
Andreas Hoppe
Editor

Catastrophes

Views from Natural
and Human Sciences



Springer



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(ed.)

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Cover: Detail of “The Last Day of Pompeji” by Karl Pavloviv Briullov 1833

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1

Twist to Evil—An Introduction to Different Views on Catastrophes

Andreas Hoppe

When, on March-11-2011, seismic waves east of Honshu propagated through the Pacific Plate it was immediately recognized by many seismic stations as a severe earthquake. But although Japan is very experienced and sorely afflicted with these natural events, this very high 9.0-magnitude earthquake (i.e. the Tohoku-oki Earthquake, see Chap. 2 by Ito & Itoh in this book and Murakami and Ewing 2012) was unexpected. In addition, the stress originating from the subduction of the westward moving Pacific plate under Japan resulted in a sudden upward movement which produced a high velocity propagating wave towards the coast line of Japan. The sudden reduction in water depth near the Japanese coast abruptly reduced the wave velocity and increased the wave height. This tsunami (a Japanese term for a wave in the harbour) flooded the coastal plains (Fig. 1.1) and water levels were raised even higher as the fast waves were pushed through narrow river mouths along the mountainous coast lines.

The tsunami turned—as a natural and relatively common event around the Pacific—into a catastrophe when it hit the densely populated coastal area killing many people and destroying homes and industries. Among others, the waters flooded the nuclear power plants at Fukushima Daiichi causing a nuclear catastrophe that was very likely due to an inefficient defence strategy by the company running the plant against earthquakes and subsequent tsunamis. High amounts of radionuclides were released within a short time interval into the atmosphere and ocean. Parts of it will likely remain together with pollutant components from other destroyed industrial infrastructure in the area, polluting soils and groundwater for a very long time (cf. the descriptions of the Belarus novelist Svetlana Alexijewitch 2006 about the enduring consequences of the nuclear Chernobyl Disaster 1986 in the neighbouring Ukraine).

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Fig. 1.1 A little memorial remembers on the tsunami in March-11-2011 which flooded the eastern coast of Japan (see *pylon* to the *left*) and devastated a densely populated coastal plain (here at Ishinomaki with newly built infrastructure in the background; photo from March 2014)

Far away in Germany, the nuclear catastrophe shocked politicians and changed their minds drastically. In 2002 the ruling party, the Christian Democrats, fiercely defended its nuclear policy against a strong anti-nuclear group saying that stopping the use of nuclear energy would not solve the expected climate change issues but enhance it while simultaneously leading to stronger dependencies on other countries. The Fukushima catastrophe changed public opinion in the whole country. Elections in south-western Germany put, for the first time in Germany, a politician from the Green Party into the position of the Prime Minister in the State of Baden-Württemberg. Furthermore, for the majority of the German politicians the change to renewable energies became the new goal, as illustrated by the election program of the Christian Democrats in Germany in 2013 stating that alternative energy along with a reduction in energy consumption would protect our environment and enhance climate-protection. Besides these political changes, the Tohoku-oki Earthquake even brought medium sized industry in southern Germany into economic difficulties, as fresh supply for their industrial processes were adapted to just-in-time deliveries from the destroyed area in Japan.

This example of an extreme natural event clearly demonstrated the numerous possible cascading effects as well as some of the interdependencies between natural events, hazard, risk, vulnerability, disaster and catastrophe as well as different aspects and views into these terms.

A sudden misfortune, a calamity is called a ‘disaster’, a word borrowed from the French ‘*désastre*’ coming from the Italian word ‘*disastro*’ (ill-omened). In a technical sense and necessary for the management of catastrophes, relevant terms are defined by a working group for the United Nations (UNISDR 2009). According to this working group, a “disaster” is defined as “a serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources”. A “natural hazard” is defined by the working group as a “natural process or phenomenon that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage”. For a disaster to be entered into the database of the UN’s International Strategy for Disaster Reduction (ISDR), at least one of the following criteria must be met: (i) a report of ten or more people killed, (ii) a report of 100 people affected, (iii) a declaration of a state of emergency by the relevant government, (iv) a request by the national government for international assistance.

Natural events—like earthquakes, volcanoes, thunderstorms, floods etc.—have occurred throughout earth’s history. For example, there have been some really big events that destroyed large living populations on our planet, like the extinction events at the end of the Permian (251 million years ago) and the end of the Cretaceous (66 million years ago) which in turn allowed geologists (like me) to divide earth’s history into time intervals before and after such an event—in these two cases for example between a Palaeozoic, a Mesozoic, and a Cenozoic era respectively. But have they been natural catastrophes? A catastrophe for whom? The mass extinction at the end of the Palaeozoic was a chance for the dinosaurs to conquer the globe, and their extinction at the end of the Mesozoic enabled the mammalia, and finally mankind, to develop (for geology see textbooks by Press and Siever 1995; Stanley 2001).

Interestingly, physicists and chemists developed further upon the ideas of geologists when they modelled the consequences of a nuclear war in the 1980s (Turco et al. 1983). They postulated that such a war would throw enormous masses of dust into the atmosphere which would absorb solar insolation and kill the majority of life on our planet. Since then, new and profound hypotheses have been developed for the mass extinction of the dinosaurs (and many other species) by a meteorite which hit the Yucatan peninsula in Mexico, where a crater with a diameter of 300 km has been discovered (“Chicxulub

Crater”), and/or by the eruption of huge amounts of volcanic lava in India at the same time (“Deccan Trapp”) emitting climate changing sulphur and carbon dioxides. In turn and since then, such ideas are used in ecological arguments to warn about ‘catastrophes’ as consequences of industrial developments (nuclear winter, acid rain, climate catastrophe etc.).

A hazard is defined as a potential danger for human society while risk describes the possibility that such a hazard will become true. The Swiss historian Walter (2010, p. 16) gives a nice example to explain it: Whether you pass the ocean by ship or by boat—the hazard to drown is the same in both cases, but the probability is certainly higher if you use a boat. While risks can be calculated, in many cases, fairly accurately, these calculations can have severe problems as illustrated by the famous example of the relation between risk and probability known as “the turkey-illusion” or “just imagine, that you are a turkey”: It says that on the first day a man comes and you (the turkey!) are afraid that he will kill you—but instead he feeds you! The second day he comes again, and he feeds you well. On day 27 you calculate the probability that he will kill you, and on day 63 the probability seems to be low and your chances to be good! On day 85 and through the following days your chances seem to be getting better and better, but on day 100 it is Thanksgiving Day! So, he had a plan and you (the poor turkey) did not know ...

Hazards and risks should be analysed in many aspects: What is the source or origin of a possible danger and is it understood in its origin and potential consequences? Is a human being or larger population and their living place exposed to such a danger, and are they prepared to deal with a dangerous event? What kind of hazard could be expected? The annual expertise for the German Advisory Council on Global Change 1998 (WBGU) divided risks into the following various categories (according to Greek mythology): (i) Damos, e.g. nuclear energy (possible but unlikely); (ii) Cyclops, e.g. natural catastrophes, terrorism, (iii) Pandora, e.g. dangerous chemicals (ubiquitous and persistent), and (iv) Cassandra, e.g. climatic change (possible in the far future; cf. Renn 2008).

Societies are vulnerable to natural events, and these vulnerabilities—whether economic, ecologic, physical or psychological—have increased during the last decades with population growth. More and more people are living in vulnerable areas—e.g. along coasts, especially those around the “Circum-Pacific Fire Belt” with its frequent earthquakes and active volcanoes, in mountainous regions endangered by mass movements etc.—so that the United Nations declared the last decade of the last century as an “International Decade for National Disaster Reduction” with the objectives “to reduce through concerted international action, especially in developing countries, the loss of life, property damage and social and economic disruption caused by natural di-

sasters such as earthquakes, windstorms, tsunamis, floods, landslides, volcanic eruptions, wildfires, grasshopper and locust infestation, drought and desertification and other calamities of natural origin.”

However, mankind itself is a hazard and risk to other species and to itself. Actually, mankind is responsible for an extinction rate of many species comparable to that at the end of the Mesozoic, so much that the sociobiologist Edward O. Wilson (2002) called us a mass murderer. We are burning ancient forests, now in the form of coal, which extracted CO₂ from the atmosphere by photosynthesis for millions of years now within a few human generations, and we are releasing that CO₂ in quantities that change our global climate. The biologist and later geographer Jared Diamond analysed in his book “Collapse—How Societies Choose to Fail or Succeed” (2005) historic human societies in different parts of the world and identified various reasons for their “suicide” or “ecocide” such as deforestation, salting or erosion of soils, overfishing or -hunting, inadequate water management, and overpopulation. But again: for whom would this be a catastrophe? Certainly, it would have been a catastrophe for the society at that time, but it led to a possible chance for other human communities or other species to take the now empty area.

Catastrophe is a relatively young term which comes from the Greek ‘katastrophé’ and means the turn or return, especially of a story in a drama, and so denominates a crucial turn to a bad end or a mischief, a doom, or a breakdown. In contrast to its recent definition, it could have a positive connotation as well because it brings the drama to a resolution, a logical end (cf. Trempler 2013, p. 10). This meaning was introduced into the French language in the fifteenth century, and dictionaries in the seventeenth and eighteenth centuries had no other meaning outside the theatre for it (Walter 2010, p. 16 f.). The historian Walter (2010, p. 18 f.) argues, that the term catastrophe has been born with a radical separation between man and nature, typically since the nineteenth century, and is experienced only with its consequences for human societies. The twentieth century and anthropology then focussed on the experiences and vulnerabilities of societies related to catastrophes, the Risk Societies, as the sociologist Ulrich Beck (1986) described.

The Middle Ages had no idea about a catastrophe as a natural event which seems to be a later projection from our times, as the art historian Jörg Trempler (2013, p. 138) states in his book about catastrophes and their origin from drawings and paintings. He concludes that our recent understanding of catastrophes originated in the eighteenth century and that older events like the Great Earthquake in Bale/Switzerland in 1356 (Fig. 1.2) was not a catastrophe at that “time without pictures”. No artist has denominated a painting about the Great Earthquake of Lisbon 1755 (Fig. 1.3; cf. description and analysis by the philosopher Horst Günther 2005 and Chap. 6 in this

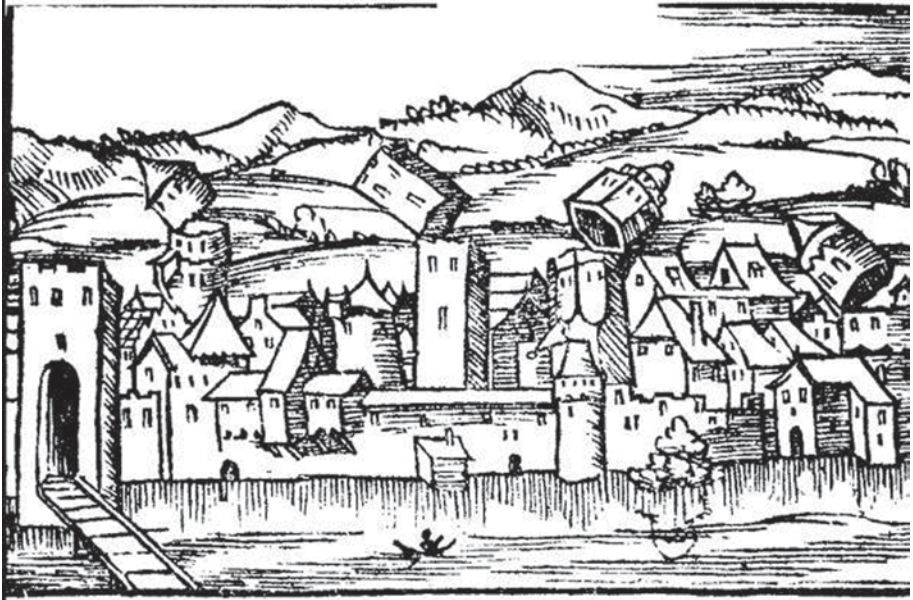


Fig. 1.2 The earthquake in Bale 1356. (Sebastian Münster, *Cosmographica* 1544)



Fig. 1.3 The great earthquake of Lisbon 1755; depiction shortly after 1755



Fig. 1.4 The Last Day of Pompeii. (by Karl Pavloviv Briullov 1833)

book) as a catastrophe, and only a graph from the sixteenth century by Sebastian Münster (Fig. 1.2) inspired later in a retrospective view a transformation of the Bale-1356-Earthquake into a catastrophe (for a compilation and interpretation of data see Meyer with Laubscher 2006). Generally, since the middle of the eighteenth century, only through the increasing number of illustrations of coeval and older disasters were these events seen as catastrophes (Trempler 2013, pp. 11, 14, 61). A famous example is the painting by Karl Pavloviv Briullov “The Last Day of Pompeii” (Fig. 1.4) which clearly shows the eruption of Vesuvius in 79 AC as a catastrophe which he finished in Rome in 1833. The huge painting (456 × 650 cm; now in the Russian Museum in St Petersburg) was extremely successful, and it is said that upon seeing the artist, people lifted their hat in the street, or stood up in the theatre to honour the artist (Trempler 2013, p. 33 ff.).

However, the detailed eyewitness-account of the Vesuvius’ eruption in 79 AC by Gaius Plinius Caecilius Secundus, better known as Pliny the Younger, may be regarded as our first and precise natural-scientific description of an extreme natural event (and volcanologists still use the term ‘Plinian event’ to describe similar phenomena from other volcanoes). His two letters to the historian Tacitus, very likely written 25 years later, were also an answer to the question on how his uncle, Pliny the Elder (Gaius Plinius Secundus Maior), died during the eruptions. Pliny the Younger already described the event as

‘malum’ (evil, disaster), thus distinguishing a natural event from something evil (later a catastrophe) for human beings. The philosopher Gottfried Wilhelm Leibniz (1646–1716) later included a separation of a ‘malum physicum’ from a ‘malum morale’ in his attempts to explain how a ‘good god’ can permit such evil (‘theodicy’). Such a distinction between the natural causes of an extreme event and the consequences for human beings would show that a ‘catastrophe’ requires human empathy.

Studies of literature like those of Judith Kasper (2014, p. 13 f.) confirm these views saying that only since the Lisbon earthquake in 1755 and similar extreme events as well as with the revolutions in Europe at that time, did the understanding of ‘catastrophe’ change to a ‘shocker’ with an extreme potential of destruction. Later in the twentieth century it led to a perpetuation of catastrophes into an ‘age of catastrophes’.

On November 1st 1755 an earthquake followed by a tsunami resulted in a catastrophe in Lisbon (Fig. 1.3) which also dramatically changed philosophical ideas and may count as the beginning of the Age of Enlightenment (Günther 2005; Chap. 6). The Great Hanshin-Awaji-7.2-magnitude-earthquake in the early morning hours of January 17th 1995 brought people closer together—as the Disaster Reduction and Human Renovation Institution (a large museum designed by the architect Tadao Ando) built after the catastrophe in the Japanese Kobe extensively shows. The Swiss historians Alois Fässler and Christian Pfister also have good arguments for their hypothesis, that the catastrophic rock avalanche of Goldau on September 2nd 1806 (Fig. 1.5), which destroyed and covered nearly the entire village and killed almost 500 inhabitants, contributed substantially to the formation of Switzerland (Fässler 2002; Pfister 2004): In this alpine country, with four different languages and where the mountain belt forced the inhabitants to look into different directions, the catastrophe created an awareness in a common vulnerability about catastrophic natural events—and the catastrophe of Goldau was the hour of birth of the first fundraising campaign for the entire Switzerland (Pfister 2004, p. 64). The Tambora eruption in South-Eastern Asia in 1815 not only killed tens of thousands of people but cooled, with its clouds of dust, the global climate such that it brought a ‘Year Without a Summer’ (de Boer and Sanders 2004), bad crops and hunger to Europe, inspired Mary Shelley to write her horror story about Frankenstein and William Turner to use new colour explosions in his paintings due to beautiful sunsets resulting from the volcanic dust which circled the globe (Chap. 6).

In contrast to a sober analysis of a devastating event, a catastrophe seems to require empathy, as mentioned earlier, and a history of catastrophes indicates also a history of culture and mentality at the time as well, as the historian Holger Sonnabend (2013) states. He divides his descriptions of catastrophes in



Fig. 1.5 A rock avalanche on September 2nd 1806 from the Rossberg buried almost the complete village of Goldau in Switzerland. (Etching from Franz Xaver Triner (1767–1824))

the ancient world into the chapters natural catastrophes, epidemics, hunger-, martial-, political-, financial-, fire-, ship- and private catastrophes—the latter even witnessed with inscriptions on tombstones from the second and third century BC in the Eastern Mediterranean area. These days, globalization and the increasing reports on catastrophes seem to increase the threshold for the individual reader, listener or viewer—locations of catastrophes sometimes so far away that the catastrophe is observed as a transient event only.

Catastrophes like the First and Second World War, the Shoah, the Gulag in the Soviet Union and the Cultural Revolution in China dominated the twentieth century—although it is not the intention here to compare them (see the arguments of the Israeli historian and former research director of Yad Vashem Yehuda Bauer 2001 about the “unprecedented” Holocaust).

Sometimes the violence by men seems to outrival the terror of an extreme event caused by nature. The writer Heinrich von Kleist (1777–1811) described in “Das Erdbeben in Chili” (1810; referring to an earthquake in Chile 1647 and likely on the occasion of the Lisbon Earthquake 1755 as well) the tragic story of a young twosome who were not allowed to live together. The young man was imprisoned when the earthquake uncaged him and even let him find his love in the chaos; they headed to the church to praise the Lord for their rescue, and the survivors praised Him along with them until a man

in the crowd discovered the couple and the priest blamed them of an immoral conduct resulting in the disaster which was the Lord's way of punishing them. The mob claimed the couple to be guilty and the end of the story is more disturbing than the description of the 'natural catastrophe'.

In recent years, negative impacts like plundering, burglary and murder after the occurrence of a catastrophe are unfortunately not rare as was seen after the devastation caused by hurricane Katrina over large areas around New Orleans in 2005. And when the President of the United States promised in a longer expected public speech on September 15th that year that billions of dollars would be invested to rebuilt a new infrastructure in the very same areas where many climatologists see rising sea level and increasing likelihood of damage by hurricanes, the perspectives seem to be rather bleak.

