victim to zero risk illusion, where ‘known risks are mistaken for absolute certainty’ (so, we ‘believe something to be infallible when it is not’) (ibid: 32) and calculable risk illusion:, where ‘uncertainty is mistaken for known risk’ (so, we mistakenly believe we know the potential outcomes/threats and can predict their impact, but we cannot) (ibid: 32).

Gigerenzer (1994) also describes calculable risk illusion as the ‘turkey illusion’: For the first 99 days of its life, the turkey has no reason to suspect the farmer will do anything but give it food when it appears each day. For the turkey, the probability (calculated using Pierre-Simon Laplace’s ‘rule of succession’) of being fed increases with each day this occurs, with the alternative that something else might happen decreasing. By day 100, the turkey could assert near certainty the farmer walking up the path is coming to feed him – for the turkey does not know about Thanksgiving.



<sup>7</sup> ‘Path dependence’ is an observed phenomenon where decision-making is limited by previous responses and previously determined strategic priorities and decisions (Darcy et al., 2013).

<sup>8</sup> Defined by Gasaway (quoted in Aldunate et al., 2005: 29) as the situation when ‘we are not willing to make a decision until we have all the available information. Because we are working in organizations that are dynamic and ever-changing, complete information is never available’.

<sup>9</sup> For example, when people perceive certain crises as more deserving than others because they have seen media footage or situation reports which elicit an immediate emotional response, and as a result those more visible crises are allocated disproportionate resources, they are demonstrating immediacy bias (Huber et al., 2011).

<sup>10</sup> Research here is not unanimous or conclusive. Kowalski-Trakofler and Vaught (2003: 3) summarise that ‘no conclusive data on judgment and decision-making have emerged [although] a number of studies have reached conclusions of interest to those who must make decisions under stress. The research is scattered throughout the social, psychological, physiological, and medical literature with varying degrees of quality and breadth’.

<sup>11</sup> Although it should be noted that some authorities would not accept this classification.

<sup>12</sup> This is studied as ‘prospect theory’ (Lu, 2017: 18-20).

<sup>13</sup> Described by Weick (1993: 634) as ‘*vu jà dé*’ – the opposite of *déjà vu*: I’ve never been here before, I have no idea where I am, and I have no idea who can help me’.

<sup>14</sup> Comes (2016) explains, ‘When facing a new problem, most people estimate an initial condition. As time unfolds, this appraisal is adjusted. Anchoring is the tendency to fix specific features, making later adjustments inadequate.’ According to Gonçalves (2009), the ‘anchoring and adjustment heuristic is commonly used by individuals when they attempt to estimate facts that they do not know. Several studies show that the estimates are often anchored on environmental or situational factors that are irrelevant. When the individuals adjust their estimates, they usually do so less than what would be necessary.’

<sup>15</sup> Bounded rationality is a concept which explains that the rationality of decision-makers is ‘bound’ by the cognitive limitations of their minds, and the time available to make the decision – so decision-makers will have to aim for a satisfactory solution within the reality of these bounded parameters (Comes, 2016; Patel et al., 2002).

<sup>16</sup> Robust decisions are those which stand up to various potential future conditions (Kwakkel et al., 2016)

<sup>17</sup> RPD, based on research on decision-making in emergency services, ‘emphasizes that courses of action are derived from a rapid assessment of a situation. In the majority of cases the commander will recall a single course of action as part of recognizing a situation to be typical and will quickly run through this option by a process of mental simulation to assess its implications before it is put into action’ (Flin et al., 1996: 267).

<sup>18</sup> Some authors describe sensemaking as in opposition to decision-making, rather than as an approach to decision-making. Weick (1993) for example, explains, ‘The world of Decision-making is about strategic rationality. It is built from clear questions and clear answers that attempt to remove ignorance

(Daft and Macintosh, 1981). The world of sensemaking is different. Sensemaking is about contextual rationality. It is built out of vague questions, muddy answers, and negotiated agreements that attempt to reduce confusion' (Weick, 1993: 636). Based on this narrative, this paper assumes by 'decision-making', Weick refers to classical/analytical approaches to decision-making, rather than all approaches to making decisions.

<sup>19</sup>This process is similar to Gestalt's 'cycle of experience', which advocates a contextual and embedded nature of perception and understanding. The cycle describes 'the process in which a human being, as an individual or part of a collective, becomes aware of what is going on at any given moment with himself or in his environment' (Zwikael and Bar-Yoseph, 2004: 138). Like sensemaking, it is a human condition which is deployed to understand a situation, occurring all the time in all contexts (see Kolb, 1984; Stevenson, 2013; Zwikael and Bar-Yoseph, 2004).

<sup>20</sup>Klein (2009) argues that groups are victim to 'groupthink' – that teams may become too cohesive, and will hinder critical voices from being raised. Those who may have spoken out if the decision were in the hands of one person do not do so if they are part of a group making a decision, as they are 'afraid of disrupting the harmony of the team' (ibid.: 234).

<sup>21</sup> With exceptions, given the concept of 'bounded rationality' – see Section 7.1 and Endnote 15

<sup>22</sup> Emphasis added by authors

<sup>23</sup> See <https://www.humanitarianresponse.info/en/programme-cycle/space>

<sup>24</sup> Derived from the RM model (Lipshitz et al., 2001), the STEP model includes 'constructing a Story, including past, present, and future events. The story is used to Test the assessment, by comparing expectations to what is known or observed. Evidence which appears to conflict with the assessment must be explained. Decision-makers 'then Evaluate the result; if the patched up story involves too many unreliable assumptions, they generate alternative assessments and begin the cycle again. In the meantime, they Plan against the possibility that their current best story is wrong' (Cohen, 1998: 11-12).



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