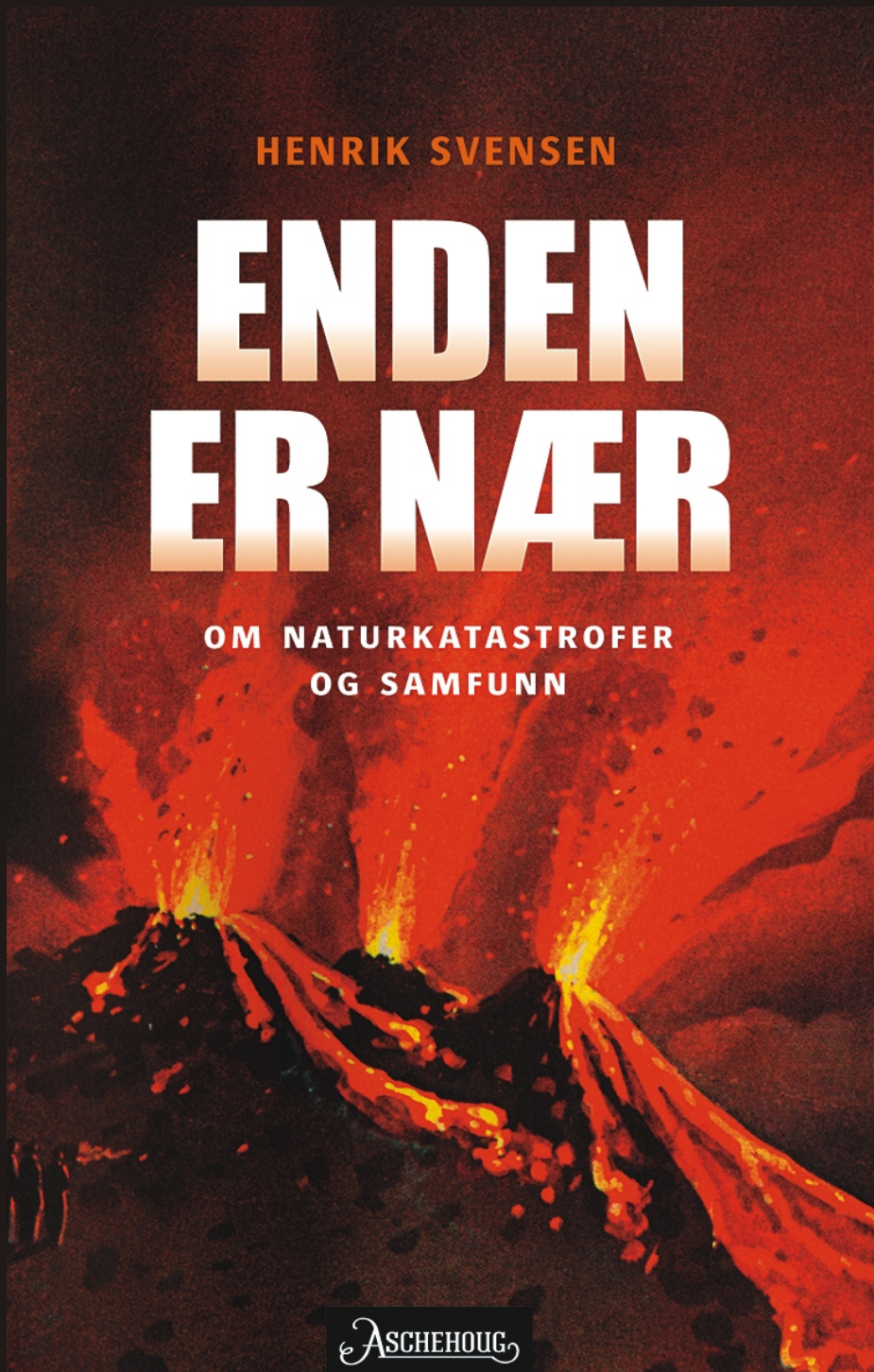


THE HISTORY OF NATURAL DISASTERS

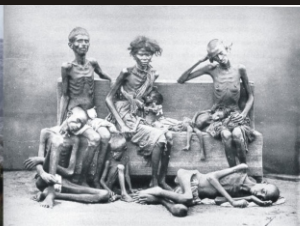
HENRIK SVENSEN

ENDEN ER NÆR

OM NATURKATASTROFER
OG SAMFUNN



ASCHEHOUG



Facts about the book

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About the author

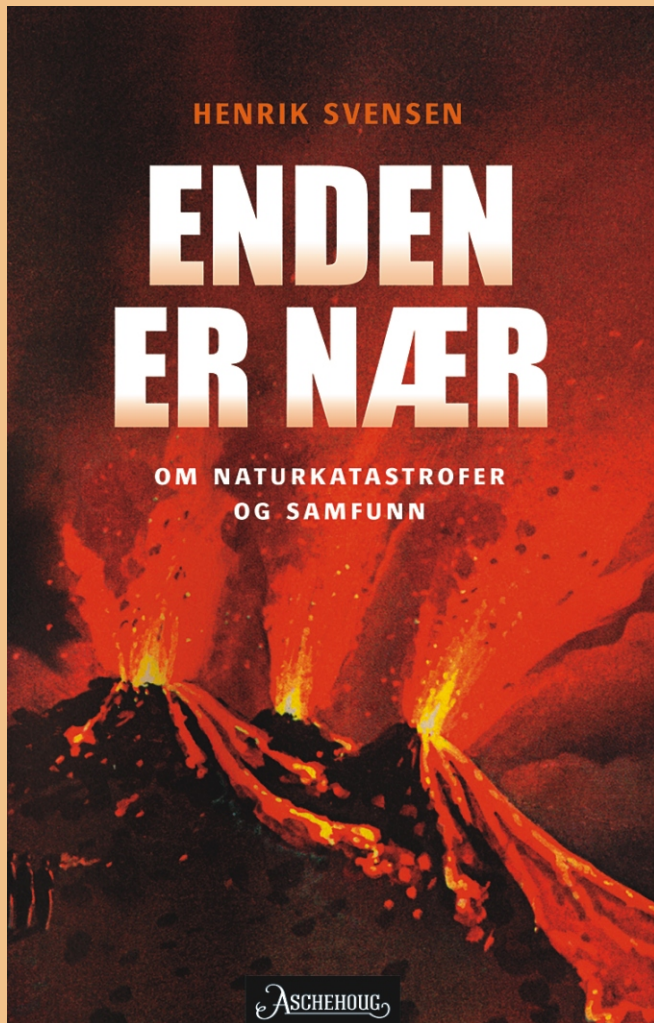
Henrik Svensen (born 1970) has a Ph.D. in geology from the University of Oslo from 2000.

He is working as a senior researcher at the centre "Physics of geological processes", established by the Norwegian research Council as a Centre of excellence. He has published more than 15 scientific papers, including one in *Nature* and three in *Geology*.

Svensen has been active in popular science for the last 6-7 years, and was an editor of the magazine www.viten.com. He has published several news comments, chronicles and essays in the major Norwegian newspapers. Following his Ph.D. he studied the history of ideas at the University of Oslo for one and a half years.

This is his first book.

The writing of the book was supported by a grant from the Norwegian Association for Non-Fictional Writing (NFF).



About the book

Millions of people have died in natural disasters. Cities have fallen into ruins, societies collapsed. As of today, nearly half the world's populations live in the danger zone. Have the natural disasters changed us, how we live and how we think? Do we react differently today than we did hundreds of years ago when disaster strikes?

Henrik Svensen takes us along on a journey through a number of major and minor natural disasters since the beginning of time. The book contains numerous gripping stories and individual destinies. We always ask ourselves the same questions when disaster hits us: Why did this happen to us, and not to someone else? Does the cause lie in the unruly natural forces, or are we punished by God for our sins? Or are disasters caused by our abuse of the environment? Why are we vulnerable?

Examples go back 2000 years in time and span many different cultures. Special emphasis is put on the main disasters and how they have influenced our thoughts about calamities. Examples include Lisbon 1755 and San Francisco 1906. Several chapters are devoted to natural disasters in the USA. Both the disasters in New Orleans (2005) and South Asia (2004) are reviewed in the book. The book presents results from many different scientific disciplines studying disasters, including geology, anthropology and sociology.

www.naturkatastrofer.no

Contents

Chapter 1: Saharan limits

[The “frame” story of the book is an expedition I led to Mali in West Africa to study what was claimed to be incipient volcanic activity. The government in Mali feared the evacuation of thousands of people near Timbuktu. We met the secretary of natural resources in Bamako and headed for Timbuktu and Sahara to evaluate the hazards... The end of the story is presented in the last chapter.]