Catastrophes have a before and an after. Industrialized mass murder in concentration camps by Germans changed the consciousness of societies and its following history leaving a constant shadow. Even after the catastrophe it left people as 'displaced persons' (Chap. 4 by Holger Köhn) or seemed to impede dialogues between the children of victims and actors (Chap. 3 by Hanna Liss). The catastrophe remained in the minds of the surviving victims and their children, leaving them tongue-tied for years and decades—as the Israeli novelist Lizzie Doron (2012) describes in her book "Das Schweigen meiner Mutter" ("My Mother's Silence"). A fictional and non-fictional novel by Bernardo Kucinski (2013) describes the catastrophe for a father in Brazil during the 1970s who discovered that his daughter belonged to the many politically prosecuted persons affected by the dictatorial system, the "desaparecidos". He learnt that she had lived a double life from which he had known almost nothing about leaving him with innumerable and never ending questions about himself, her and them.

And what may be a day of sheer happiness for many may be a catastrophe for others. The Israeli novelist (and survivor of the Holocaust) Yoram Kaniuk writes in his book "1948" (2013, p. 72 f.): "And when November 29th, the day of the decision of the UN Plenary Session has come, all stood outdoor or grouped around the few owners of a radio and laughed, as happy as never before and never will be. ... Two thousand years of diaspora came to an end. We danced on the streets greeting the event which later would be remembered as the beginning of Nakba, we would have intrigued the Nakba in order to displace the Arabs" [translation by the author]. The Palestinian physicist Ghaleb Natour, born in Israel, reports in Chap. 5 about these views. Certainly, a catastrophe always hits an individual. Theodor Bergmann for instance, born in 1916 as seventh son of a rabbi in Berlin, suffered two World Wars, as a Jew, and in addition as a still critical communist by many disappointments the way communism went, so that he entitled in 2000 his book "In the Century of Catastrophes—Autobiography of a Critical Communist".

“Catastrophe is a tree that grows”, say people in Chernobyl. The disaster on April 26th 1986 in block 4 of the nuclear power plant near the Ukrainian city Prypjat became a central point in many lives, their portraits and voices written down by Svetlana Alexijewitch (2006), a Russian writer who says that she is “a woman of the ear” more than a woman with a pen. Writing in Belorussia where her books cannot be read, she lives in a part of Eastern Europe which passed so many historical infelicities and suffered so many catastrophes during the last decades: The pogroms and assassination of Jews, the Second World War, the Stalinism and the gulags, the Chernobyl nuclear disaster and the brutal suppression day by day in one of the last dictatorships in Europe.

In many cases, decision makers use a catastrophe to act. After the Lisbon earthquake in 1755 the prime minister of King José I, the Marquês de Pombal, proposed: “Your majesty, let us bury the dead and feed the living” and consequently ordered the destruction of the old structures, the construction of a new Lisbon with wider streets, and enacted numerous decrees to reorganize the public administration. During the Great Flood in Hamburg 1962 (see Chap. 7 by Jens Ivo Engels) the then senator Helmut Schmidt and later chancellor of Germany illegally but successfully asked the military forces to help and thus opened the way for emergency laws (for crises like a natural catastrophe, riot or war) which led to massive protests by students in 1968 in Germany.

Disaster, catastrophes or “crashes, crises and calamities” are difficult to predict as the physicist Len Fisher (2011) explains, so predictions may fail (although mitigation is possible, as the example about medicine in Chap. 8 by Walter Merkle may show). The warning about future catastrophes is a common topic—if human society does not change its behaviour. Scientists claim the occurrence of climate change (see Chap. 9 by Gerhard Berz) and sometimes even predict a “climate catastrophe” (which, even when the change is fast, is not an appropriate term). However, fear is in many cases a good driving agent for political interests. We remember from recent history the prophecies about man-made catastrophic “Waldsterben” by acid rain in the 1980s or the debates about stratospheric ozone depletion over Antarctica 25 years ago when a catastrophic scenario by many scientists about skin cancer, eye diseases and failures of crops were frequently developed. In the meantime we still see the green trees of the Black Forest in Germany and hear that in a few decades the danger coming from a hole in the ozone layer may be gone. In other words: bad prophets are in some cases good prophets as well because their bleak scenarios convince decision makers to act; e.g. to pass bills against industrial emissions or to forbid the production of fluorinated hydrocarbons.

Generally people tend to overestimate the bad news which can now be distributed, almost in real time, over the globe—for example they often develop pessimistic views for the future by focussing on the increasing occurrence of

natural catastrophes and overestimating the negative impacts of these catastrophes. However, data for the last five decades show a contrary development: although the economic loss by extreme natural events has increased dramatically, the number of fatalities has decreased by more than 50%, due to better constructed buildings as well as the implementation of effective early warning systems (see numerous statements of the Swedish physician and statistician Hans Rosling and the visualisation of regional and global statistics through his Gapminder Foundation—www.gapminder.org).

However, new and often worse scenarios are portrayed for us. Computers are used to model catastrophes, and open new possibilities for the implementation of early warning systems and mitigation techniques. The use of computers enables, especially in endangered areas, the building and running of complex infrastructures like skyscrapers, chemical industries, high velocity trains etc. On the other hand, the fast growing computer networks are also vulnerable to intrinsic risks of failure or cyber-attacks while information ethics are still lacking, as the philosopher Luciano Floridi (2014) states.

“The possibility of abrupt climate change ... with potentially catastrophic consequences cannot be ruled out”, says the Intergovernmental Panel on Climate Change IPCC in its Fourth Assessment Report: *Climate Change 2007: Chaps. 2.2.4 and 10*. But it may not necessarily lead into a catastrophe for mankind. In recent years or during the last millennium changes have often been dramatic (cf. the books of the biologist Josef Reichholf 2007; the geographer Rüdiger Glaser 2001 and the historian Joachim Radkau 2002). The warning of prophets can change minds, as we have realised with the “Waldsterben” and the “Ozone Hole”, and there are still many future possible outcomes, depending on the changes implemented. For example: The Netherlands may successfully battle sea level rise and flooding, and Bangladesh and neighbouring South-East Asian countries for example have the chance to successfully combat sea level rise as well by saving the enormous mass of sediment from its hinterlands that is annually flooded through its rivers into the ocean: One could try to keep these sediments to gain and raise land. Protecting the mangrove forests along the coast would help to trap these sediment and defend the coastlines, rather than the clearance of these mangroves for the installation of fish or shrimp farms which is a potential catastrophe for biodiversity as these areas are the nursery grounds for most of the marine life.

The term ‘catastrophe’ is a difficult term with many facets and which has been re-defined over the last centuries. It looks to past events and requires empathy, whether originated from an event caused by nature or by man. One may question whether the “catastrophes of the twentieth century” should be denominated as such when defining a catastrophe as an extreme event with consequences neither wanted nor planned. The Holocaust was planned! However, for every person concerned it was a catastrophe.

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2

The Great East Japan Earthquake in the Context of Historical Catastrophes in Japan

Toshihide Ito, Yoshitsugu Itoh

2.1 Preference

The Great East Japan Earthquake on March-11-2011 at 14:46 local time (it is named “The 2011 off the Pacific coast of Tohoku Earthquake” by the Japan Meteorological Agency) occurred on a Friday afternoon, a time of the day when people had maximized their activities. Because of the time period, the pictures of the massive tsunami caused by this quake were broadcasted instantly nationwide. People everywhere were not able to take their eyes off the tragic scenes in front of them, not only on smartphones and cellular phones, but also on TV sets at station buildings, electrical appliance stores, and large plasma display screens installed on exterior building walls all over Japan. Since the time zones in Europe and the US also meant that people were not asleep, shocking scenes rushed live round the world. In these scenes, many people and cars were running about this way and that, and they were swallowed up by the tsunami one after another.

Probably, to people outside Japan, the scene mentioned above might look like an unprecedented tragedy that the Japanese people had never experienced before. Although this catastrophe might be a highly unhappy truth, unquestionably, Japan has experienced many very painful tragedies caused by massive disasters. This recent earthquake disaster is just one of them. However, the

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shocking live scenes generated a great reaction everywhere as compared to past quakes because the requirements for the live coverage all over the world were met by chance in terms of technology and timing. This chapter grasps The Great East Japan Earthquake anew by tracing the history of various disasters from such a perspective as mentioned above.

When the Great Kanto Earthquake struck on September-1-1923 at 11:58 local time, Japan experienced large-scale aid from abroad for the first time in the history of Japanese catastrophes. On this occasion, the United States of America helped a Japan that was still developing, as only approx. 50 years had passed since the Meiji Restoration. Knowing the distress in Japan, the US carried out large aid activities including sending seven destroyers etc. to Japan by the order of President Calvin Coolidge and American citizens contributed more than US\$10.6 million to Japan. After the reconstruction, the Japanese government dispatched six young women to the US on a mission to thank the US for its largesse. It was widely reported in the news both in Japan and the US and this mission conveyed a sense of gratitude to American citizens etc. in various locations across the US (Hatano and Iimori 1999). In that way American aid was a welcome relief for victims of disaster in Japan. Nearly 90 years have passed since that Great Kanto Earthquake in 1923, and this quake caught the world's attention through the live broadcasts, and many countries and people offered Japan what help they could. Although earthquakes are an unfortunate event that occurs suddenly and unexpectedly, a basic spirit of seeking peace surely exists in the aid from each country, and Japan accepted it with appreciation.

Since Japan is subject to frequent natural disasters, the Japanese are thought to love temperamentally the term "recovery." The following anecdote has been passed on: Just before the end of the Second World War, when President Franklin Roosevelt said in 1945 at the Yalta Conference that it would take at least 70 years to reconstruct all the disaster-damaged regions in Japan, because the nation had been hurt so much by the war, Joseph Stalin declared that it was not true and that Japan would reconstruct without any delay, because the country had experience of a swift recovery from the Great Kanto Earthquake in as little as several years (Sakitani 2009; The Sankei Shimbun Co Ltd 1985).

In the Great East Japan Earthquake too, apart from the emotional problems, the recovery and reconstruction looks to be only a question of time in terms of the city's reconstruction or economic revival of Japan. However, Japan was severely hit by the subsequent Nuclear Power Station accident in Fukushima Prefecture, such that nobody was able to entertain the thought and the difficulty that it would cause. We discuss this situation and the future prospects of Nuclear Power Stations too, through considering all the present information.

2.2 Catastrophes in Japan up to the Last Century

2.2.1 Great Natural Disasters in Japan (Disaster Prevention Research Institute Kyoto University 2011)

2.2.1.1 Volcanic Eruptions

There are 100 and more examples of topography called calderas or caldera lakes vast in size, i.e. comprising several kilometres in diameter. There are also numerous topographical changes which have been caused by volcanoes, and the Japanese are doomed to suffer many tragic events due to volcanic eruptions (Fig. 2.1 and Table 2.1).

Modern humans are thought to have begun settling down in the Japanese Archipelago approx. 30,000 years ago via firstly the Okhotsk Sea and secondly the Korean peninsula. Therefore, the Japanese people did not observe the

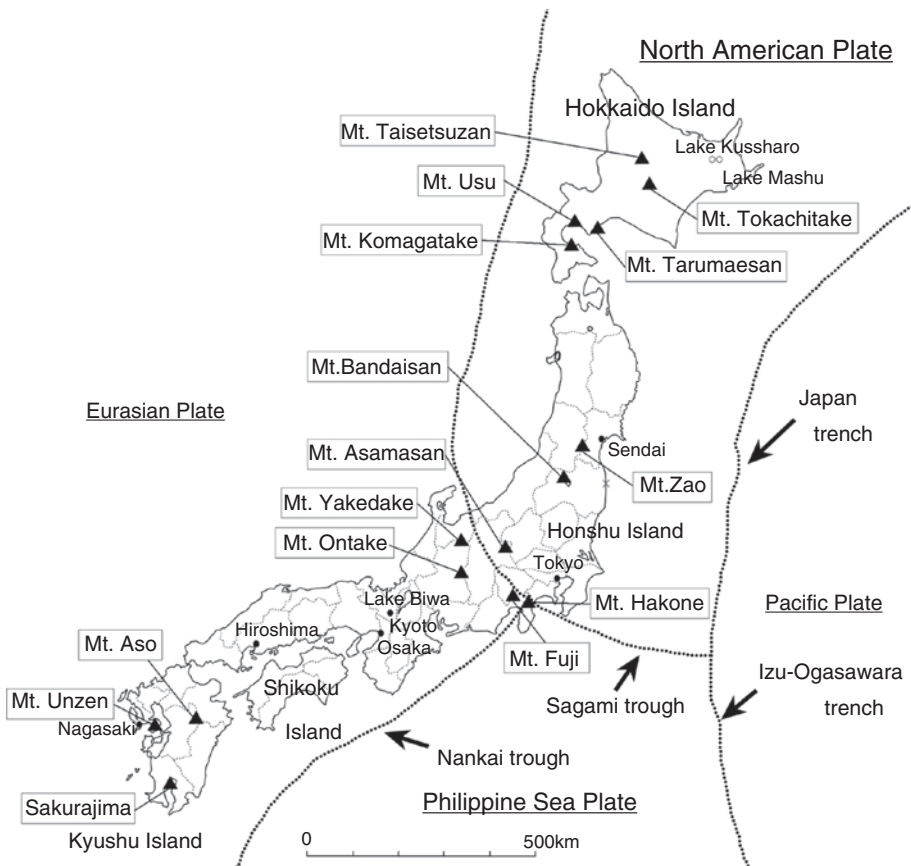


Fig. 2.1 Major active volcanoes in Japan

Table 2.1 Major volcanic eruptions

Mountain	Year	Victims
Mt. Komagatake	1640	700
	1856	21–29
	1929	2
Mt. Bandaisan	1888	461–477
	1938	2
Mt. Asama	1596	Many
	1721	15
	1783	1151
	1908–1914	Many
	1929–1932	6
	1947	9
Mt. Fuji	1707	Many(starvation)
Mt. Fugendake	1663	30
	1792	15,000
	1922	27
	1991	43

formation of one of world's largest calderas such as the formation of the Aso caldera (25×18 km) in Kyushu 90,000 years ago, and the Kussharo caldera (26×20 km) in Hokkaido, which largely sank into formation 33,000 years ago. However, there might be a lot of people who saw drastic topographic changes and experienced tragic events relating to the birth of Lake Mashu formed by great eruptions 7000 years ago.

Since the dawn of history, although a large diastrophism has not been recorded of the formation of a large caldera or lake such as Aso or Kussharo, the only major active volcanoes in Japan as shown in Fig. 2.1 have shown repeated volcanic activity. Active volcanoes in Japan are concentrated in the Northeast and Kyushu regions, and there are no active volcanoes on the western edge of the main island from Lake Biwa and Shikoku Island. Active volcanoes that have caused extensive damage in recent years are as follows, from north to south: Mt. Komagatake, Mt. Bandaisan, Mt. Asama, Mt. Fuji, and Mt. Fugendake. The main record of these eruptions is shown in Table 2.1 based on data from the Japan Meteorological Agency.

In this table, the eruptions of Mt. Asama and Mt. Fugendake are especially significant. Firstly at Mt. Asama, violent activities were frequently repeated, after a major eruption in 1532, until 1783. The eruption in 1783 killed more than 1600 people and carried away over 1000 houses in the Tone River basin due to pyroclastic flow and the avalanche of debris. Furthermore, falling ash caused the whole area to become as dark as night even in daytime after the eruption in the mid Kanto area, which was followed by

cold weather for several years. The large famine, known as “the Great Tenmei famine”, caused by unfavourable weather, cool weather damage etc. in Japan from 1782 was enhanced by this eruption and the resulting cold increased the number of people who starved to death. In the same year, 1783, Laki in Iceland erupted vigorously, causing colder weather throughout the world, similarly contributing to the increase in the number of people who starved to death worldwide.

The eruption of Mt. Fugendake in the Kyushu area recorded the greatest number of victims. This mountain’s volcanic activity caused a massive collapse of the volcanic edifice and the resulting avalanche of heavy debris falling into the Ariakekai gulf in 1792 caused a large tsunami. As a result, approx. 15,000 people died on the other side of the gulf. Although Mt. Fugendake was dormant for a while thereafter, it became active again in 1990 and its eruption in 1991 killed 43 people by its pyroclastic flow.

The highest mountain in Japan, Mt. Fuji is 3776 m in altitude and from ancient times it has been considered a holy mountain dedicated to the god of the shrine on the summit. A massive eruption in 1707 covered Edo (present Tokyo), which is 100 km from Mt. Fuji, in ash to a thickness of around 5 cm. Although there are records of activity in the ensuing year as well as 2 years later, there has been no further record of an eruption in at least 300 years. Mt. Fuji looks to be in an apparent hiatus; however, low-frequency earthquakes derived from magma reservoirs have been frequently observed since 1990. This situation has stimulated concern about the possibility of a massive eruption in the not too distant future. Mt. Fuji is well known as an object of faith, worshipping of mountains being sacred since ancient times, and it has also been an artistic inspiration in terms of Ukiyo-e Painting (color prints of everyday life in the Edo period) etc. As a result, Mt. Fuji was registered as a World Cultural Heritage Site in 2013.¹

2.2.1.2 Earthquakes and Tsunamis

The earth’s surface is covered by dozens of large plates. Japan is located on the junction of the North American, the Eurasian, the Pacific and the Philippine Sea plates. Basically, the Japanese Archipelago is placed on the North American plate and the Eurasian plate. The Pacific and the Philippine Sea plates

¹ Note: Mt. Ontake (3067 m) caused hydro volcanic explosions on September-27-2014, after the writing of this chapter came to an end. Unfortunately, since the tragedy happened at noon (11:52) on Saturday in autumn tourist season, there were many victims from it. Now it began to snow, and the search of missing hikers has been suspended. At the present moment, 57 people were confirmed dead, and it is supposed that there are still 6 missing people. According to the past record of Mt. Ontake, 29 people died by sector collapse due to an earthquake in 1984.

