

grace under
pressure

PART ONE

“*Invention is merely a way of seeing,
of reading accidents as signs and as opportunities*”

• Paul Virillio¹

01 | INTRODUCTION

There are few subjects in the whole field of building on which so much effort has been expended, so much money spent and yet, paradoxically, where so little is really known.²

...[d]espite the wide-ranging and diverse activity carried out into the problems of shelter after disaster, this work appears to have had minimal impact on the relief of human suffering on the ground.³

In this vein the thesis questions what an appropriate design response would be in the event of a disaster.

Whilst we as society should always strive to build better and healthier environments to create an ideal world, room should be made for asking how design could enable us to live in an unstable one.

Kronenburg⁴ maintains that “[e]ffective preparation has rarely been a part of disaster relief activities.”

Disaster management concerns itself with two main objectives: disaster prevention and disaster preparedness. Disaster prevention entails identifying communities at risk, proposing various prevention strategies that run parallel with community-based initiatives, to work closely with improving the livelihoods of the target population.

Current measures have shown to be inadequate and could benefit from research and development in the field of disaster response/shelter provision.

In the light of recent events this modest investigation tries to identify the pressures that come with the desire to aid those who have just lost everything. The study involves moving the traditional role of the architect from post-disaster reconstruction towards pre-disaster preparedness.

Does shelter fall within the domain of architecture? The historic separation between settlers and hunter gatherers resulted in portable nomadic shelters such as igloos and tents. These have traditionally not been formally included in the definition of architecture.

What is the role of interior architecture in emergency relief and what can be gained from approaching shelter from the inside out instead of the outside in?

The thesis looks critically at the various pressures exerted on designing for post-disaster relief. The study investigates throughout the role of the designer in terms of the subject of shelter provision. It investigates and appropriates a local shelter typology.

¹ Virillio (2006:5)

² Ian Davis is a principal lecturer in Architecture at Oxford Polytechnic and has considerable experience disaster shelter as a member of a UN advisory team • Davis (1987:xv)

³ Kronenburg (2002b:101)

⁴ Kronenburg (2002b:102)

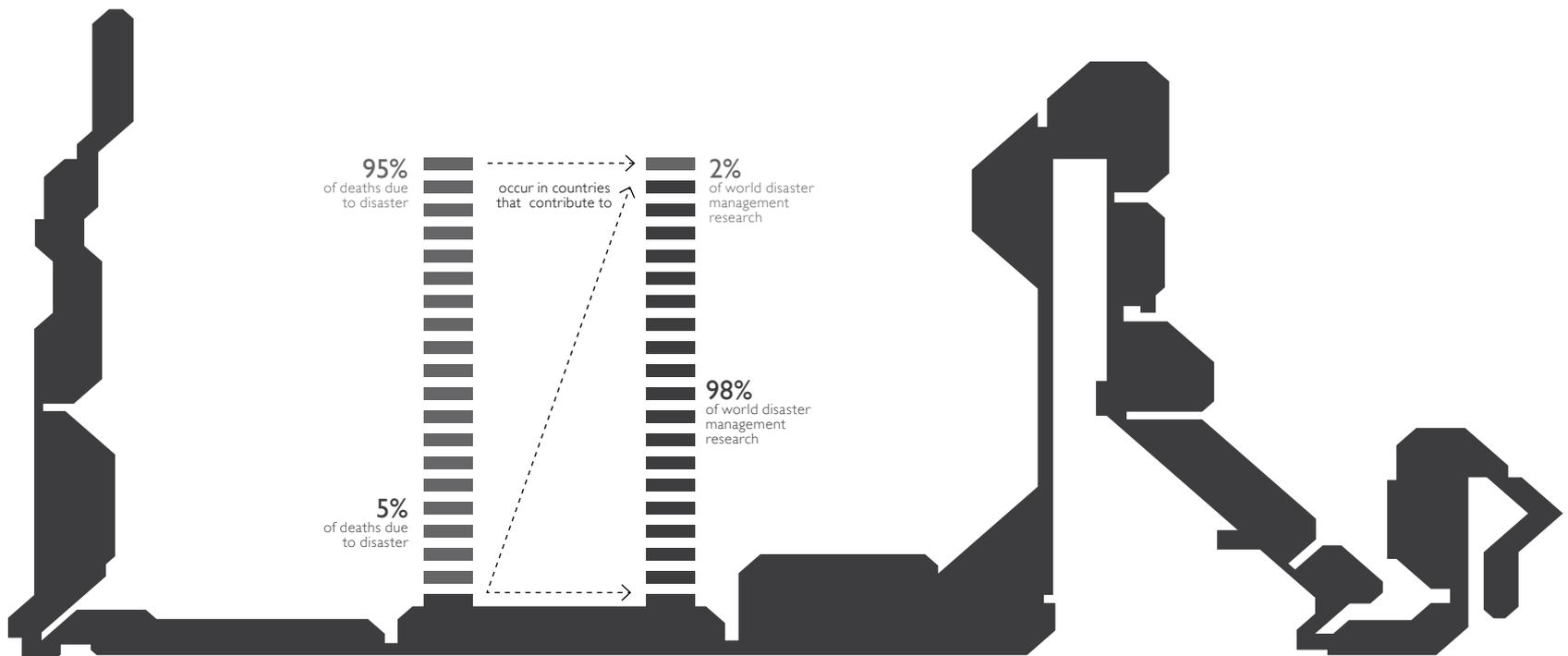


Figure 02 Graph showing percentage of disaster-related deaths in countries contributing towards disaster management research

1.1 OVERVIEW AND CLASSIFICATION OF CHAPTERS

CHAPTER 01 provides a brief introduction to the embodied elements of disaster. This serves to establish the premise of the problem statement and design intent discussed in CHAPTER 02. The aims and objectives set out in these first two chapters shall be subjected to a theoretical and contextual synthesis formulated in PART ONE. A further exploration of the concepts shall be developed in PART TWO, with an emphasis on application.