Chapter 2: Since the beginning of time

The end of the world – Beginnings – Norse ghosts – Rituals during the Middle Ages – A question of blame – Death wares black – Intermezzo – London in crisis – On comets and bacon

[Interpretations of natural disaster since mythological times are presented. We hear about how people in the Middle Ages tried to prevent disasters, about the Black Death, and the view on nature. What was the role of God in disasters? The chapter also describes the transition to the Age of reason, with the emerging scientific interpretation of disasters.]

Chapter 3: Day of the dead

Remembering disasters – The day of the dead – Tents and camps – Pombal and Portugal – Fighting the ideas – Theory and praxis – God or science? – The future

[Account of what may be regarded as the most important disaster ever. The 1755 Lisbon earthquake caused big losses in Portugal, and the intellectual effects spread throughout the world. How could God do his? The post-quake political struggles and the implications for the Age of reason are presented.]

Chapter 4: Shaking the periphery

With courier to Copenhagen – Disaster books – Who controls nature? – Creation

[Presentation of the reactions to the 1755 Lisbon disaster in Scandinavia. Both the tsunami and earthquake were felt in Norway. The intellectual response was huge, led by the leading authority Eric Pontoppidan. The material in this chapter is based on

new research conducted during the writing of this book.]

Chapter 5: California – the culture of earthquakes

Symbolic sacrifice – San Francisco 1906 – The politics of denial – Popular culture and eye witnesses

[Natural hazards and disasters in California, starting as a road trip along the southern end of the San Andreas fault. How is risk and disaster interpreted in California? The rest of the chapter describes the consequences of the 1906 earthquake.]

Chapter 6: “The last call”

The earthquake – Acts of God? – Ideas and changes – Crossing the Atlantic – Apocalypse now?

[The association between religious movements and the 1906 earthquake. Pentecostals in Los Angeles, and how disasters are interpreted as signs of “the last days”.]

Chapter 7: Natural disasters in Metropolis

Natural disasters as opportunities – Cities and risk – An American tragedy – Metropolis in ruins – Long live the cities

[Disaster in cities, how disasters can influence politics. Examples from China, Nicaragua and New Orleans. How is risk distributed in cities, and why are cities always rebuilt? The aftermath of hurricane “Katrina” is devoted several pages. Foreign reactions to US policies and the disaster.]

Chapter 8: Kingdom of the fjords

“The strange disaster” – From disasters to world class literature – “Come to me” – Norwegian disasters – A modern nation – Capitol panic

[Avalanches and flood disasters in Norway, and how they affected marginal societies along the fjords. The role of nature in building Norway as a country, and

how it affected interpretations of disasters. There is also a section about Henrik Ibsen and how the disasters in the fjords shaped his plays.]

Chapter 9: Dangerous nature

Denials – Perspectives – Death at sea – Destruction – Norwegian prophecies

[Why is nature regarded as dangerous, and how does that influence interpretations of disasters? What do disasters do with our mental health? What are the consequences of surviving a disaster?]

Chapter 10: Nature's problematic child

Five towns. Five reactions. One volcano. – Surveillance and scapegoats – St. Agate – Tragedy in several chapters – “Mommy, will we burn?” – Risk – Not super at all – Mordor versus Mt. Fuji

[Volcanic disasters, from the birth of a volcano to the disaster strikes. With examples from Mexico, Colombia and the USA. What happens when surveillance fails to warn the population about disaster? The story of Iceland biggest disaster, the 1783 Laki eruption, and how it affected Iceland and Europe – seen through the priest Steingrímson's diary. Why are volcanoes regarded as dangerous in Western culture, when they are sacred in countries like Japan?]

Chapter 11: The politics of disaster

Climatic struggles – Changes and disasters – Burning heat – The making of the “third world” – Repetitions – Occupied – El Niño – Sustainable development

[Climatic hazards and famines. Why are famines evolving? What is the link between famines and natural disasters? Examples from Asia in the late 1800's, where millions of people died from famine at the same time as grain was exported to Great Britain.]