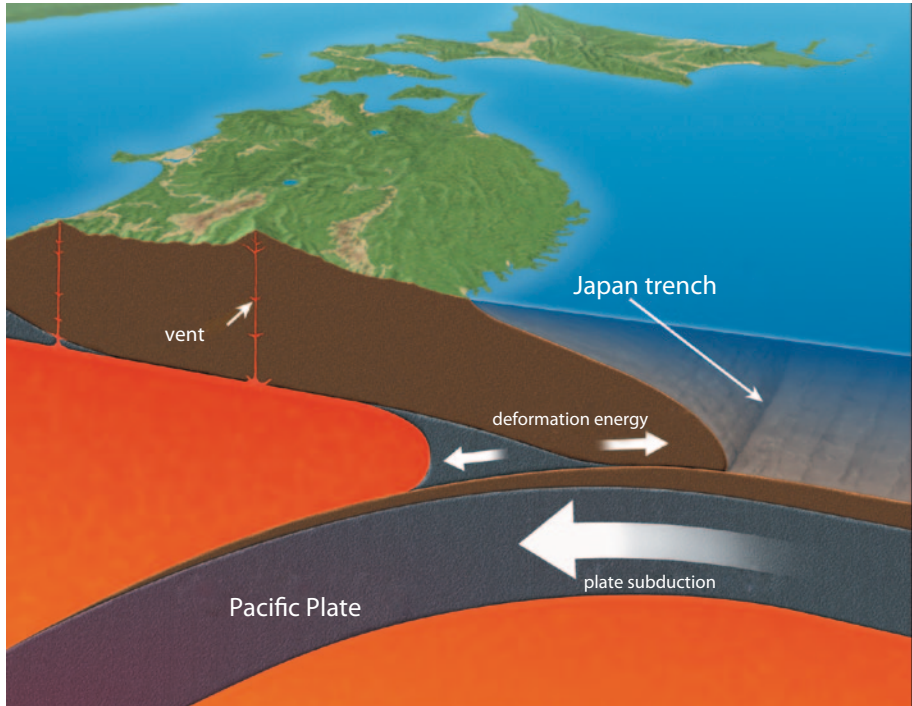


Fig. 2.2 Sources and mechanism of volcanoes and earthquakes in Japan. (From Newton magazine October 2000. Copyright: Akira Yata/Newton Press)

are being submerged beneath both continental plates at the rate of several centimetres a year. There are ocean trenches of approx. 10,000 m in depth at the subduction zone of each plate boundary. The plate boundary between the Pacific and the North American plates is called the Japan trench, in the case of the North American and the Philippine Sea plates—the Sagami trough, and the Eurasian and the Philippine Sea plates—the Nankai trough, and finally that of the North American and Philippine Sea plates is known as the Izu-Ogasawara trench (Fig. 2.2).

The deformation-energy due to the plate subduction process near these trenches has been stored for a very long period of time, and when this stored energy exceeds fixed limits that maintain the balance of the topography, it is released in the form of an earthquake (Fig. 2.2). Thus plate-related earthquakes, due to the structure of the earth, produce geologic faults, which are fissures in the ground. Once a fault is formed, plate-related earthquakes strike the same fault.

An active fault is a geologic fault that has the possibility of causing earthquakes in the future. For example, the geographical conditions to build a nuclear power station in Japan is regulated in that it should be built in a place

where potentially active faults have not shown movement after 120,000–130,000 years ago. However, it is basically meaningless to identify active faults in this general type of way.

Although it is said that there are at least 2000 active faults having the possibility of regularly causing earthquakes in Japan, the exact number of active faults is actually unknown because the ground is covered by thick topsoil including the loamy layer of the Kanto Region etc. Additionally, many active faults are not found due to their presence in the bottom of the sea. In any case, these active faults cause earthquakes of various magnitudes.

Although the magnitude of an earthquake is estimated by its energy, the actual feeling of a tremor varies according to the distance between a given place and the seismic centre or depth of the seismic focus. On the other hand, the strength of a quake is called “seismic intensity”. Regarding the seismic intensity, international rules have not been developed yet. The European Macroseismic Scale used in Europe and the Mercalli intensity scale in the US have 12 levels regarding the tremors of an earthquake. In contrast, a seismic intensity of 10 levels is defined by the Japan Meteorological Agency as shown in Table 2.2. However, the lower and upper intensity in 5 and 6 are unified into one classification, and a total of 8 levels are defined too. The concrete numerical value of seismic intensity levels had been decided by the visual judgment of an employee at the above Agency until 1995 when the Great Han-Shin Awaji Earthquake disaster on January-17-1995 struck near Kobe. Since that time it has been calculated utilizing the measurement data of the seismometer.

Table 2.2 Seismic intensity as defined by the Japan Meteorological Agency

Seismic intensity	Human perception and reaction
0	Imperceptible to people, but recorded by seismometers
1	Felt slightly by some people keeping quiet in buildings
2	Felt by many people keeping quiet in buildings. Some people may be awoken
3	Felt by most people in buildings. Felt by some people walking. Many people are awoken
4	Most people are startled. Felt by most people walking. Most people are awoken
5 Lower	Many people are frightened and feel the need to hold onto something stable
5 Upper	Many people find it hard to move; walking is difficult without holding onto something stable
6 Lower	It is difficult to remain standing
6 Upper	It is impossible to remain standing or move without crawling. People may be thrown through the air
7	

Table 2.3 Number of annual earthquakes in Japan (The Society of Historical Earthquake Studies 2008)

Seismic intensity	2009	2010	2011	2012	2013	Average
7	–	–	1	–	–	–
6	1	–	19	5	1	5
5	4	5	103	22	16	30
4	55	49	520	140	94	172
3	222	190	2,213	527	375	705
2	751	623	7182	1749	1238	2309
1	1927	1670	15,655	4280	3129	5332
Total	2960	2537	25,693	6723	4853	8553

Table 2.4 Major earthquakes until the twentieth century (Narita and Hotate 2013)

Name	Year	Victims	Name	Year	Victims
–	1293	30,000	Mino	1891	7000
–	1498	5000	Sanriku	1896	23,000
Genroku	1703	6500	Kanto	1923	105,000
–	1707	20,000	Tonankai	1944	1251
–	1771	12,000	Nankai	1946	1443
–	1854	6000	Fukui	1948	3769
–	1855	5000	Hanshin Awaji	1995	6443

Table 2.3 shows the number of earthquakes with an intensity of more than 1 in Japan during the period 2009–2013. As is shown, earthquakes with seismic intensity of 1 and more were observed at least 2500 times per year.

Earthquakes have been the cause of great damage in Japan since ancient times; those on record until the twentieth century are shown in Table 2.4. At the beginning of the twentieth century a huge earthquake, the Great Kanto earthquake, occurred 80 km off the Bay of Sagami with a magnitude of 7.9. It directly affected the capital city, Tokyo, just before noon on Saturday, September-1-1923. This earthquake was the most serious disaster in the recorded history of earthquakes in Japan. 105,000 or more people died, 109,000 houses were completely destroyed and 212,000 houses were destroyed by fire. There was a great deal of damage by fire because many families were preparing their lunch at that time.

After the post-war revival was mostly completed, damage was not so heavy even if a relatively large earthquake occurred because many building regulations and earthquake counter-measures for common facilities were enforced. However the Great Han-Shin Awaji Earthquake with a magnitude of 7.3 and the epicentre in Kobe City took 6433 lives and completely destroyed 105,000 houses. Unfortunately, it occurred in the early morning in winter on January-17-1995 at 5:46 am. Many houses were also destroyed by fire just like in

the Great Kanto Earthquake because many families had turned on the heating and were preparing their breakfast at that time.

2.2.1.3 Typhoons

A typhoon is called a hurricane or a cyclone depending on the country. Although the Japan Meteorological Agency defines a typhoon as a tropical depression whose maximum wind speed is more than 17 m/s and staying north of the equatorial line and west of 180° east longitude, or in the South China Sea, this definition is somewhat different from that of the World Meteorological Organization.

During the past half century, an average of 26 typhoons occurred per year. Among them, 12 typhoons advanced in the direction of Japan and 3 typhoons reached at least 300 km near Japan. Particularly, in 2004, 19 typhoons approached near Japan and 10 or more typhoons actually struck Japan. Although most typhoons come close to Japan in August, when a typhoon comes in autumn it often runs through the Japanese islands and brings heavy rain by reacting with the autumn rain front.

Basically, a typhoon is a counter clockwise rotation vortex of cumulonimbus and brings extended rain across a wide area with strong winds. Although typhoons are classified by the strength of wind by the World Meteorological Organization, they become stronger in a right semicircle in the typhoon advancing in a northerly direction. Moreover, typhoons raise the sea level, sometimes more than 1 m.

The disasters caused by typhoons are due to mainly wind damage, flood damage, high tide water damage and ocean wave damage. A strong wind can cause damage to houses or ships, heavy rain causes river flooding or landslides, and high tide water or ocean waves destroy dikes or banks. Though each factor may not bring damage by itself, usually these factors combine to bring more major disasters. There are no historical records or documents about typhoons as there was no concept of typhoons in earlier times. The Toya-maru typhoon at the end of September 1954 is the first typhoon the Japan Meteorological Agency gave a proper name.

Table 2.5 is a list of the major typhoons which have caused heavy damage in recent years. In this table, the name of the Toya-maru typhoon came from the Seikan ferry Toya-maru that linked Aomori City in Honshu (the main island of Japan) and Hakodate City in Hokkaido. This vessel, which was launched soon after the Second World War, carried both passengers and vehicles, and had a maximum speed of 17.5 knot/h, it was 118 m in length and weighed 3898 tons. However, the Toya-maru was sunk by strong winds and high waves caused by this typhoon. The number of deaths or missing persons was 1155,

Table 2.5 Major typhoons in Japan during the twentieth century

Name	Year	Lowest pressure (hPa)	Maximum speed of wind (m/s)	Number of death	Number of missing
Muroto	1934	911	60	2702	334
Makurazaki	1945	916	62	2473	1283
Kathleen	1947	960	45	1077	853
Toya-maru	1954	956	63	1361	400
Kanogawa	1958	963	36	888	381
Ise-wan	1959	895	75	4697	401
Muroto 2nd	1961	918	66	194	8
			Total	13,392	3660

which made it one of the world's largest accidents at sea, after only the *Sultana* (1865) and the *Titanic* (1912). It is said that a mistake in recognition of the occluded front for the eye of the typhoon may be the cause of this disaster. In those days, observation by weather radar or weather satellite was not performed. In addition, four vessels were also sunk at the same time, namely, the 11th-*Seikan-maru* (2851 tons; 90 fatalities), the *Kitami-maru* (2928 tons; 70 fatalities), the *Hidaka-maru* (2932 tons; 56 fatalities) and the *Tokachi-maru* (2912 tons; 59 fatalities). In all, 1430 people died in this one night in the Tsugaru Strait between Honshu Island and Hokkaido Island (Uemae 1983).

Though many typhoons inflicted serious damage to Japan as mentioned above, the damage has lessened and the number of deaths or missing persons has not exceeded 100 after the second Muroto typhoon. The reason for the reduction is mainly due to the implementation of disaster prevention measures, which have been revised and strengthened repeatedly. These measures include efforts such as the maintenance of breakwaters, maintenance of concrete films against cliff failures or boulder flows, etc. Furthermore, the precision of weather forecasting that is necessary for disaster prevention has markedly improved through the use of weather radars or satellite images.

On the other hand, a huge typhoon has not reached Japan since the second Muroto typhoon except in the Okinawa Island area. It is hypothesized by some global warming theorists that typhoons may grow bigger, however, the data does not show whether such typhoons will come close to Japan.

2.2.2 The Second World War as a Human-Generated Catastrophe

During 4 years of this war, the economy of the country worsened, resulting in Japan experiencing its worst tragedy in the twentieth century. The fight on the battlefield came to a tragic end. At that time, the fighting was done by

soldiers, while the tragedy involved the general public including women and children, i.e. air raids against the Japanese mainland, and the destruction of Hiroshima and Nagasaki by atomic bombs.

The first air raid against the mainland was the “Doolittle Raid” on April-18-1942. Sixteen medium bombers, B-25, left an aircraft carrier “Hornet” on the Pacific: 15 of the bombers attacked 6 cities including Tokyo, and 5 other cities in Kanagawa, Aichi, Mie and Hyogo Prefectures, and killed 87 people including private citizens.

From that time on, the US occupied one island in the South Pacific after another after winning the Battle of Midway Island. In November 1944 it started massive air raids on Japan by large bombers, B-29s, taking off from the Mariana Islands. At first, the air raids were aimed at munitions factories, but early in 1945 the air raid turned into indiscriminate night-time low-level bombing from between 1600 and 2200 m altitude. The incendiary bombs consisted of a bundling structure containing small vessels stuffed with combustibles such as jellylike gasoline etc. After release, these vessels are diffused to cause a fire over a wide area. Furthermore, this type of bomb had a shape that easily penetrated the solid shale roofing tiles on most Japanese houses and then burned inside the house.

At least 500 B-29s were dropped in large cities. Table 2.6 shows the damage overview in each prefecture, though the specific numerical values vary among some accounts. This table also contains the damage data on atomic bombs in Hiroshima and Nagasaki.

Among the prefectures, the greatest damage was experienced in Tokyo. Tokyo had suffered the first aerial attack by a large bomber, B-29, on November-14-1944, after the first bombing by medium bombers—the “Doolittle Raid”, mentioned above. It suffered 106 aerial attacks over 275 days, including the two attacks mentioned above, continuing until the end of Second World War. The most terrible was the aerial attack on March-10-1945, a large-scale disaster known as “the Great Tokyo Air Raids” which cost more than 100,000 human lives. Over two and a half hours, a total of 381,300 incendiary bombs (1783 tons) were dropped on Tokyo causing sheets of fire in downtown areas. Everywhere huge whirlwinds of fire broke out, even trying to escape by river was in vain because they were covered with flame due to the gasoline and other flammable materials in the incendiary bombs.

As a last resort to end the war, the US dropped atomic bombs on Hiroshima and Nagasaki in 1945. At 8:15 am on August-6, the bomber “Enola Gay” (B-29) dropped an uranium atomic bomb, causing a nuclear explosion at 600 m, on Shima Hospital in Hiroshima. A huge mushroom-shaped cloud appeared together with intense heat, and in due course a Black Rain started to fall which contained a great deal of radioactive material. In those days, a total

Table 2.6 Air raid damages in 46 prefectures in Japan during the Second World War; in addition, 548 victims have been reported from the prefecture of Okinawa (The Association Which Records Tokyo Air Raids 1982)

Prefecture	Death	Missing	Total	Prefecture	Death	Missing	Total
Hokkaido	835	20	855	Mie	3600	0	3600
Aomori	931	0	931	Shiga	101	7	108
Iwate	688	10	698	Kyoto	111	0	111
Miyagi	1170	82	1252	Osaka	11,089	0	11,089
Akita	73	0	73	Hyogo	11,246	0	11,246
Yamagata	16	0	16	Nara	68	0	68
Fukushima	783	66	849	Wakayama	1806	5	1811
Ibaraki	2626	60	2686	Tottori	120	9	129
Tochigi	543	0	543	Shimane	19	0	19
Gunma	1109	0	1109	Okayama	1782	127	1909
Saitama	713	8	721	Hiroshima	86,141	14,394	100,535
Chiba	1719	44	1763	Yamaguchi	2568	161	2729
Tokyo	97,031	6034	103,065	Tokushima	581	450	1031
Kanagawa	6637	0	6637	Kagawa	927	186	1113
Niigata	1188	0	1188	Ehime	1346	0	1346
Toyama	2174	0	2174	Kochi	647	43	690
Ishikawa	35	0	35	Fukuoka	4623	0	4623
Fukui	1758	14	1772	Saga	225	0	225
Yamanashi	1027	0	1027	Nagasaki	26,238	1947	28,185
Nagano	32	0	32	Kumamoto	1008	15	1023
Gifu	1377	23	1400	Oita	550	16	566
Shizuoka	6473	10	6483	Miyazaki	708	0	708
Aichi	11,324	231	11,555	Kagoshima	3719	48	3767
				Total	299,485	24,010	323,495

of 350,000 people lived in Hiroshima, i.e. around 310,000 general citizens and 40,000 soldiers, and in the several months after this aerial attack, it was estimated more than 90,000 lives were lost.

Three days after the bombing of Hiroshima, at 11:02 am on August-9, the bomber “Bockscar” (B-29) dropped a plutonium atomic bomb, causing a nuclear explosion at 500 m, on the tennis court at a cottage 3 km north of the central part of Nagasaki City. Although the dropping point of the aerial attack in Nagasaki was around 3 km away from the city centre, it was estimated, several months after bombing, that more than 70,000 people were killed out of a population of 240,000.

Two B-29 bombers were used for observing and photographing the damaged areas in both the Nagasaki and Hiroshima bombing. Promptly after the war, the US armed forces sent investigation teams to Hiroshima and Nagasaki to observe the situation and the effect of the radioactivity in the area

surrounding the blast hypocentre. The data on the effects of radioactivity on human beings observed at that time have been used for the guidelines etc. concerning the uses of nuclear power including power generation. Somewhat ironically, this material has proved helpful for the preparation of safety standards, as well the recovery operations conducted to decommission the nuclear reactors damaged by the Great East Japan Earthquake.

2.3 The Great East Japan Earthquake

2.3.1 Disaster in the 'Sanriku' Coastal Area (Yoshimura 2004)

Aomori, Iwate and the northern region of the Miyagi Prefectures are called the 'Sanriku' coastal area where "San" means three, and "Riku"—land. Though this name resulted from an administrative district early in the Meiji Period, it was unknown to the public. However, a massive earthquake in this area in 1896 was reported as the "Sanriku earthquake", and the name "Sanriku" became common.

The region in Japan called the Sanriku coastal area is known for huge earthquakes that occur frequently. Among them, there are some earthquakes located directly above the focus that occurs due to the activities of inland active faults as in the Great Han-Shin Awaji Earthquake. However, most of the large earthquakes are plate types where the seismic center is on the Japan Trench as illustrated in Fig. 2.2. The Japan Trench is the final destination toward which the Pacific plate moves at a speed of about 9 cm per year. The Pacific plate pushes under the North American plate, on which the Hokkaido and Tohoku regions are situated, to go deep into the earth.