The following is a short overview of the topics considered:

- ▶ PART ONE discusses the design task and problem statement in terms of a theoretical approach [CHAPTER 03]. A brief overview of the local legislative framework is provided [CHAPTER 04], as well as the international minimum standards for emergency relief, so as to develop a set of guidelines that is contextually relevant.

The concept is further informed by an examination of context and climate, as well as the myths and realities regarding disaster response and recovery at the hand of local case studies and a-contextual sites / scenarios [CHAPTER 05]. This section aims to inform the design development undertaken in PART TWO.

- ▶ PART TWO interprets the ideas put forward in part one, with the emphasis on application. Portable architecture typology and their applications are evaluated,

offering validity to conclusions of the framework and context. This is followed by a review of similar projects and a study of design precedents pursued in CHAPTER 07.

Working closely with material and manufacturing processes [CHAPTER 08], a design proposal will be developed [CHAPTER 08-11] to ensure that the goals set out in CHAPTER 02 are achieved.

1.2 BACKGROUND

Annually, disasters claim the lives of 250 000 people worldwide.⁵ More than 95% of these deaths occur in developing countries. Although a wide range of factors contribute to this statistic it is a fact that most disaster management research is done in developed countries whilst only 2% of the research programs are initiated by developing nations [Figure 02].

The Red Cross Society South Africa [SARCS]⁶ best articulates the necessity of disaster management in the South African context:

When disasters strike, years of development can be wiped out in a short space of time. Often, already fragile public services – such as health, water and sanitation – are further weakened.

The costs of mitigating the effects of disasters consume

the much-needed resources intended for development.

It is estimated that since 2008 more than half the world's population would have become urban dwellers. This number is predicted to grow by two thirds by 2025⁷.

Latent risks that exacerbate the occurrence of disasters in South Africa have become increasingly interlinked. It is the opinion of the South African National Disaster Management Centre⁸ that disaster predictions correspond proportionately to rapid urbanization trends:

Declining livelihood opportunities intensify urban migration. This situation results in overcrowded and poor living conditions in areas often bordering industrial and manufacturing zones, a situation which amplifies the potential damage that can be caused by industrial disasters.

The increase in population growth puts pressure on the development of marginal or “at risk” areas such as arid zones and flood plains.

These statistics should be viewed against the fact that 57% of South Africans live below poverty line⁹, which means that they live in domesticated structures that cannot withstand disasters.

5 German (1999:161)
6 South African Red Cross Society ([n.d]:1 of 1)

7 German (1999:162)
8 National Disaster Management Centre ([n.d]:1 of 1)
9 Schwabe (2004:[1 of 1])

1.3 DISASTERS IN CONTEXT

The declaration of an event as a disaster is not determined by the number of lives lost but rather by the potential of the event to cause loss of life, yet the effect an unfortunate event has on the individual remains the same.

The investigation contained in this thesis is therefore not bound by the definition of disaster alone but also considers events that are classified as major incidents, accidents and hazards.

1.3.1 LOCAL DISASTERS

According to the Tshwane Department of Disaster Risk Management, the most likely and recurring disasters in the region are categorized as natural hazards and these are:

- Informal settlement fires
- Floods (urban)
- Severe weather events
- Veld fires
- Sinkholes

The most recent and largest declared disaster in the region was the outbreak of xenophobic attacks in 2008. It is classified as a political disaster and the rehabilitation of the displaced persons are still ongoing.

This thesis aims to determine whether it is feasible to adopt a unified approach to emergency relief for both natural and political disasters.

1.3.2 RECOVERY PHASES

Response and recovery operations are comprised of various phases. For the purposes of this study they are identified and referred to as follows:

- EMERGENCY RELIEF PHASE
- TEMPORARY PHASE
- TRANSITIONAL PHASE
- PERMANENT PHASE

The scale and magnitude of the disaster would determine the need and duration of any or all of the above-mentioned phases.

1.4 DEFINING THE PROBLEM

It is a harsh reality that those who are least likely to recover from disasters are the most likely to experience them. It is also within this same demographic that one finds people who would never come into contact with the ideals of architecture.

This thesis pursues "grace under pressure" in a quest to elucidate why so many projects of goodwill in aid of disaster relief have failed to realize.

South Africa has as yet no formalised shelter standards and depends on a patchwork of universal solutions and local improvisation. With the accelerated rate of urbanization in African cities the threat of disasters yields staggering implications. There is an urgent need for research into disaster mitigation strategies. Factors that deem imported solutions inadequate are the same factors that could inform local, contextually relevant shelter typologies.

1.5 AIMS + OBJECTIVES

This thesis aims to quantify the present shortcomings relating to emergency relief and recovery, to identify the opportunities that could arise in the event of a disaster, and to investigate and contextualise spatial guidelines. It also aims to determine the feasibility of the approach instigated by the Department of Disaster Management and establish if collaborations with industry can host opportunities for commercial activities.

1.6 RESEARCH METHODOLOGY

- Framework: comparative study
- Context
- Case Studies
- Interviews
- Review of Similar Projects
- Material Exploration

1.6.1 THE PROCESS OF DESIGNING SOLUTIONS

The American Institute of Graphic Arts [AIGA] asks why do you design and put forward a process for designing solutions¹⁰ [Figure 02]. With slight modifications this process forms the backbone of the approach taken for this thesis.

Figure 03 Process of designing solutions • American Institute of Graphic Arts (2005:13) [amended by author], Photograph of Klerksoord refugee camp • Pretorius (2008b:[7 of 10])

¹⁰ American Institute of Graphic Arts (2005:13)