Chapter 12: The tsunami

Anatomy of a disaster – “They told us to run” – The global disaster – When Nature strikes back – Christian worries – Karma – Is Allah benevolent? – There is no doubt – Hope

[This chapter is devoted to the geology and the aftermath of the December 2004 tsunami that hit Asia. The religious aspects of the disaster are presented, including Protestant and Muslim reactions. The latter are highlighted and elaborated by an interview with an Imam. Religious reactions to natural disasters are

widespread among Muslims (and strikingly similar to Christian), but are rarely discussed in western societies.]

Chapter 13: Are natural disasters natural?

Modern myths – Masters of nature – Long live the sciences! – Disasters and how they influence us – Conspiracy – “The end of the world”

[This is a summary chapter on key aspects of disasters: Do they cause changes in societies? Is science the best way to ensure future reductions in the number of people dying from disasters? What are the sub-cultural reactions to disasters, and are disasters indicators that we approach “the end of the world”? The chapter begins with the history on how natural disasters became “un-natural”.]

Chapter 14: Where the devil lives in the ground

[The chapter concludes the book and is presenting the second half of the story behind the feared volcanic eruption in Mali. The scientific results of that expedition were published by Svensen et al. in 2003 (in the journal *Geology*) and received world-wide attention in the media, including The Guardian, BBC, Discovery Channel, The Washington Post, *Nature*, *Science*, and many more.]

Additional material (tables):

Major natural disasters of the world

Major natural disasters in Norway

Book reviews

The disaster and us

Following the tsunami, the hurricane “Katrina”, and the earthquake in Pakistan, we are given an evocative analysis about how natural disasters are being exploited by politicians and religious leaders.

When the tsunami hit Norwegian tourists on the beaches of Thailand a year and a half ago, the wrath of nature hit closer to Norway than we are accustomed. But that was also an exception. Even when “Katrina” raged in New Orleans and the earth cracked in Pakistan it became evident that the less resourceful were the hardest hit. The reasons for this uneven distribution of consequences of natural disasters is one of many questions addressed by Henrik Svensen in this book – which likely became of extra interest for the publisher Aschehoug following all the dramatic disasters lately. Svensen is a geologist with a Ph.D., and is normally working on themes related to natural hazards. However, he is not using his geology expertise to a full extent in this book. Instead, he is blending the geology and the hazards with a mixture of DVD-covers from disaster movies, Kant’s philosophy, the history of religion, gender studies, anthropology, and anecdotes, in order to fully address the effects of natural disasters on societies. A will to make cross disciplinary approaches is rare among Norwegian academics, and Svensen deserves credit for his contribution.

Lisbon’s fall

Svensen is putting special emphasis on the 1755 Lisbon earthquake as the first “modern” natural disaster. When the age of reason reached its peak, the earthquake demolished 85 percent of the powerful city. The belief in a modern, benevolent and humane God was so strong that the earthquake shook the modern world view. This gave philosophers like Rousseau and Voltaire an opportunity to agitate against the age of reason’s most naïve supporters: Evil is actually present in this world. Kant wrote three papers about the earthquake, and Svensen is daring the claim that reactions against the ideas of progress were fed from the earthquake.

The wrath of Nature

Svensen shows that throughout history, natural disasters have been regarded as important “points of contact” with God. It is in the wrath of nature we find the unresolved questions about the meaning of life: From pre-historic times and towards our times, when religious American anti-abortion activists find a similarity between images of “Katrina” and a fetus, or Iranian leaders interpret the hurricane as Allah’s punishment over USA.

Svensen is often using a textbook style, with remarks so general that they lose some of the meaning. He must be uncertain about his target audience when he is defining “the age of reason”, but not “eschatology”.

“Good old theology”

But he is also presenting a lot of drama, and more than anything else, the book is a multi-faceted and scientifically vivid history of a phenomenon that is shaping our civilization more than we realize. Next time the earth cracks, the reader now has a tool to analyze the reactions and consequences. But just in case: Don’t think you will remain calm if disaster is striking *you*. As the priest Thorstein Gunnarson said in 1928: “When the forces of nature awakens, we all turn into evangelists, and forget about astronomy, physics, metrology, geology, to turn towards good old theology.”

Reviewed by Per Kristian Bjørkeng, *Aftenposten* 7. May 2006. *Aftenposten* is among the three biggest national newspapers in Norway, where Bjørkeng is a journalist. The whole book review is translated and presented here.