In many cases, a huge earthquake occurring near or at the ocean floor is accompanied by a tsunami. Tsunamis can travel great distances from the source region, for example an earthquake in Chile and the western coast of the US across the Pacific can cause a tsunami that can affect Japan. A tsunami propagates at a speed of the radical of gravity acceleration multiplied with the water depth. Therefore, for example, in the Pacific at a water depth of 4000 m, the tsunami travels at a speed of at least 700 km/h (a little less than 200 m/s), the same speed as a jet aircraft. As a result, even if the tsunami occurs in Chile, far away from Japan, it arrives in Japan one day later. Of course, the opposite is true, and a tsunami occurring in the Sanriku coastal area may hit the western coasts of North and South America.

The term "Tsunami" comes from the Keicho tsunami, which occurred in the Sanriku coastal area in 1611. Regarding this tsunami, Masamune Date,

Table 2.7 Major earthquakes and consequences in the Sanriku coastal area before the twentieth century (Research Report by Ofunato City Museum 1990)

Name	Year	Magnitude	Intensity	Tsunami (m)	Victims
Jogan	869	8.3–9.6	–	10	1000
Keicho Sanriku	1611	8.1–8.5	4–5	20	2000–5000
Kansei	1793	8.0–8.4	6	5–7	100
Ansei Hachinohe	1856	7.5–7.7	5	5–7	38
Meiji Sanriku	1896	8.6	4	38	21,959
Showa Sanriku	1933	8.1–8.4	5	28	3064
(Tsunami from Chile)	1960	–	–	6	139
Tokachi-oki	1968	8.1	5	6	52
Sanriku-Haruka-Oki	1994	7.8	6	–	3

the lord of the Sendai domain who had control over this territory visited Ieyasu Tokugawa, who began the Edo Shogunate, to talk about the event. Ieyasu Tokugawa described this tsunami story in “Sunpuki” (his diary-like record) where the term “Tsunami” was used for the first time in Japan. The Chinese character “Tsu” in the word of “tsunami” means a landing place, and “Nami”—wave, as a result, the term “tsunami” has a meaning of “the wave that attacks the port”. Incidentally, Masamune Date said in his story that when the tsunami came, one of his vassals, landed with fishermen, moored their boat to a pine tree in fear of the tsunami. The boat was found to be washed toward the treetop of that pine after the tsunami went down. Three hundred years later, the 1946 Aleutian Islands earthquake struck causing a tsunami. The Japanese-American immigrants in the US state of Hawaii referred to the phenomenon as a “tsunami” and the term became used in the US and eventually around the world (Ebina 2014).

The record of earthquakes in the Sanriku coastal area goes back to 799, and Table 2.7 shows a list of huge quakes and tsunamis that had a large number of victims until the last century. The Sanriku earthquake of 869 (“Jogan” earthquake) falls into the oldest record of an earthquake with a large number of victims, estimated at more than 1000 people. Incidentally here, “Jogan” is an era name, and according to Japanese custom when a large earthquake occurs, it is often named after the era in which it occurred.

In those days, Japan had a population numbering less than 6 million. The tsunami that struck in 1960 was an apogean tsunami which originated from an earthquake that occurred in Chile. This tsunami hit Japan like a bolt out of the blue, 22 h after the Chile earthquake, to cause a lot of damage along the Pacific Coast from Hokkaido (north) to Okinawa (south) in the early morning of May-24. Nineteen cases were reported since 1586 of tsunamis that had occurred off southern South America and hit Japan and considering

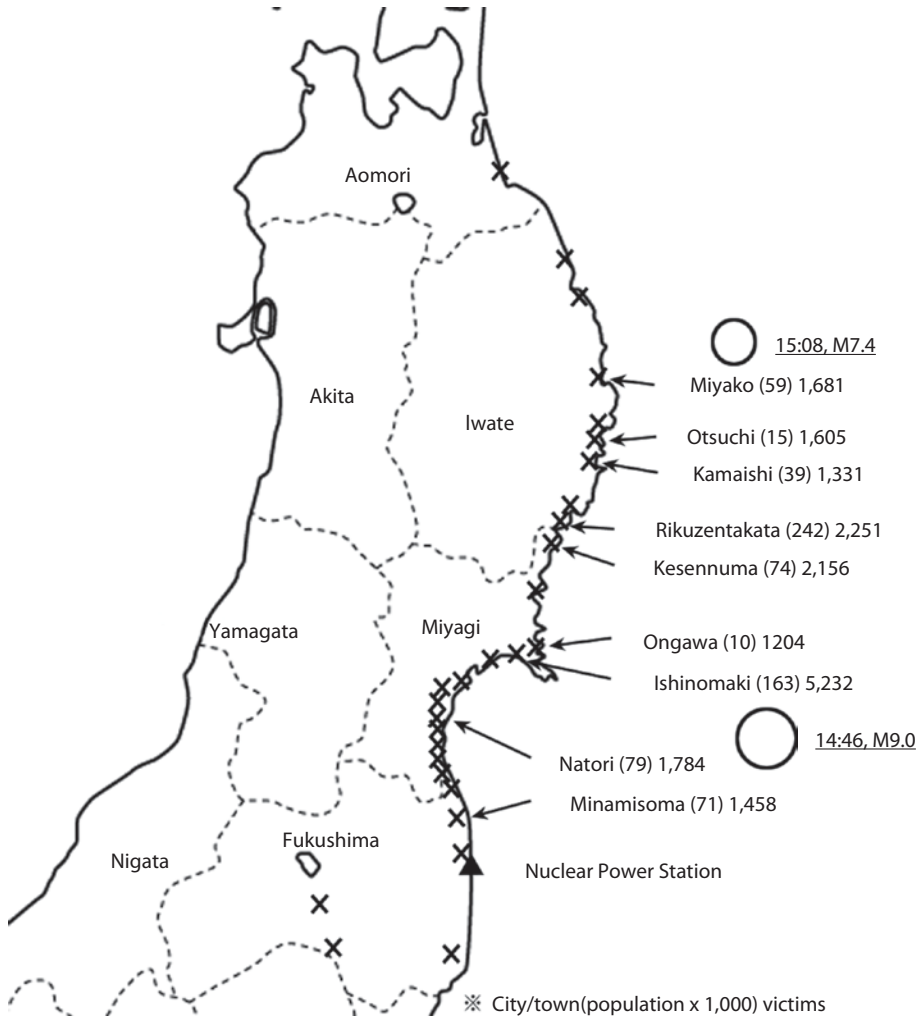


Fig. 2.3 Epicenters and cities/villages with at least 1000 fatalities (as of 30 March 2011) during the Great East Japan Earthquake in the 'Sanriku' coastal area. Other X marks: cities/towns with less than 1000 victims. (Source: Asahi Newspaper)

this record the Japan Meteorological Agency should have been able to stay on top of the issue in 1960.

Since the 1933 Sanriku earthquake, powerful earthquakes have struck frequently at relatively short intervals such as approx. 30 years including the Tokachi-Oki (Off-Tokachi) earthquake in 2003 and the far off Sanriku earthquake (the 1994 offshore Sanriku earthquake). Sixteen years after the 1994 offshore Sanriku earthquake, the 2011 Great East Japan Earthquake struck on March-11. Figure 2.3 shows the focal region of this earthquake, and large aftershocks just after the main shock. In principle, this earthquake

occurred as a plate type on the landside of the Japan Trench, that is, the area where the Pacific plate submerges beneath the North American plate. Furthermore, since many earthquakes strike in a considerably wide range along the Japan Trench as well, this earthquake suggests it would be a massive earthquake. However, the intensity of the aftershocks did not exceed that of the main shock. In this earthquake disaster, a colossal tsunami causing great damage was brought about by fault slips estimated to be as big as 50 m.

This earthquake registered a maximum magnitude of 9 and a seismic intensity of 7 on the Japan Meteorological Agency scale. Furthermore, in this quake, the tremor with a seismic intensity of more than 1 was felt throughout Japan from the north end of Hokkaido in the north to the south end of Kyushu in the south. This earthquake was the first to be felt nationwide in Japan since the Japan Meteorological Agency had begun automated observation by seismic meters. According to Table 2.3, the number of earthquakes classified as those with a seismic intensity of more than 1 was 25,693, more than ten times that in the previous year. In the case of earthquakes with a seismic intensity of more than 4—there were as many as 643, approx. 12-fold compared to the previous year. The mean number of quakes during 3 years before the Great East Japan Earthquake was 3108, as a result, the number of aftershocks in that earthquake was approx. 22,500 in 2011, 3600 in 2012, and 1700 in 2013. Furthermore, the latest data at the present time (i.e. until May 2014) registered 1582 earthquakes, and the number of quakes through linear extension is expected to be 3800 in 2014. Therefore, the aftershocks are still continuing even now though 3 years have passed since the Great East Japan Earthquake struck. However, the magnitude and number of aftershocks are converging rapidly.

2.3.2 Disaster Resulting from an Earthquake

2.3.2.1 Damages Caused by an Earthquake and Tsunami

Table 2.8 shows the severity of the damage caused by the Great East Japan Earthquake available as of March 2014 and divided into administrative divisions. This table covers only prefectures where the dead were confirmed, however, when the injured were included, 24 prefectures come under the affected area as far as the Kochi Prefecture in Shikoku Island.

Regarding the cause of death, many people (77 % of the total) were crushed to death in the Great Han-Shin Awaji Earthquake, 16 years ago. On the other hand in the Great East Japan Earthquake (Fig. 2.3), the ratio of death by crushing was 4 %, whilst that of death by drowning caused by the tsunami was 92 %. In that sense, the aspect of damage in this earthquake is similar to

Table 2.8 Fatalities by the Great East Japan Earthquake

Prefecture	Deaths	Missing	Total
Hokkaido	1	0	1
Aomori	3	1	4
Iwate	5112	1142	6254
Miyagi	10,472	1283	11,755
Yamagata	3	0	3
Fukushima	3263	226	3489
Ibaraki	65	1	66
Tochigi	4	0	4
Gunma	1	0	1
Saitama	1	0	1
Chiba	22	2	24
Tokyo	7	0	7
Kanagawa	4	0	4
Total	18,958	2655	21,613

that caused by a typhoon. As shown in Table 2.8, missing persons represented 12 % of victims even after 3 years, and almost all were washed out to sea. In the case of a typhoon, the sufferers are exposed to wind and rain for a long stretch time. On the other hand, in the event of a tsunami, the afflicted people experience the weather for a short time as compared with typhoon. Possibly for that reason, the ratio of missing persons among victims is approx. half of that compared to the ratio 21 % in a typhoon (Table 2.4).

The recent earthquake disaster is said to be the severest earthquake in 1000 years since the Sanriku earthquake of 869 (Jogan large earthquake), and the tsunami height was far beyond the administration's assumptions. In the document produced by The General Affairs Agency, the tsunami height was described to be more than 9.3 m. The reason why the expression "more than" was used is that the practical height was higher than an available observation value because the observatory was damaged by the tsunami. According to the media, the actual tsunami height is estimated to be at most 21 m (Tomioaka Town, Fukushima Prefecture). A situation that occurred at the office building for disaster mitigation in Minamisanriku Town, Miyagi Prefecture, stands as a symbol for an event that was far beyond the administration's assumptions (Fig. 2.4). This building had been erected for disaster prevention, mainly earthquakes and/or tsunami, and it was designed to withstand these phenomena. When this great earthquake struck, a young female staff was exhorting people, through loudspeakers in each district, with all her strength to evacuate from the tsunami. However, since tragically the tsunami height was 2 m higher than this building, she fell victim to the tsunami. Above all things, her courageous act enabled many people to escape from tsunami.



Fig. 2.4 The office building for disaster mitigation in Minamisanriku Town (*left*) and the Okawa Elementary School (*right*) in March 2014

Though damage due to the tsunami was serious, the run-up height of the tsunami from the seashore to the inland was up to four times higher than the tsunami itself. This run-up height is estimated by the remaining traces etc. of drift due to a tsunami wave, and in this earthquake disaster, it was reported to be more than 40 m at some places in Miyako City, Iwate Prefecture, and Onagawa Town, Miyagi Prefecture.

Due to this run-up, a lot of serious damage was caused, above all, most tragically at Okawa Elementary School in Ishinomaki City, Miyagi Prefecture. This long-established school was opened in 1873 and is located beside the Shin Kitakami River, 5 km inland from the Gulf of Oppa on the Sanriku Coast. When approx. 50 min had passed since the earthquake, a tsunami that had run-on from the Shin-Kitakami-gawa River hit children and faculty members just starting to seek refuge outdoors. 74 children out of 108, and 10 faculty members died or went missing when this run-up struck the area after the Great East Japan Earthquake (Fig. 2.4).

2.3.2.2 Accident at a Nuclear Reactor as a Secondary Disaster (Takada 2011; Fuchigami et al. 2012)

Different from previous earthquakes, a new problem was generated at the Nuclear Power Station during this earthquake on March-11-2011 (Figs. 2.5, 2.6, 2.7). When this earthquake struck, the following four Nuclear Power Stations were operating on the Pacific coast near its seismic center: (1) Onagawa (Tohoku-Electric Power Co., Inc.), (2) The Fukushima Daiichi (No. 1; Tokyo Electric Power Company—TEPCO), (3) The Fukushima Daini (No. 2; TEPCO), and (4) Tokai No. 2 (The Japan Atomic Power Company). Each reactor was shut down automatically at each Nuclear Power Station. Furthermore, the cooling reactor was successful at three of the Nuclear Power Stations to the

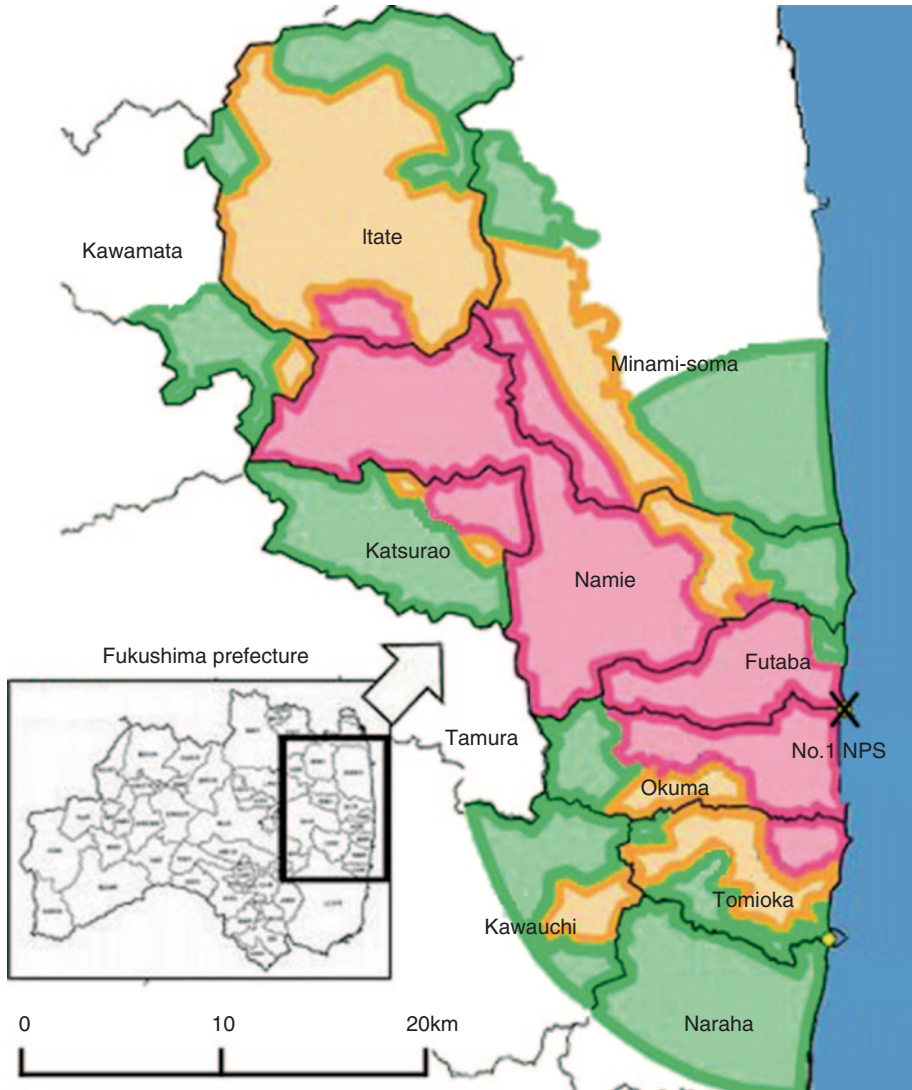


Fig. 2.5 Evacuation areas in the district of Fukushima after the Great East Japan Earthquake. *Green*: evacuation directive lift prepared area, *orange*: restricted habitation area, *red*: difficult to return zone

approved aseismic performance of light-water reactor technology. However, things began to present an entirely different picture at the Fukushima Daiichi station (Matsui 2011).

At this Nuclear Power Station, just after the power supply from the outside was cut off, emergency diesel generators began operating. Once the tsunami hit however the generators stopped working. The tsunami was 13 m in height, far higher than the 5.7 m that had been anticipated at the time of construction.