Natural disasters – crossing disciplines

“The end is near” sounds like a religious doomsday warning, but Henrik Svensen’s book is far more realistic than that. Svensen, a geologist educated at the University of Oslo, is in this book dealing with natural disasters in a time frame going back millions of years.

It is hard to define what a disaster really is. Is it composed solely of the triggering factors (earthquakes, volcanic eruptions, flood, avalanches, etc.) or the often unimaginable consequences?

At the beginning of the book, Svensen and other geologists have been called to Mali in Africa to identify an incipient volcano with the possibility of disaster in case of eruption. The ground was steaming hot with sulfur emissions and burnt clay. The locals feared a big eruption. At the end of the book we are taken back to Mali, where both Svensen and the reader are taken by surprise. In the book, the author is showing an overwhelming knowledge. He has learnt from other popular science writers lately, and do not hide the fact that most of the book is based on scientific reports. 321 end notes and 12 pages of references is proof of that.

In stead of writing a catalogue of the world’s death and disasters, Svensen has selected disasters that have some way or the other changed the course of history or our view of disasters. In earlier times, men believed they were punished for their sins when disaster stroke. This is evident from many of Svensen’s stories, but he is also showing how political and social forces struggled for scientific explanations, and that measures were taken to prevent future losses. The 1755 Lisbon earthquake is a fine example on how earthquake prevention became a part of the new city planning.

The opposite was the case in Guatemala in 1902. During a dramatic volcanic eruption followed by earthquakes, lava flows and avalanches, a village spokesman declared on the city square that “there are no volcanoes in Guatemala.” The president desperately tried to convince visitors and investors that the country was safe for coffee plantation investments. There *were no* volcanoes to destroy the crops.

“The end is near” is a great example of story telling across scientific disciplines, and in a gripping prose it spans geology, geography and history, anthropology, sociology and the history of religion. The book is recommended to both natural and cultural scientists, but also to politicians and decision makers. It really gives visions far beyond the often rigid divisions of the various sciences.

Reviewed by Hans Arne Nakrem, *Apollon*, June 2006. *Apollon* is the science magazine at the University of Oslo. Nakrem is a Professor in geology at the Natural History Museum in Oslo. The whole book review is translated and presented here.

When Nature strikes back

What is a natural disaster? Is it only when men die we can call it a disaster or it is sufficient that we are affected in other ways? What about destruction of nature on a grand scale? How do people behave after disasters? And not the least: Can disaster be avoided?

Two new Norwegian books circle around these questions: “The end is near” by Henrik Svensen and “The global warming” by Nina Dessau. “The end is near” is treating natural disasters as a phenomenon, whereas “The global warming” is focused on the man made climatic changes and its consequences. These two facts may form the biggest disaster we have ever seen. The disaster will to a large extent be our own fault, which makes it a problem of rare significance.

[Only the parts of the review dealing with "The end is near" are presented below.]

Disaster as a phenomenon

The focus of Svensen in “The end is near” is moved one geographical level down towards the Earth in comparison with “The global warming”. Even though the title of the book is misleading, Svensen is more concerned with single events that with global trends. What is a disaster and what are the consequences for society and individuals? It is a heavy load that Svensen is carrying on his back. In the preface he writes that he entered the project with an attitude that natural disasters are exactly that: natural phenomena rooted in the natural or possibly extreme processes. He has matured a lot since then. It is a book that takes disasters seriously, and goes in depth with both the scientific explanations and the consequences for those affected in various societies. An earthquake striking an empty desert will never be classified as a disaster no matter how big it is. Implicit in a natural disaster is that people are affected, either by death or by destruction of property and livelihoods.

Svensen has written a book that can be recommended to most people. You don’t need any knowledge about natural disasters in order to enjoy and learn from “The end is near”. At the same time, he is holding on to the educated reader by elegantly combining many disciplines, and by analysis inspiring to further reflections.

The art of writing

What is it that Svensen is doing? He is foremost a dazzling storyteller, and in the book we are confronted with many destinies and places. We wander the streets when the earthquake hit Lisbon in 1755, and we are cunningly led through the political struggles following the disaster. Hundred and fifty years later, when the earthquake shook San

Francisco, we feel the earth shake and follow the Pentecostal movement all the way to Norway. As engaging and vivid is Svensen leading us to disasters in Norway. To Verdalen in 1893, when the mud flow took men and houses down the river in one of the biggest disasters in Norway. And to Loen in Western Norway when a 40 meter high tsunami swept away several small towns. However, the book is more than a collection of anecdotes. Svensen is putting all events into a context: historical, geological, religious, and all stories highlight new aspects of disasters. What did disaster aid consist of more than a hundred years ago? Who were the deliverers? How was life in the affected areas after the disaster?

Telling non fictional stories from the sciences is an art form, and few of those publishing non fictional books in Norway are mastering it. Many are perhaps claiming that storytelling is not the goal, and that people should not be “fed”, which is almost like flirting with the unskilled reader? They are all wrong. It is the stories we remember. And it is the fate of individuals solidly rooted in a context that leads us through the text. We remember those in Verdalen swept away by the avalanche, the two young geologists that tried to read the signs of a volcanic eruption in Colombia, but were too late to save people. We remember the people in the Icelandic island Heimaey that were evacuated during one day and still live with the fear of another eruption. Every day. Through the stories we get closer to the events, and we even think that this could strike us as well. It enables us to reflect in a new way.

Life during crisis

You should not be fooled by the title “The end is near”, which is luckily not literal. The author is concerned about how people have associated natural disasters with doomsday prophecies, and this is a theme throughout the book. Nothing indicates that Svensen think the end is near, and the book is rather about life in crisis, during crisis and after crisis.

Svensen’s main message is that natural disasters are natural phenomena, but that the way they are handled is strongly differing and reflects local culture and society. These mechanisms are complex and poorly understood. Natural disasters, including famines and floods affect poor people to a much larger extent than rich. Rich people have safer environments and the resources to get out of disaster areas. And they have the proper insurance. These are important issues and make the big difference between dramatic floods in Norway and let’s say Bangladesh. Svensen is also discussing other events and how political disputes are exploited during and after disasters.

Svensen gives us food for thought to the speculations emerging after reading “The global warming”...Henrik Svensen questions our view on what is natural and un-natural in his book. He shows that victims of

natural disasters often search for scapegoats, be it scientists, entrepreneurs or others. Or they turn to God and a higher meaning. From a western perspective the global warming is man made but will not affect us as hard as in other parts of the world. Norway is in no need of an evacuation due to rising tides, and we do not starve from failing crops. It is the fate of poor people whom we do not know.

Reviewed by Eirin Hongslo, *Prosa*, 05/06 2006. *Prosa* is the national magazine for non fictional writing in Norway. Hongslo is a researcher at the Institute for development and environment at the University at Ås, Norway.

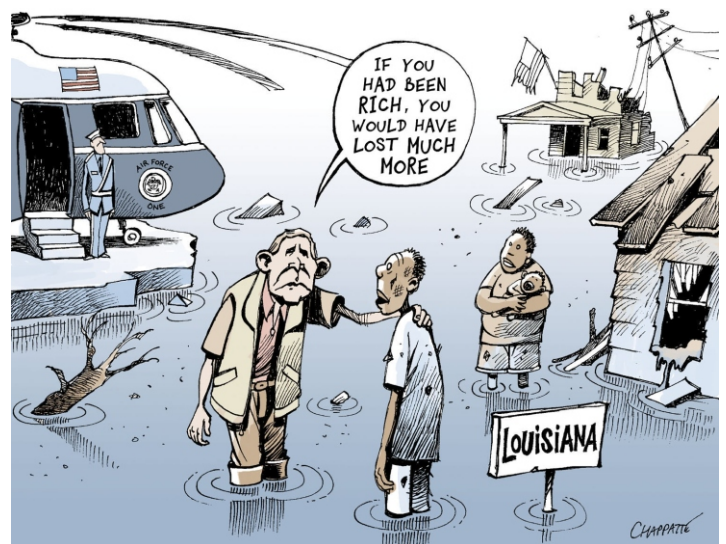
Selected images from the book



Escaping the volcanic cloud of the 1991 Mt. Pinatubo eruption.



The mosque as the only building surviving the 2004 Asia tsunami. Drawing by Mufti Dinda (13) from Aceh, Indonesia.



Satirical comment following the 2005 "Katrina" hurricane.