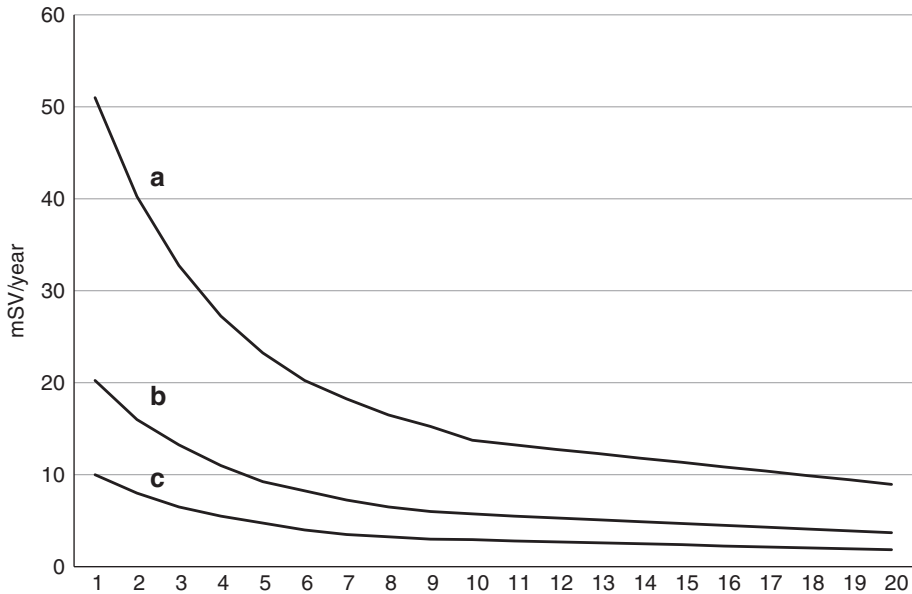


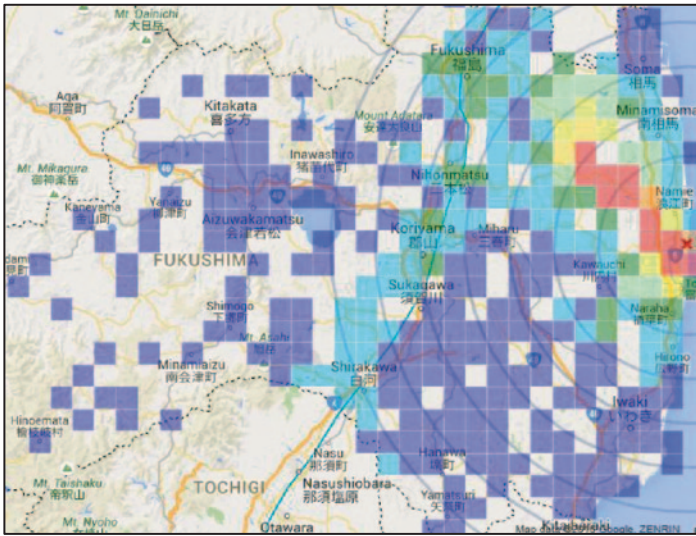
Fig. 2.6 Estimated future annual integral dose of radiation (in millisievert) after the Fukushima Daiichi catastrophe in March 2011 for areas with **a** difficult to return, **b** restricted habitation, and **c** evacuation directive lift prepared

Immediately, the emergency battery, with an operating time of 8 h, began to provide electricity, but eventually the emergency core cooling system stopped its operation at Units 1–3 of Fukushima Daiichi. Soon, the core damage began to break the pressure containers and a vent hole was made for releasing gas because of the abnormally increasing pressure within the container vessels. As a result, zirconium wrapping fuel rods reacted with water to produce hydrogen gas, which filled the building to bursting point. On the 12th, the day after the earthquake, a hydrogen explosion occurred at the building housing Unit 1, on the 14th—that of Unit 3, and on the 15th—at that of Unit 4 under quality control. These hydrogen explosions occurred within each of the buildings, not in the atomic reactor. Within the building housing Unit 2, a hydrogen explosion did not occur because hydrogen gas was discharged due to the fall-off of a partial exterior-wall panel caused by the hydrogen explosion occurring at the building housing Unit 1.

Approx. 2 million kW of the quantity of total power generation by the operation at Units 1–3 are between 4 and 5% of the daily electric energy supplied by TEPCO. Therefore, though failure in power supply was not a huge setback for the supply of electricity, radioactive contamination became a serious problem.

Various kinds of radioactive materials leaked out from Fukushima Daiichi, and an area of approx. 1150 km² around this Nuclear Power Station was desig-

2012/4



2015/8

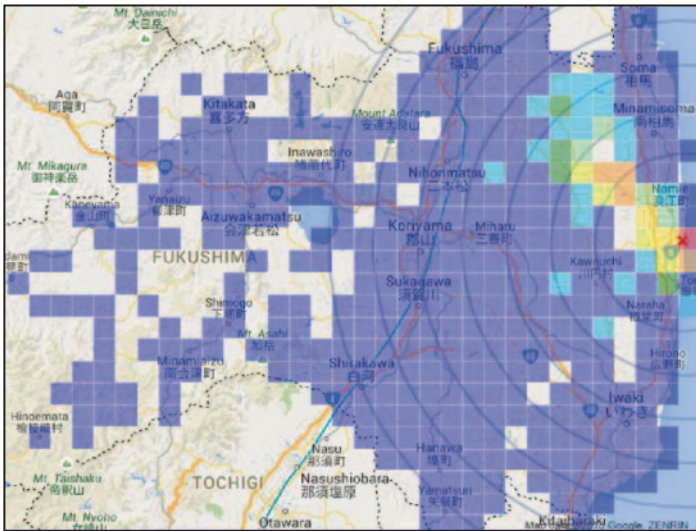


Fig. 2.7 The radiation doses around the Fukushima Daiichi after the monitoring systems were prepared with the following values in microsievert per hour: *purple* ≤ 0.25 , *aqua* ≤ 0.5 , *green* ≤ 1.0 , *yellow* ≤ 2.0 , *pale orange* ≤ 4.0 , *orange* ≤ 5.0 , *red* ≥ 5.01 . (X: Fukushima Daiichi)

nated as being under an evacuation order for the 81,291 residents. Within this area, there were three zones: the difficult-to-return zone is an area of 337 km² (24,818 people), the restricted habitation area—304 km² (23,394 people), and the evacuation directive lift prepared area—509 km² (33,079 people;

Fig. 2.4). Figure 2.5 shows the estimate of future integral dose of radiation per year announced by the Cabinet Office, and Fig. 2.6 the radiation after the accident. This radiation leak made it impossible to organize the rescue operation and the recovery efforts for missing persons around this Nuclear Power Station, which resulted in great damage to the affected area. Among the missing persons shown in Fig. 2.3, most of the missing were from around this area.

The International Atomic Energy Agency (IAEA) decided on 7 (the most serious level) as the severity of this accident, equivalent to that of the Chernobyl atomic power plant. Although unquestionably, the accident at Fukushima is very serious, it differs from Chernobyl in some points. First of all, an explosion occurred at the No. 4 reactor of Chernobyl, but the explosions at Fukushima did not occur at the reactor but at the buildings. Furthermore, since Chernobyl used graphite as a moderator, a great fire occurred at the power plant, eventually taking 28 lives, and 17 people were killed by radioactive exposure. On the other hand, no lives were lost in the accident in Fukushima. Above all, the Chernobyl disaster was not reported from the country directly concerned, but it was discovered through an atmospheric abnormality in Sweden over 1000 km away and 2 days after the accident. Regarding the radiation dose that leaked to the outside, the data at the time of the Chernobyl accident are uncertain, and therefore it is impossible to compare the Fukushima and the Chernobyl accidents (The Emergency Situations of the Republic of Belarus 2013).

2.4 Disasters and the Japanese Mentality

2.4.1 Disasters and the Popular Mind (The Association to Compile Modern and Current History 2012; Aida 1972)

The *Hojoki* (Chronicle of my tiny hut) written by Kamo no Chomei (1155–1216), is a representative essay in the history of medieval Japanese literature. In this essay, he said that among all the terrible experiences, it was an earthquake that was especially terrible. The descriptive contents are based on his experience from a very major earthquake in 1185 in the mountains extending over Omi Province. A historical saying, which is well known among people in Japan, says that nothing is dreadful apart from earthquakes, thunder, fires, and fathers in order of scariness. In other words, huge quakes that greatly shake the earth serve as a symbol of catastrophe. It was often observed before a great earthquake that animals including catfish behaved strangely. Therefore, it was believed in Japan that the catfish caused the earthquake. Figure 2.8



Fig. 2.8 Kashima Daimyojin punishes a catfish which caused an earthquake in Edo. Every other catfish represents a specific historical earthquake (xylograph from 1855)

shows a colour woodblock print spread after the great earthquake of the Ansei era that occurred on November-11-1855 showing “Kashima Daimyojin” (the Kashima Deity: a god of Japanese Martial art) dressed in red punishing a catfish which caused an earthquake in Edo. These types of pictures are full of humour and satire, and called “Namazu-e” and large quantities of various Namazu-e were illegally published. Through laughing heartily that a “quake is likened to be a catfish”, it can be imagined that there might be a wish for social reform behind it.

In the same age, there is a record of an official proclamation issued to the general public by the Shogunate or a feudal lord ordered that a man from each family carrying a lantern should look out for fire, arson and robbers (burglars) all night long in Suruga Province (present Shizuoka Prefecture). On the other hand, when this quake struck Kii Province (present Wakayama Prefecture), there is a story that a man named Goryo Hamaguchi lit piled straws of just harvested rice to show villagers, who had failed to escape in the black of night, to safe rising ground. Although villagers were driven by the preparations for a festival, they saw the fire of rice straw and gathered on the rising ground to extinguish the fire. As a result, they were able to evacuate from the tsunami waves and later they realized the purpose of the fire warning.

After the Meiji Restoration, nationwide newspapers were successively started from around 1890. In the eruption of Mt. Bandaisan (1888), press

reporting might have borne fruit, and a contribution of around 40,000 yen (an estimate based on rice price is approx. US\$820,000, today) was gathered nationwide. However, the contribution nationwide is said to have begun in earnest after the Nobi Earthquake on October-28-1891 when as much as 210,000 yen in contributions was made. In this connection, the government's bail-out decided for the Nobi Earthquake was 5000 yen.

In this way, the time came when mass media reported disaster information, but this weapon of news reports backfired sometimes in a sense. The Great Kanto Earthquake struck the capital of Japan, Tokyo in September 1923. Because of this disaster, all the papers headquartered in Tokyo had to be suspended, which created a tragedy. Through a lack of information, malicious rumours of all sorts were abroad, and vigilante committees were organized resulting in the murder of, for example, labour movement members, anarchists and Koreans. So far as labour movement and anarchists were concerned, the party which feared contemporary trends in society advancing democratization was thought to be behind rumours afloat in the climate of the Taisho Democracy (a series of liberal movements in the Taisho period 1912–1926). On the other hand, regarding Koreans, the malicious rumour was thought to spread because Japan's structural problems were caused by their influx into Japan. It may be feasible to take not so many lives away using just bare hands even if using clubs or edged tools in a short period such as within several days until the rumour and situation were brought under control by the police. Figure 2.9

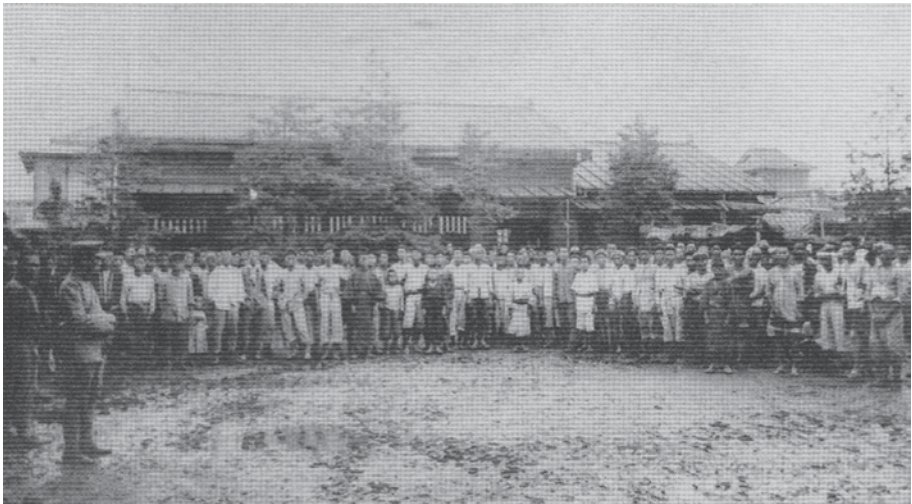


Fig. 2.9 Koreans protected at the Senju Police Station in Tokyo after the Great Kanto Earthquake



Fig. 2.10 An evacuation scene after the Great Kanto Earthquake. (From Asahi Newspaper Co Ltd)

shows the situation of Korean people protected at the Senju police station in Tokyo before deporting them to their home country (The Society of Historical Earthquake Studies 2008).

Although there were unhappy incidents like this, generally people did not plunder or cause social problems in the aftermath of the Great Kanto Earthquake. Figure 2.10 shows a picture in which, without any disorder, people take refuge calmly, bringing with them household goods on two-wheeled carts or jinrikishas during the time when the fire was still raging just after the earthquake. Similarly, the Great Han-Shin Awaji Earthquake (1995) did not cause any great confusion in civil society.

In relation to the common people's behaviour, it should be especially stressed again that we frequently find expressions like "Give a warning to posterity" in quake records written by letter. Near the Taisho Bashi bridge in Osaka City, there is a stone monument into which letters are sunk "When it looks like a tsunami, do not flee by boat", and even now people trace the letters trenched into the stone in Japanese ink every year in order to transmit this epigram to posterity. When an earthquake in 1707 (Houei era:1704–1711) and the 1854 Nankai earthquake struck this area, many people fell to the tsunami by trying to flee aboard a ship.

2.4.2 Recovery from a Catastrophe (Kitahara 2006; Kitahara et al. 2012; Yasuda 2013)

Natural disasters reveal the true nature of a nation or society. It can be shown by the extent of damage, and subsequent humanitarian aid or recovery from damage. Emperor Shomu (701–756), who ordered the construction of the Great Buddha in Todai-ji Temple in Nara Prefecture, confirms his determination that an emperor who governs a country is responsible for the disasters saying wisely, “I’m the only one to blame.” Constructing the Great Buddha, a most ancient huge bronze statue, was a national undertaking related to a wish to recover from the earthquake (Fig. 2.11). An earthquake with a magnitude of more than M7.0 in Kawachi and Yamato Provinces in 734 struck the Kinki Region causing a lot of damage, and violently shaking Nara as well, where the government and the Imperial Court were located in those days. After a period of 10 years, the construction was started on the Great Buddha.

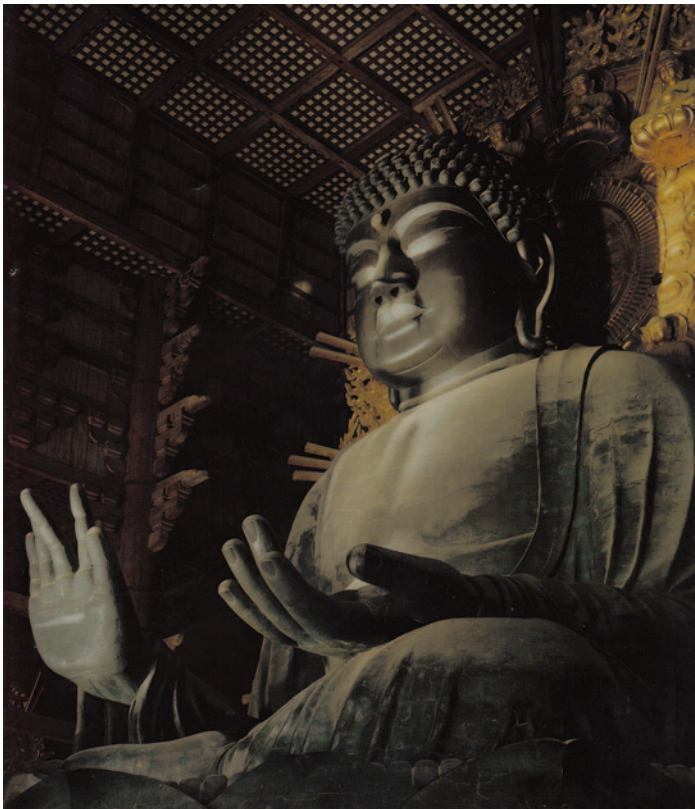


Fig. 2.11 The Great Buddha in Todai-ji Temple in Nara

Although when an extraordinary phenomenon occurred in this way, the authorities built a temple or performed a ritual ceremony for the repose of souls, there are hardly any materials which describe what the imperial court in ancient and medieval Japan did in detail with regard to restoration support. When a great earthquake of M7.5 struck the Kanto area in 818, the imperial court sent a mission to inspect the damaged districts and gave alms to people who were severely damaged by the quake, exempted them from taxes to avoid starvation, and ordered the burial of the mortal remains. However, there are doubts about whether the imperial court had the power in those days to execute these measures and it is unclear what was actually carried out in detail.

In the Edo period (1603–1868), the feudal domain where the disasters occurred relieved the victims directly. In the early Edo period, in 1611, the Sanriku earthquake struck the Sendai Domain, which was also damaged by a tsunami. Masamune Date (1567–1636), the lord of the Sendai Domain encouraged people to break up and reclaim wasteland. That is, he ordered that the domain buy out the fields covered with seawater from people and to switch them to saltpans to sell salt. Furthermore, he ordered the domain to carry out thorough countermeasures for flood control such as irrigation channels to drain water for clearing away new land for cultivation in the upcountry districts that had not been affected by the tsunami.

Private relief work began in earnest after a famine in western Japan in 1681. Relief through temples or priests was conducted in Nagasaki, Osaka, Kyoto etc. and many wealthy merchants donated. When there was a famine in 1732, approx. 18,000 people are recorded in a document as cooperating with them for the relief of the sufferers. Furthermore, after a very massive tsunami on December-24 in 1854, the previously mentioned Nankai earthquake, Goryo Hamaguchi (1820–1885), the entrepreneur, spent his own funds on the construction of the dike with a height of 5 m, width of 20 m, and a total length of 600 m. He also exerted himself to help inhabitants in poor and desolate villages due to the tsunami, through the employment of disaster victims for the reconstruction work.

In this manner, usually the feudal domain, where the disaster had occurred, conducted the reconstruction work, and when this work covered a wide-ranging program, it was carried out under the command of the Tokugawa or Edo Shogunate (1603–1868), the last feudal Japanese government. At the beginning, private relief work was done independently from the work by the Edo Shogunate or local feudal domains. In the late Edo period, relief and reconstruction efforts were improved in that the Edo Shogunate, local feudal domains and nonofficial organizations carried out their own suitable tasks. After an eruption of Mt. Fuji in 1707, it was decided that villages in every local

feudal domain should bear the expenses of public duties evenly for reconstruction regardless of whether it was a Shogunate territory, or private land.

A modern constitutional state was established through the Meiji Restoration in Japan, and a national remedy was established, that is, a law paying relief benefits was enacted to a fixed relief standard in 1880. Thereafter, relief acts have been improved repeatedly for various kinds of disasters. In the Great Kanto Earthquake of 1923, the reconstruction work in the capital city of Japan, Tokyo was graded as a national undertaking to declare restoration in 7 years. Since then, this model has been adopted in the rebuilding after other great disasters as well.

2.4.3 Wisdom Derived from Disasters to Reduce the Impact of Natural Disaster (Okubo 2012)

As described above, Japan can be likened to a department store of natural disasters, in that they are many and inevitable. Since it is impossible to prepare a perfect disaster prevention plan, unique wisdom has emerged in order to keep damage to a minimum. The following are some examples of old wisdom for disaster reduction in buildings and from floods.

First of all, in the case of a building, Saiin-Garan (Western Precinct) of Horyu-ji Temple (a World Heritage Site; now in the city of Ikaruga in Nara Prefecture) is considered as the oldest wooden construction existing in the world and it is estimated that it was made in 607. During more than 1400 years up to the present, it has been hit by many earthquakes and been repaired several times, however, it did not suffer any decisive destruction. The reason why it was proof against major earthquakes is that it had several ingenious ideas incorporated into the building so as to avoid directly receiving the energy of the earthquake. For example, the method for joining the pillars and beams is not based on wood fixation but on wood joinery, and it generates the movement that creaks in the shaking of an earthquake to disperse effectively that energy. In the case of strong shakes, the soil wall was broken naturally and therefore transformed naturally to be an absorber of energy. Or taking advantage of the characteristics of wood, at the place where the horizontal material such as the beam and the vertical material like the pillar are connected, by arranging it so that the wood fibre directions are made orthogonal to each other to sink the pillar into the beam in the earthquake motion, and therefore the seismic energy is effectively absorbed.

Furthermore, there is a pillar called the “Shin-bashira” (central pillar) as shown in Fig. 2.12a at the centre of a five-storied pagoda (Goju-no-to) in various places all over Japan. This pillar stands alone without connection with each story, and when an earthquake occurs, the central pillar collides with

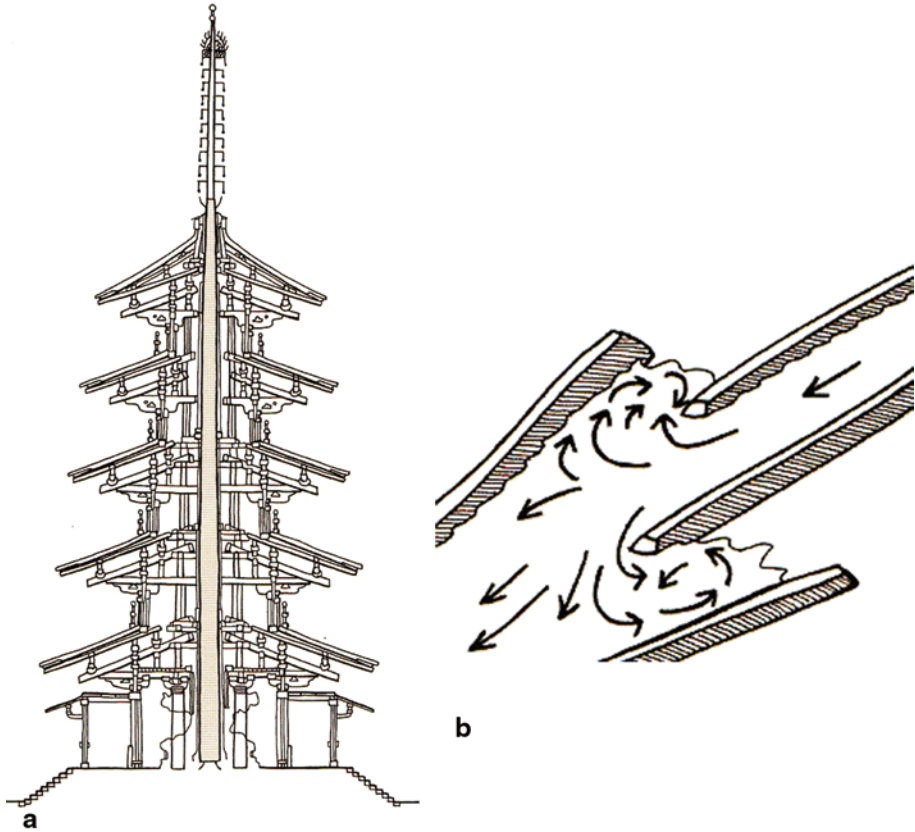


Fig. 2.12 a Five-storied pagoda (Goju-no-to) with a central pillar (Shin-bashira). b An open levee at rivers (Kasumi-tei) intends to reduce the damage of floods. (Source: Learn wisdom from history to reduce the damage caused by natural disasters, Bungeisha/Kyoto)

each story to suppress the oscillation movement of the pagoda in the earthquake motion, and it is arranged that the swing of the upper storey inhibits the vibration of the lower storey. The oldest Japanese five-storied pagoda in the wide grounds of Horyu-ji Temple uses a Japanese cypress (*Chamaecyparis obtusa*) over 2000 years old to take the trouble to quarter this tree for removing the distortion or property of the wood. No Japanese five-story pagodas are known to have collapsed in earthquakes though they did collapse during severe winds or burned after lightning strikes. In recent years, this architectural know-how lives on in the Tokyo Skytree, the highest steel tower (634 m) in the world, which opened in 2012 in that this central pillar system is adopted in its structure.

In the next place, Shingen Takeda, a military commander of the sixteenth century devised a method to reduce the damage called “Kasumi-tei” (open

levee) regarding floods from rivers. As shown in Fig. 2.12b, the open levee involved building a dike which has spaced blanks in it discontinuously to avert a flood at places where a flooding would normally occur but need to be secured.

In addition, there is a wooden Katsura Rikyu Imperial Villa beside the Katsura River in Kyoto, which was built in the beginning of the seventeenth century. Even though this Katsura River often overflows, this Villa still exists. The reason why it has not washed away in floods is that a prepared bamboo forest beside the Katsura River catches the muddy stream softly in the flood, and this Villa designed with a raised floor reduces the shock of the muddy stream. In this manner, the bridge designed to be underwater during a flood is another example of daring to accept some minor damages by a flood to prevent destructive damages to other structures. It is said there are more than 400 bridges of this type in Japan. In this bridge, its girders are made as thin as possible, and no bridge-rails are prepared.

In a manner that is from ancient times, an earthquake disaster has a side of actually bringing new wisdom. A recent example is that the architect Shigeru Ban conceived an idea of building temporary housing and assembly-halls using cardboard tubes that was applied as a special process after the Great Hanshin Awaji Earthquake disaster. The building, consisting of cardboard tubes, is dismantled after use for recycling, and this technique makes it possible to smoothly and quickly build strong refuge shelters in which privacy is protected in the disaster. Since then this method has been used in earthquakes in New Zealand, Turkey, India, China etc. and tsunami in Sri Lanka.

2.4.4 Future Outlook Following the Great East Japan Earthquake

2.4.4.1 Recovery After the Great East Japan Earthquake (The Situation as of March 2014) (Shioya 2013)

The Japanese government established the Reconstruction Agency in order to smoothly and rapidly execute administrative affairs relating to the recovery from damage caused by the Great East Japan Earthquake, however, according to the act for establishment of this Agency, it shall be abolished 10 years after the disaster occurred (Article 21). This provision indicates that the government has a strong declaration of intention to finish completely restoration activities by 2021. The current administration plans for a reconstruction budget of approx. 25 trillion yen (approx. US\$244.25 billion) over 5 years, and within this budget, the amount of 10,500 billion yen has been set aside for tax purposes, e.g. tax increase for reconstruction, the local inhabitant taxes, the corporation tax etc.

According to the restoration status as of March 2014 summarized by the Reconstruction Agency and the Ministry of Land, Infrastructure, Transport and Tourism, first of all, the number of evacuees has decreased by approx. 47,000, though in 3 years since this earthquake, it is still over a half of the 470,000 people at the time of the occurrence. Secondly, the number of families in temporary housing has decreased by approx. 15,000 compared to that in the previous year, and the families that left temporary houses may have rebuilt their house or moved to disaster public housing etc. this year. Disaster public housing is provided by the municipal governments based on a government grant of 87.5% of the construction cost. They are rented permanently, and their rent is affordable based on the income of the victims. The ratio of construction reached 72% of the number of necessary houses (21,851).

According to the Ministry of the Environment, the treated quantity of the waste (debris) from the disaster amounted to a total of 20,187 thousand tons in 13 prefectures including 4288 thousand tons in Iwate, 11,710 thousand tons in Miyagi and 2,796 thousand tons in Fukushima. The quantity in these three prefectures is approx. 93% of the whole. This is about the same amount as that generated during the Great Han-Shin Awaji Earthquake (1995), in which the treatment of waste was completed in 2 years.

However, the progress rate of debris treatment in this recent quake was 63% as of March 2013, 2 years after the quake, and it is still 97% 3 years after the disaster. One of the causes is that the processing time is now longer due to increasingly stringent environmental regulations compared to environmental regulations at the time of the Great Han-Shin Awaji Earthquake resulting in the need to separate the debris in a more detailed manner. For example, previously in the reclaimed land off the Gulf of Osaka, it was not required that the debris should be separated in a detailed manner. In contrast, in this later disaster, detailed separation of waste is required according to different classifications such as metal, wood, plastic etc. As a result, the process has become very troublesome, time consuming, and expensive.

However, the main reason that the progress rate does not reach 100% is that the areas around Fukushima Daiichi still cannot be reconstructed. In fact, at the present moment, the disposal of debris is completely finished for all 12 prefectures except Fukushima Prefecture. The progress rate is 74% in Fukushima, and counting backward on this rate, there may still be non-disposed debris of 982 thousand tons in the areas around Fukushima Daiichi, and almost all debris is anticipated to contain radioactive materials.

On the other hand, regarding the provision of infrastructure, work has commenced by as much as 68% in 471 places planned for disaster prevention countermeasures for coasts, by 86% of the total of 570 km road reconstruction required, and by 90% in 339 districts planned for comprehensive

community development including the relocation of housing to higher ground and land rearrangement etc. Based on the industrial production index by prefectures, assuming an index of 2010 before the earthquake disaster as 100, the index as of January 2014 is 102.2 in Iwate Prefecture, 97.5 in Miyagi, and 99.7 in Fukushima, and it has recovered generally to the level existing before the earthquake disaster. Regarding the agricultural forestry and fishing industries, the main industry in the affected areas, the agricultural land affected by the tsunami was restored and recovered to approx. 70 % operation, facilities relating to forestry—over 80 %, fishing ports—approx. 90 %, fishing boats damaged by the tsunami—approx. 85 %, and fish markets—approx. 70 % (approx. 80 % in terms of monetary amount).

Though the restoration is moving along quite smoothly in terms of developing infrastructure and economic improvement, unfortunately the radioactive contamination in Fukushima has a particularly serious impact on the restoration.

2.4.4.2 The Future of Fukushima

Disaster-related death is defined as not only death from direct damages caused by a tsunami or an earthquake such as from collapsed buildings etc., but also that from indirect causes such as the deterioration of physical conditions, extreme fatigue, and stress in refugee life at the time of the disaster. The number of disaster-related deaths in this earthquake is estimated to be 3089 people as of March 2014, which is well over three times that of the 921 deaths recorded in the Great Han-Shin Awaji Earthquake.

The number of deaths recorded in the Great East Japan Earthquake is: 1704 people in Fukushima Prefecture, 889—Miyagi, and 441—Iwate. The disaster-related deaths in these three prefectures represent 98 % of total deaths recorded, and it is protuberantly large, over a half of the total, at the rate of 0.9 per population of 1000 in Fukushima. The administrative districts with many disaster-related deaths is as follows in Fukushima: 452 persons (7.1 persons out of population of 1000)—in Minami-soma City, 323 (17.5)—in Namie Town, and 236 (16.6)—in Tomioka Town. Approx. a half of Minami-soma City and the whole area of Tomioka Town belong to the areas under evacuation orders, and in the case of Namie Town, the whole town is designated as a 'difficult-to-return zone' in the areas under evacuation orders (Fig. 2.4). According to the report by the Reconstruction Agency as well, refugees from the accident at Fukushima Daiichi have a large influence on the disaster-related deaths in Fukushima. Namely, the disaster-related deaths are thought to be mainly caused by the feeling of despair in the face of reality, i.e. the difficulty of any restoration to former conditions.

Though the Reconstruction Agency has a plan to perform decontamination with a total budget of 500 billion yen until 2016, unfortunately it is unlikely, at least for residents in the difficult-to-return zones to return to normal life at their original locations in their lifetime. It is also not likely for the residents at the restricted habitation area or even the evacuation directive lift prepared area to return to normal life in the next several years (Fig. 2.5). Furthermore, it is hardly probable in reality that residents can come back to the areas where they lived previously for two reasons, firstly, that the major industries in these areas are agriculture and stock farming which are faced with concerns over harmful rumors of radioactive contamination, and, secondly, that population aging is continuing in these areas.

In this regard, a mood of anti-nuclear power generation has increased in Japan after witnessing the reality of the accident in Fukushima. At present, there are 50 units (approx. 45.7 million kW) at 17 Nuclear Power Stations in Japan, however, it has become difficult for Nuclear Power Stations that are temporarily suspended for inspections to re-start operations in the background of the outcry against nuclear power. The last nuclear generator at Tomari (Hokkaido Electric Power Co., Ltd.) stopped operations for inspections on May-5-2012. Since then, more than 2 years and 3 months have passed and as of August 2014, only Japan is supplied with electricity without nuclear power generation amongst advanced countries. Stopping nuclear power generation is estimated to cost approx. an additional 3800 billion yen per year for the fuel costs of thermal power generation. Currently, trade deficits in Japan are increasing since this great earthquake. In this way, the accident at the Fukushima has also become a terrible blow for Japan economically.

On the other hand, the electric companies have had a major influence on energy policy in Japan, and ten companies have monopolized power generation and power transmission on the ostensible grounds of stable electric power supply. In the area where electric wire is not available, it has been actually impossible to achieve power supply by the renewable energy. That is because the electricity supplier must lay the electric wire to supply the energy and it will need a lot of budget. However, through this nuclear power accident, the influence of TEPCO, who had had the biggest say as a head of the electric utility industry, has diminished. As a result, finally in 2016 it will be possible to separate electrical power production from power distribution and transmission through the operation of separate entities. Hereafter, the supply of electricity by a wind generator and a solar power generation device will be promoted for remote areas, and it is expected that number of companies that enter the new business will increase. This is also one of the various outcomes generated by the accident at the Fukushima Daiichi.

The nuclear accident caused severe and varied damage to Japan and from now on the completion process/procedures for the safe decommissioning of nuclear facilities will take generations. However this serious situation in Japan leads to the challenge of finding a new technique about nuclear plant accidents and decommissioning.

The International Research Institute for Nuclear Decommissioning, under the leadership of the Ministry of Economy, Trade and Industry, has been established in the summer of 2013 for the purpose of researching, developing and implementing new technologies to contain a nuclear accident. Nuclear operators, heavy electric apparatus manufacturers etc. participate in it.

This organization has not yet experienced much since its establishment but currently works on research and development for the immediate challenges: for instance developing a device for investigating the leak spot in the reactor container, a method of filling in the vent tube by grout material, robots which work on controlling the Nuclear Power Station after accidents etc.

Although it has by no means been a happy moment to have experienced the damage from the accident at the Nuclear Power Station, it has led Japan to understand the limitations of currently known techniques and begin the advance toward the development of new technology.

Note: In this chapter, we refrained from publishing concrete photos of the damage caused by disaster.

For example, they show scenes of victims engulfed by tsunamis in the Great East Japan Earthquake, capsized ships in the *Toya-maru* typhoon, heaps of corpses etc. in the Great Tokyo Air Raids and in the atomic bombings of Hiroshima and Nagasaki during the Second World War. Although many pictures and records remained showing the misery of the damage by disaster, we didn't place them because they were different from the purpose of this chapter.

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3

No “German-Jewish Dialogue”? On Gershom Scholem’s Concept of Jewish Totality as the Cornerstone for Cultural Resilience

Hanna Liss

3.1 Introduction: “Remember!”

The 27th of the month of Nisan (March/April in the Gregorian calendar) is the commemoration day for *Yom ha-Shoah*.¹ As an official resolution on *Yom ha-Shoah*, i.e. the Holocaust Remembrance Day, the Knesset of the State of Israel in 1951 proclaimed the 27th day of Nisan as “the Holocaust and Ghetto Uprising Remembrance Day—a day of perpetual remembrance *for the House of Israel*”. It is a commemoration day for Israel. That matches exactly what is read during the Shabbat that precedes the feast of Purim, a portion from Deut 25:17–19 reads as follows:

Remember (*Zakhor*) what Amalek did to you on your journey out of Egypt, how he attacked you on the way, when you were faint and weary, and struck down all who lagged behind you; he did not fear God. Therefore when the Lord your God has given you rest from all your enemies on every hand, in the land that the Lord your God is giving you as an inheritance to possess, you shall blot out the remembrance of Amalek from under heaven; do not forget.²

This paragraph is taken from Parashat *Ki Tetse* in which Moses requests from Israel the remembrance of Amaleq. According to rabbinic literature, Ama-

¹ This paper was read for the first time at the *Lexington Theological Seminary*, Lexington, KY, on the occasion of *Yom ha-Shoah* in 2002, and was slightly revised and updated for publication.

² *The Holy Bible: New Revised Standard Version*. (1989) (Deut 25, 17–19). Nashville: Thomas Nelson Publishers.

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leq is the everlasting, the irreconcilable enemy. The *Pesiqta de Rav Kahana* (Chap. 27) stresses that all the tragedies, which Israel suffered, are considered the direct outcome of Amaleq's hostile act. Therefore, the most important enemies of Israel, Germany among them, were or even are identified as direct descendants of Amaleq.

However, for almost the first time in history, the Jews, in particular the Jews in Germany, are faced with the fact that Amaleq/Germany makes a tremendous if not obsessive effort to remember its evil deeds. Germany's official representatives do almost everything in terms of repairing the damage. There is hardly one local community that will not hold a commemoration on the victims of the Shoah, either on *Yom ha-Shoah* or, at least, on the 9th of November. Non-Jewish German city officials will attend the memorial service held at the Synagogue, and likewise, representatives of the local Jewish communities or of the *Central Confederation of the Jews in Germany* are always invited to join in the Holocaust commemoration held by the German municipalities, and they would be affronted, if they were not invited. In all these common commemorative ceremonies, German officials and intellectuals eagerly underline the "common German-Jewish history" or "German-Jewish dialogue" that had been destroyed by the Nazis, and the Jewish participants take note of this public confession of guilt benevolently. One outcome therefore of the terrible events of the Nazi period, is that Germans and Jews not only focus exclusively on the Nazi-Era; Germans and Jews take their roles as the scions of the perpetrators and the scions of the victims without any further debate.

No Jewish attempt is made to escape this pattern that—although historically right and appropriate in terms of political correctness—forces the Jews into a fixed and permanent role as victims of other people's bloodstained history. This can be illustrated clearly by the manners of Jewish people on the occasion of the *Yizkor* memorial prayer that is said on each of the Jewish Festival days during the synagogal service. The *Yizkor*, in which always a special prayer for the martyrs of the Shoah is included, is recited after the Reading of the weekly Torah portion, and thus, becomes a part of the public service, no more, but also no less! In most countries, people would attend the synagogal service, stay during the *Yizkor*, and afterwards continue with the regular service. As for the Jews in Germany, for the majority of the community the *Yizkor* prayer provides the only occasion to come to the Synagogue, and since the exact time when the *Yizkor* is said is announced in advance on all community bulletin boards, people would come only for the *Yizkor*, thus entering the Synagogue at the earliest by the time of the *Haftara*, the reading of the prophets, and leaving immediately after the *Yizkor*, as if they could not stand a whole service not even three to five times a year.



Fig. 3.1 Gershom Scholem in 1935. (Gershom Scholem archive, ARC. 4 1599/38–39, Archives Department, The National Library of Israel)

Moreover, while concentrating on Germany's Nazi-history and the Germans' moral compensation, the Jews in Germany rather overlook that *Pesiqta de Rav Kahana* formulates the devise that the "Zachor" = "Remember" does not enjoin the Jews to call to mind the evil deeds of the other nations but rather Israel's *own sins*, thereby taking up the biblical and rabbinic pattern of sin and divine punishment. With regard to the Shoah it seems outrageous to call to mind the sins of those men, women, and children who suffered from or died in the Nazi-Terror. However, *Pesiqta de Rav Kahana* can be understood as a request to think about oneself in the shadow of the events, in the memory of the victims. To honor the memory of those who were tortured or murdered, it is the task of their descendants to think about the way to cope with the "Zachor" as well as about their own Jewish future. In that, common commemorations as held in Germany seem inappropriate, since they smother the dilemma that Jews and Non-Jews, the scions of the victims and the scions of the perpetrators, cannot share the same memories.

3.2 Gershom Scholem and the Question of Jewish (Intellectual) Substance

In order to call into question this gathering of Jews and Non-Jews that makes all of the participants believe that the so-called "German-Jewish dialogue" has started again, let us turn to Gershom Scholem (1897–1982; Fig. 3.1) who is known today as the most important authority in the field of Kabbalah and Jewish mysticism, but his way 'from Berlin to Jerusalem' bears comparison

with a marathon: Born as Gerhard Scholem in Berlin (in 1897), he was a scion of the “run-off-the-mill” Jewish bourgeoisie in Germany, and grew up in an environment of almost total assimilation and ignorance as regards to Jewish culture and Hebrew Law and Lore. Scholem immigrated to Palestine in 1923, where he first served as a librarian at the University and National Library at the Hebrew University (founded in 1925) and from 1933 until 1965 as a professor of Jewish mysticism and Kabbalah.

Scholem raised the question of the existence of what is today called a “German-Jewish dialogue?” Many positive answers were given to that question, yet very few refutations were also brought up, of which Scholem’s is one of the fiercest.

To date, German and Jewish intellectuals have and continue to merely express their grief about the situation for the Jews during the Nazi Era while at the same time praising the good relations between Jews and Germans in the nineteenth and early twentieth century. In contrast, Scholem’s most prominent essays on the issue, written in the late sixties and early seventies, represent a severe accusation, since he denied that a German-Jewish dialogue had ever taken place. He claims:

It takes two to have a dialogue who listen to each other, who are prepared to perceive the other as what he is and represents, and to respond to him (...) This dialogue died at its very start and never took place.³

Scholem not only contested the idea of a German-Jewish dialogue, but he also brings up the reasons for its failure:

[The German-Jewish dialogue] died when the successors of Moses Mendelssohn—who still argued from the perspective of some kind of Jewish totality, even though the latter was determined by the concepts of the Enlightenment—acquiesced in abandoning this wholeness in order to salvage an existence for pitiful pieces of it (...). To whom, then, did the Jews speak in that much-talked-about German-Jewish dialogue? They spoke to themselves, not to say they outshouted themselves (...). When they thought they were speaking to the Germans, they were speaking to themselves.⁴

According to Scholem, the Jewish eagerness to initiate a German-Jewish dialogue was a cry into the void, since although the Jews had given up most of

³ Gershom Scholem, *Against the Myth of the German-Jewish Dialogue*, in: *On Jews and Judaism in Crisis. Selected Essays*, (Ed.) by Werner J. Dannhauser, Philadelphia: Paul Dry Books 2012, 61–64, 61–62; see also *idem*, *Once More: The German-Jewish Dialogue*, in: *On Jews and Judaism* 65–70.

⁴ G. Scholem, *Against the Myth* 62–63 f.

what Scholem called the "totality of Judaism" (and I will return to that expression) no one ever responded to it.

What is the background of Scholem's criticism? How is the Jewish milieu in nineteenth and early-twentieth-century-Germany to be depicted, and how had Scholem's attitude towards the German-Jewish dialogue been shaped by the experience of the German-Jewish culture in which he had been brought up?

During the nineteenth century, one of the main tasks facing the Jews in Germany was to formulate and form their self-identity as Jews while simultaneously integrating into the German nation, respectively into the concept of a "German-Christian" state that was at that time being developed. Intent on fostering the unity of the German nation, the non-Jewish environment viewed Judaism, in particular Orthodox Judaism as downright unmanageable: in its tradition of the *Law* and thus its halakhic practice, traditional Judaism appeared (and appears until this very day) to be at odds with the aim of national unity. Dietary laws, the Sabbath prohibition on work, the ban on mixed marriages and obligatory circumcision (to name but a few) were dividing elements, which, in the eyes of the external world, constituted what was "essentially Jewish", aspects seemingly ill-suited to facilitating Jewish integration into the German nation.

The response to this discussion, especially in Reform-minded circles, was a dual reconfiguration or re-evaluation of what comprised "Judaism." Jewish intellectuals sought to tear down the barriers erected by *halakhah* by redefining such traditions of religious practice as "national" distinguishing features, thereby transforming them into elements that would thus have to be discarded in the process of Jewish emancipation.⁵ Most of the Jews abandoned themselves more or less from this "ceremonial law" which to them became tantamount to a fossil of an ancient era. In their desire to be part of the German nation, the Jews took up the German claim that they should renounce their ethnic distinctiveness. Jews in Germany no longer wanted to be labeled "German Jews" but "Germans of the Mosaic Faith". In a famous statement, Rahel Varnhagen (d. 1833), who is known today especially for her salon, in which the Jewish and Non-Jewish literal and intellectual elite came together, declared: "The Jew must be extirpated from us, that is the sacred truth."⁶ One

⁵ On this entire complex, see also A. Gotzmann, 'Zwischen Nation und Religion: die deutschen Juden auf der Suche nach einer bürgerlichen Konfessionalität', in: A. Gotzmann, R. Liedtke et al. (Eds.), *Juden, Bürger, Deutsche. Zur Geschichte von Vielfalt und Differenz 1800–1933*. Mohr Siebeck, Tübingen 2001, 241–261.

⁶ Cf. H. Arendt, *Rahel Varnhagen, The Life of a Jewish Woman*. Harcourt Brace Jovanovich, New York 1974, 120.

can say, therefore, that “to the Jew, Enlightenment offered freedom, but to Judaism self-dissolution.”⁷

Hand in hand with the desired elimination of particularistic, national-Jewish elements, Judaism was established as a bourgeois, middle-class religion, a “*bürgerliche Konfession*” whose core was ethical monotheism. In its code of ethics, stressing “morality, sentiment, cleanliness, education (...) and loyalty to the state,”⁸ it did not differ substantially from other religious denominations (especially the protestants) gathered under the canopy of national unity. Thus, by denying legal tradition and its practical application to their *religious* dimension, the “Law” was driven off into the desert, scapegoated so to speak in order that those at home in this now ‘purified’ religion might become—as individuals—worthy of integration into the German nation. The Jewish avant-garde throughout the nineteenth and the beginning of the twentieth century stood out in a complete disavowal of Jewish nationality. To most of the Jews, Christianity was regarded only a watered-down version of Judaism.⁹ When Scholem was born in 1897, the majority of German Jewish communities tended toward Reform Judaism, their members almost completely assimilated (with a very few exceptions in the rural communities). Jewish emancipation and assimilation seemed to be entirely completed.

Scholem described the mentality of his parents’ milieu as it had evolved especially in Breslau (Silesia) or Berlin (Prussia) as a liberal-Jewish, German-assimilationist environment. Well known is the anecdote when young Gerhard came home stating: “Papa, I think I want to be a Jew”, to which his father answered with a popular slogan among German Jewry: “Jews are only good for going to Synagogue with.”¹⁰ Like in most Jewish families, dietary laws were no longer kept. Fasting on Yom Kippur was regarded as Grandma’s quirk. In his biography *From Berlin to Jerusalem*, Scholem quotes the headwaiter of a well-known restaurant in Berlin addressing the guests in their Yom Kippur finery “The gentlemen who are fasting will be served in the back room.”¹¹

Already by the time when he was to become a Bar-Mizwah at the age of 13, Scholem was very much aware of the fact that most of his German-Jewish contemporaries like his parents were devoting their entire lives to self-delusion. Although they tended to be often even more a German national

⁷ German quotation translated from R. Schaeffler, “Die Wissenschaft des Judentums in ihrer Beziehung zur allgemeinen Geistesgeschichte im Deutschland des 19. Jahrhunderts,” in: J. Carlebach, ed., *חכמת ישראל. Wissenschaft des Judentums. Anfänge der Judaistik in Europa*, Darmstadt: Wiss. Buchges. 1992, 113–131, 116.

⁸ German quotation translated from Gotzmann, *Juden, Bürger, Deutsche*, 258.

⁹ See G. Scholem on his parents’ attitude towards Christianity in: G. Scholem, *From Berlin to Jerusalem: Memories of my Youth*, New York: Schocken Books 1988, esp. 28–31.

¹⁰ In: With Gershom Scholem: An Interview, in: *On Jews and Judaism in Crisis* 4.

¹¹ G. Scholem, *From Berlin to Jerusalem*, 11.

than their Non-Jewish contemporaries, naming their children in a distinctive German-national mode (Hebrew names weren't mostly even given), they still did not get more than half a foot into the door of the Non-Jewish middle or upper class bourgeoisie. Scholem always mocked his elder brother Reinhold who was a member of the *Deutsche Volkspartei* [German People's Party] and emigrated to Australia in 1938, and would still in 1971 answer the question of what he really was with the words "I am a *Deutschnationaler* [...] I am not going to let Hitler dictate my views to me".¹²

In a harsh and formidable article on the so-called German-Jewish dialogue, published in 1965, Scholem wrote:

I left no doubt (...) of my conviction that the liquidation of the Jewish substance by the Jews themselves must in large part be held responsible for the fact that this dialogue did not come to take place as a historical phenomenon (...) It is precisely this readiness for self-denial which goes a long way in codetermining the unreal and ghostly element in this "dialogue". They are no longer even Jews in the full sense of an unbroken historical consciousness, who speak here, but Jews in flight from themselves.¹³

When Scholem turned to Zionism at the age of 14, it was more a revolt against his parents' attitude towards both Judaism and Germany than an outcome of political reasoning. In 1912, he joined the Zionist youth group Young Judea. Almost all Zionist Youth groups in Germany lacked a clear concept of what Judaism actually was meant to be.¹⁴ Some of them, like the camps organized by the "Blue-White" that had been founded as the Jewish counterpart of the German Hikers youth club "*Wandervogel*", were in fact part of the "back-to-nature"-movements, organizing hikes and campfires through the countryside around Berlin.¹⁵ Most of the young people, high school students of the middle class bourgeoisie, were later regarded by Scholem as complete ignoramuses in terms of Jewish history, culture and religion.

In contrary to his colleagues in the Zionist movement whose attitude towards Judaism was grounded to a large extent in Martin Buber's claim for the "personal Jewish experience" and the "formative spirit"¹⁶ in Judaism, Scholem

¹² Scholem, *From Berlin to Jerusalem*, 42 f.

¹³ G. Scholem, "Once more: The German-Jewish Dialogue", in: *idem*, *On Jews and Judaism* 65–70, 68–69.

¹⁴ See U. Kaufmann, "Kultur und 'Selbstverwirklichung.' Die vielfältigen Strömungen des Zionismus in Deutschland 1897–1933," in: A. Schatz/Ch. Wiese (Eds.), *Janusfiguren: "jüdische Heimstätte", Exil und Nation im deutschen Zionismus*, Berlin: Metropol, 43–60; D. N. Myers, "Von Berlin nach Jerusalem. Zionismus, jüdische Wissenschaft und die Mühsal kulturelle Dissonanz," in: *ibid.* 331–347.

¹⁵ See also J. Hetkamp, *Die jüdische Jugendbewegung in Deutschland von 1913–1933*, Essen, Univ. Diss. 1991, esp. 59–64.

¹⁶ G. Scholem, Martin Buber's Conception of Judaism, in: *On Jews and Judaism in Crisis* 126–171, 138.

realized very soon that a diffuse concept of ‘Jewish religiosity’ was not an adequate substitute for an intensive study of the Hebrew language and the traditional sources. Scholem’s turn to the primary sources and his serious ambition for the Hebrew language by the age of 15 is, therefore, also to be considered as a revolt against the romanticism that his Jewish contemporaries had succumbed to. He himself took classes in Hebrew as well as in Talmud and Rabbinic Literature (which was strongly objected too by his parents). Later, he turned to the study of the *kabbalah*. To Scholem, the *kabbalah* was one of the possibilities for Jewish survival in history. Although he had considered the *halakhah* without the *kabbalah* as totally fossilized, he had always been conscious of the fact that the *halakhah* not only served as a rigid corset for withered sheets on the tree of Judaism, but had been an essential factor for the dynamics of Judaism throughout almost 2000 years of history in exile.¹⁷ According to Scholem, the living tradition in Judaism meant above all the halachic tradition. Consequently, he never dealt with the *kabbalah* only in terms of philology and history. After having arrived in Jerusalem in 1923, he was attracted by the kabbalistic *Bet-El* Yeshiva, a group of Kabbalists in Jerusalem’s Old City (founded already in 1737) that had remained intact.¹⁸ Although it never appealed to him to conduct himself as an Orthodox, i.e., above all, an observant Jew, he never called himself a ‘secular Jew.’ He once described his secularity as ‘non-secular,’ which is a contradiction in terms, but Scholem never wanted to admit that he was touched by kabbalistic spirituality more than what he pretended to feel comfortable with. Yet, by the time when he was offered the chair for Kabbalah studies at the Hebrew University in 1933, he devoted his scholarly life entirely to the study of Jewish Mysticism, Kabbalah and Hasidism.

To recapitulate Scholem’s views on Judaism in the nineteenth and early twentieth century one can say that Scholem not only enunciates a negative view of German Jewry but above all blamed his parents and even his own generation for having failed to set up an understanding of Judaism beyond a mere “middle-class religion”. In 1969 he observed:

At the Time of the Appearance of the Zionist Movement, the Jewish Communities of the Diaspora represented institutions, in which a Judaism, on which the struggle for Emancipation had left its imprint, defined itself in purely religious categories (...). Measured against the totality of Jewish life in the Period before Emancipation, it was a most watered-down version of Judaism (...).¹⁹

¹⁷ Sh. Magid, “Mysticism, History, and a ‘New’ Kabbalah: Gershom Scholem and the Contemporary Scene,” in: *Jewish Quarterly Review* 101, 4, 2011, 511–525.

¹⁸ See Ch. Horowitz, *Sefer Chibbat Yerushalayim*, 1844, reprint Jerusalem 1964 (<http://www.hebrewbooks.org/32382>; access April 2014).

¹⁹ Scholem, “Israel and the Diaspora,” in: idem: *On Jews and Judaism in Crisis* 244–260, 246.

According to Scholem, therefore, the history of the Jews in Germany reached its nadir long before the Nazi-Era, precisely by the time when German Jewish intellectuals saw themselves an integral part of German society, Jewish culture had been absorbed by the German culture, and Jewish expectations and German attitudes being completely intermingled. To Scholem, it was precisely for that reason that the gradual humiliation of the Jews during the Nazi Era until their final fate in the concentration camps turned out so traumatic for the German Jews: the racist rejection by the Germans seemed even more far-fetched and absurd in the eyes of those who regarded themselves more German than Jewish.

Although Scholem showed restraint with regard to the situation of the Jews in Post-Nazi-Germany, his opinions are very clearly outlined. In 1969 he wrote the following concerning the Jewish Diaspora:

There was certainly no dearth of signs of dissolution here. It was precisely in a state of separation from others that many individual Jews in the postwar era preferred and found it easier to give up their ties to all that was Jewish (...). They may have been aware of their past, but they no longer wanted to have anything to do with the future of the Jews.²⁰

Scholem's reflections on Judaism in the Post-Nazi-Era culminated in the question:

Beyond physical survival in extreme situations, (...) the question will be always put precisely—and with good reason *to us*: whether we will have more to offer to our people than this survival.²¹

Scholem's critique, therefore, consisted in its core that the Jews of the Post-Shoah period, in particular the Jews in Germany, only looked backwards at the events that had happened. Moreover, he disapproved the fact that the Jews had accepted the Holocaust as their central subject of learning and intellectual occupation, thereby again submitting themselves under the Germans' own subject matters and cementing their status as historical victims of German Nazi fascism. According to Scholem, for the second time in German-Jewish relationship, the Germans and their national problems dictated the issue under which the Jews had to define and redefine their place and task in history. An "Alt-Neu" (old-new) German-Jewish dialogue had indeed been taken up, and to both sides this dialogue had never been worked out better than in our times. However, this was in turn a tricky "dialogue," and it was, therefore, not coin-

²⁰ Ibid. 255.

²¹ Israel and the Diaspora 258.

cidental that this situation had led at least until the late eighties into an almost complete religious self-denial on the Jewish side that included not only the formal visit of the synagogal service, but more of a positive approach towards all kinds of Jewish and learning. For the second time, many of the Jews in Germany had become completely estranged from the literal sources of Judaism as well as from the traditional way of Jewish life. Traditional Jewish practice, serious Jewish learning, and the maintenance of home ritual were far from the norm of the majority; religious reforms and religious revival (i.e. integration of conservative or even Reform facets) had by this time taken place very limitedly and slowly. Still in 1994, the former rector of the *College for Jewish Studies (Hochschule für Jüdische Studien Heidelberg)* in Heidelberg, Julius Carlebach, noticed that the Jews in Germany “want to be Jews, but not Jewish,” closing his statement with the remark: “And, how that should progress, I don’t know.”²²

As a result, for the first time in the almost 3000-year-old history of the Jewish people, in particular the Jews in Germany, lacked their own *Jewish* response to the catastrophe.²³ Jewish responses to calamities all over the ages have always encompassed on the one hand the suffering of the individual or even the destruction of an entire nation and the visionary prospect of its renewal on the other. The most luminous visions in the Hebrew Bible were written after the destruction of the first Temple, in the bleakest period of the Babylonian exile. During the biblical period as well as in later rabbinic times, Judaism held either on the biblical paradigm of sin and punishment, or on the idea of the righteous put to test. The biblical prophets and the later rabbinic tradition were well aware of the fact that in terms of policy and military strength the Jews could set almost nothing against the Mighty Assyrian or Babylonian Empire. Yet, by means of these various theological patterns, biblical prophecy and the Midrash-Literature as well as the later accounts on the Crusades (to give but a few examples) theologially transform the Jewish people as the innocent victims in history into the doers of their own fate, and thereby the events become an integral part of Israel’s own history, which could lead to a dynamic understanding of Jewish history. In later Jewish history, especially after the expulsion of the Jews from Spain in 1492, the question of the origin and nature of evil was one of the principal motivating forces behind kabbalistic speculation. To the kabbalists, the historical exile of the Jewish people has its spiritual causation in various disturbances and faults in the cosmic harmony for which it serves as a concrete symbol. When the divine

²² Quoted in M. Kaplan, “What is ‘Religion’ among Jews in Contemporary Germany?”, in: S. L. Gilman/K. Remmler (Eds.), *Reemerging Jewish Culture in Germany: Life and Literature since 1989*, New York: New York University Press 1994, 77–112, 89.

²³ On this issue see in particular A. Mintz, *Hurban. Responses to Catastrophe in Hebrew Literature*, New York: Syracuse University Press 1984.

sparks became diffused even further in Adam's descendants, the mission of gathering them and thereby preparing the way for redemption, was awarded to Israel. According to kabbalistic thought, the exile, therefore, is not, merely a punishment and a trial but is a mission to Israel as well. Thus, by overcoming their role confirmed in the geopolitical context and thereby regaining an active part in their own history (that has always been understood as a meta-history between God and His people), survivors of the catastrophes and their descendants regained their dignity, since they were no longer tied only passively into other nations' history. Israel's collective memory as attested in the traditional sources has always gained its significance as a testimony to be held by later generations *afterward*.²⁴ It was one if not the only way to cope with the numerous devastating experiences caused by the Gentile's persecutions and tortures. It was certainly the only way to gain strength and to build up a Jewish future on the ruins of the previous catastrophes.

This recollection and adaptation of the traditional sources and their responses to catastrophes was indeed obstructed to the Jews in Germany. To be sure, no generation can simply copy their ancestor's solutions. However, until the late eighties, the ignorance of Jewish tradition and at best a diffuse individual religiosity prevented the formulation of a Jewish formative answer to the catastrophe. In rejecting what Scholem had called Jewish totality or Jewish substance, many of the Jews in Germany had not only cast themselves away from the heritage of their fathers and mothers with regard to the *halakhic* obligation—they had also lost the access to their ancestor's responses to catastrophes, as mirrored in the literature written throughout the period of Jewish exile.

3.3 Overcoming Gershom Scholem

When the Berlin Wall was brought down, Berlin was the first city to face Jewish visitors from all over the world. A considerable number of Jewish Americans, but also Jews from Eastern Europe and, in particular, a significant number of young Israelis, decided to stay. The cultural-political dynamics that was initiated by the new political development and the open windows towards Eastern Europe, led to an altered view of one's own history. For the first time, the younger Jewish generation was not only aware of but also in deep distress about this missing link between the generations as *shalsholet ha-qabbala*, the

²⁴ See also T. Linafelt, *Surviving lamentations: catastrophe, lament and protest in the afterlife of a biblical book*, Chicago: Chicago University Press 2000; H. Liss, *Die unerhörte Prophezie. Kommunikative Strukturen prophetischer Rede im Buch Yesha'yahu*, Leipzig: Evangelische Verlagsanstalt 2003, esp. 272–290.

‘chain of tradition’ with regards to Jewish knowledge. The question of how to deal with the ‘Zakhor’ was still an issue (and will always be), however, it has gradually been accompanied by a long-term perspective towards a Jewish future. In 1999, the *Abraham Geiger College* (AGC) was founded at Potsdam University as the first academic seminary for rabbis and cantors in Western and Eastern Europe after the Shoah. The AGC²⁵ regards itself as the successor and intellectual inheritor of the *Hochschule für die Wissenschaft des Judentums* in Berlin (the *Institute for the Scientific Study of Judaism*), which was closed down by the Nazis in 1942.²⁶ It trains male and female rabbis and cantors for Jewish communities in Germany, but also for communities in Eastern Europe. The AGC has initiated a kind of religious maelstrom not only with regards to the Jewish Reform movement and Jewish renewal,²⁷ but also with regards to a variety of (Modern-) Orthodox streams, among them the *Ronald S. Lauder Foundation*, whose aim it is “to revitalize Jewish identity through educational and cultural initiatives.”²⁸ From 2005 on, an initiative called *Jewish Experience* has established local groups all over the world, among them an increasing number in Germany.²⁹ All these groups and institutions share a renewed interest in Jewish learning, either academic or rabbinic. In contrary to Scholem’s sceptic outlook, Jewish professionals have realized that future generations will gain a solid grounding in Jewish religion and culture only when given educational tools at hand that enable them to find their place in the chain of tradition.

Times have changed since 1982, the year Scholem died in Jerusalem, as a consequence of an accident that occurred when he visited the Institute of Jewish Studies in Berlin. His aforesaid bequest of Jewish learning as the nucleus and marrow of cultural resilience has indeed proven true.

²⁵ See <http://abraham-geiger-kolleg.de/welcome.html?L=2> (access March 2014).

²⁶ Due to the fact that Jewish Studies was not integrated into the academic traditional core subjects at German Universities, in the seventies of the nineteenth century, three rabbinical seminaries were founded within two years, the *Jüdisch-Theologisches Seminar* in Breslau (1874), the Berlin *Hochschule für die Wissenschaft des Judentums* (1872), and the Berlin *Rabbinerseminar für das Orthodoxe Judentum* (1873). All three institutions sought to combine rabbinical education with a thorough philological and historical academic training, and were closed between by the Nazi regime; see J. Carlebach (Ed.), *חכמת ישראל. Wissenschaft des Judentums. Anfänge der Judaistik in Europa*, Darmstadt 1992.

²⁷ See e.g. E. Singer (Ed.), *Paradigm Shift: From the Jewish Renewal Teachings of Reb Zalman Schachter-Shalomi*, Jason Aronson, Northvale, NJ, 1993; P. Ochs (Ed.), *Reviewing the covenant: Eugene B. Borowitz and the Postmodern Renewal of Jewish Theology*, Albany, NY: State University of New York Press 2000. On Jewish Renewal in Germany see <http://www.ohel-hachidusch.org> (access March 2014).

²⁸ See <https://lauderfoundation.com/tag/germany> (access March 2014).

²⁹ See <http://www.jewishexperience.de> (access March 2014).

4

Jewish Life in Camps after 1945. Displaced Persons Camps in the US Zone of Germany

Holger Köhn

4.1 Phenomenon Displaced Persons

After Second World War, around 20 million people were straggling through Europe: civilians as well as soldiers and prisoners of war, forced labour workers and survivors of concentration camps. A specific group of this moving stream was defined as Displaced Persons. The available statistics are surely inaccurate and highly variable. Nevertheless, in spring 1945, about Seven million so called Displaced Persons were located at the western zones of occupied Germany.

In words of Supreme Headquarters Allied Expeditionary Forces (SHAEF), dated April 1945, “Displaced persons are defined as civilians outside the national boundaries of their country by reason of war, who are (1) Desirous but unable to return home or find homes without assistance; (2) To be returned to enemy or ex-enemy territory.”¹ As a reaction of the movements of post-war period, in later definitions the term “by reason of war” disappeared. The Allies were responsible for care and control of Displaced Persons. Right from the beginning, the whole group of ethnic Germans was explicitly excluded from that status; millions of refugees or expellees, who had fled from the Red Army or had been expelled from Eastern Europe. For this group the German administration was responsible.

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¹ 16.4.1945, SHAEF Administration Memorandum No. 39 (Revised), National Archives and Records Administration (NARA), 165/476/818, Folder GERMANY (Displaced Persons SHAEF Admin. Memo 39).

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Against all odds, particularly the chaotic circumstances, for example destroyed routes of transport, the Allies managed to repatriate a big part of the group of Displaced Persons in the first months after the end of Second World War. United Nations Relief and Rehabilitation Administration (UNRRA) supported the Allied troops and the Military Governments. Till October 1945, about six million Displaced Persons were returned to their homelands—an incredible success. But in camps a “hard core” of nearly half a million people resided who had been unable or unwilling to be repatriated. As soon as in summer 1947 the International Refugee Organization (IRO) replaced the UNRRA there was no doubt that repatriation was no longer a realistic solution. Resettlement was now the strategy to solve the problem of the hard core, new homes had to be found for Displaced Persons still living in occupied Germany.

Generally, Displaced Persons were accommodated in camps, located in barracks or other kinds of non-private living quarters, like former forced labour camps. Sometimes the Allies used territories of former concentration camps. Only in few cases the camps (or Assembly Centers) were located in confiscated private housing space.

The hard core in camps consisted mainly of three big clusters: Baltic, Polish and Jewish Displaced Persons. All of them were unable or unwilling to return to their homeland. The situation of Jewish Displaced Persons was for some reasons quite particular.

4.2 Jewish Displaced Persons in the US Zone of Germany

At the end of Second World War only a comparatively small group of Jewish survivors were located at occupied Germany. Historians guess that about 50,000 survivors were situated on German territory at spring 1945, about 30,000 within the US Zone. Many of them were weak and haggard from years of malnutrition and the death marches. Thousands of them died shortly after liberation of concentration camps. The survivors of the Holocaust (*She'erit Hapletah*) were accommodated in camps of exclusion, like other Displaced Persons as well. At former concentration camp Dachau for example former Jewish inhabitants lived at the camp space. The largest Jewish Displaced Persons camp in the US zone of occupied Germany was located at the *Saarburg-Kaserne* of Landsberg am Lech.

The situation of Jewish people in camps had been obviously disastrous. This information reached the US State Department. As a reaction President Harry S. Truman sent Earl G. Harrison, US representative on the Intergovernmental Commission on Refugees, in early July 1945 to Europe to examine the DP

camp within the US zones of Germany and Austria. The report prepared by Harrison after his inspection tour illustrated how especially Jewish DPs were living under unsustainable conditions. Sometimes they still housed behind barbed wire in former concentration camps. Harrison argued that “we appear to be treating the Jews as the Nazis treated them except that we do not exterminate them.”² He claimed better living conditions, amongst others better housing conditions. Thereby Harrison contrasted the conditions in camps with the relative normal life led by the nearby German populations. His report caused an enormous and controversial discussion. President Truman ordered General Eisenhower to change all conditions criticized by Harrison as soon as possible. Related to housing conditions Truman claimed: “We must intensify our efforts to get these people out of camps and into decent houses until they can be repatriated or evacuated. These houses should be requisitioned from the German civilian population.”³ However, one of Harrison’s main demands started to work before the report was published: In August 1945, the Army issued a directive concerning the establishment of separate Jewish DP camps. During the first months after liberation Jewish people had been—as well as all other DPs—distributed in camps by (former) nationality, for example together with non-Jewish Poles or Balts. Although Jewish people were classified as stateless the Army continued to refuse to recognize “Jewish” as a nationality. But in response of Harrison’s critique separate Jewish camps were established, following General Eisenhower’s directive, “wherever necessary, suitable accommodation will be requisitioned from the German population.”⁴ Nevertheless, in autumn 1945 only in a few cases private houses had been requisitioned from the German population in favour of Jewish DP camps. In the British and French zones the policies were quite different to the American way. Especially the British government refused to accept Jewish people as an own group with a right of distinct care. By far the largest DP camp in the British zone, Bergen-Hohne, continued at the territory of former concentration camp Bergen-Belsen.

The Jews who were accommodated in DP camps in Germany came from all across Europe, although a substantial part did come from Poland. A specific

² Harrison, Earl Grant: Report. Mission to Europe to inquire into the condition and needs of those among the displaced persons in the liberated countries of Western Europe and in the SHAEF area of Germany, with particular reference to the Jewish refugees who may possibly be stateless or non-repatriable. Washington 1945.

³ 31.8.1945, Harry S. Truman, President of the United States of America, to Dwight D. Eisenhower, General of the Army, published in Harrison, Earl Grant: Report, p. 1–2, 1.

⁴ 22.8.1945, Special Camps for Stateless and Non-repatriables, by Command of General Eisenhower, USFET, to CG Eastern Military District and Western Military District, NARA, 498/Records of the Assistant Chief of Staff, G–5 383.7/42, Folder 383.7–3 (Jews).

phenomenon of the US zone was the problem of so-called “infiltrates”. From December 1945 till the end of 1946 about 100,000 Polish Jews infiltrated into the US zone of occupation. The new influx began as a trickle and grew in 1946 to a serious problem—in view of the Allied Forces. Thousands of Polish Jews had fled during the war eastward deep into the Soviet Union and were after the war moved westward by Soviet troops. They did not want to remain in Poland, among other reasons because of continued violence against Jews in their former homeland. At the Kielce Pogrom, a violent massacre of Jews in the south-eastern Polish town of Kielce on July 4, 1946, at least 42 Jews were murdered. The number of Jewish people entering the US zone peaked at that time to 400–500 per day. As a result there was a serious housing problem. In summer 1946 requisition of private space was no longer an option. Territories like schools and other kinds of public space were given back to the German population. In fact former prisoner-of-war (POW) camps were used for accommodation of the Jewish refugees. Only in the US zone the infiltrates received DP-status.

From 1945 till 1948 more than 100 Jewish DP camps were registered in the US zone, large camps with some thousand people as well as kibbutzim with only a few dozen. In 1947 the Jewish DP group was one of the three biggest groups of DPs within the US zone, beside non-Jewish Poles and Balts, with similar the same number (between 120,000 and 140,000 people). The camps were established as cultural centres with education and employment opportunities, structures of self-government, own justice within the camps and community life in general. But 99% of the Jewish DPs wanted to leave Germany as soon as possible. And most of them left the camps after foundation of the state of Israel and after liberalization of US immigration law in 1948, if they got documents of entry. Nevertheless, some hundreds stayed in camps till the last Jewish DP camp Föhrenwald closed in 1957.

4.3 Local Spatial Characteristics of Jewish DP Camps

As explained below, the territorial formation of the DP camps had been quite different. In every case there was the (mutual) desire of separate spaces between DPs and local population. But depending on the local camp space, it had been easier or quite impossible to create separated areas. However, the DP research argues that DPs and local population lived in totally different

spaces, totally independent from each other.⁵ But that is surely a myth. Yes, there were different spaces and they were desired. The camps established ex-territorial spaces within German cities with no entry for local population and German police. But these enclaves did not hover in an empty space. There were a lot of possibilities of forced contacts, in form of conflicts as well as in a more positive way. The camps were not totally closed, not self-sufficient. One main reason for the intensity of contacts between the two communities was the spatial characteristic of the DP camp in situ. For example the requisitioning of private houses at the centre of German cities created a main difference.

In following annotations I will introduce four quite different Jewish DP camps within the US zone, all located in small towns in the southern part of Hesse, south-western Germany. Every camp had a capacity of at least 1000 people. Preliminary I will outline the circumstances at the time of implementation. Then I summarize the allocation of the spaces.

4.4 Zeilsheim

Zeilsheim was the first and largest Jewish DP camp in this area. The provincial town of Zeilsheim, a dozen kilometres southwest of Frankfurt/Main centre and part of the metropolis' administration, counted about 5000 inhabitants in 1945. It was hardly affected by agriculture, but till the end of nineteenth century and more intensive at the beginning of twentieth century the residential area was multiplied. One main reason was the establishment of a working-class quarter called *Kolonie Zeilsheim*, built for workers and their families of the *Farbwerke Hoechst AG* (one of the co-founders of *IG Farben*). In addition two colonies of small houses with big gardens were established in the 1930s. And at the beginning of 1940s two forced labour camps were set up in Zeilsheim, one of them outside the residential area, built of brick barracks for Polish forced labour workers. This camp was going to be the core of the later DP camp.

However, why did the Army chose just Zeilsheim to accommodate Jewish Displaced Persons? The answer was provided by Earl G. Harrison himself. During his stay in Germany in July 1945 he and a private of US Army were looking for a place for Jewish DPs stranded in Frankfurt/Main. These Jews were at the time located in a couple of hotels within Frankfurt, which "must be vacated because they were needed for military proposes"⁶. Several housing

⁵ Königseder, Angelika/Wetzel, Juliane: Lebensmut im Wartesaal. Die jüdischen DPs (Displaced Persons) im Nachkriegsdeutschland 1945–1949. Fischer Frankfurt am Main 1994, p. 9.

⁶ Earl G. Harrison: The Last Hundred Thousand [draft without date], USHMM Archives, RG-10.088, Earl G. Harrison papers [microform], 1945–1946.

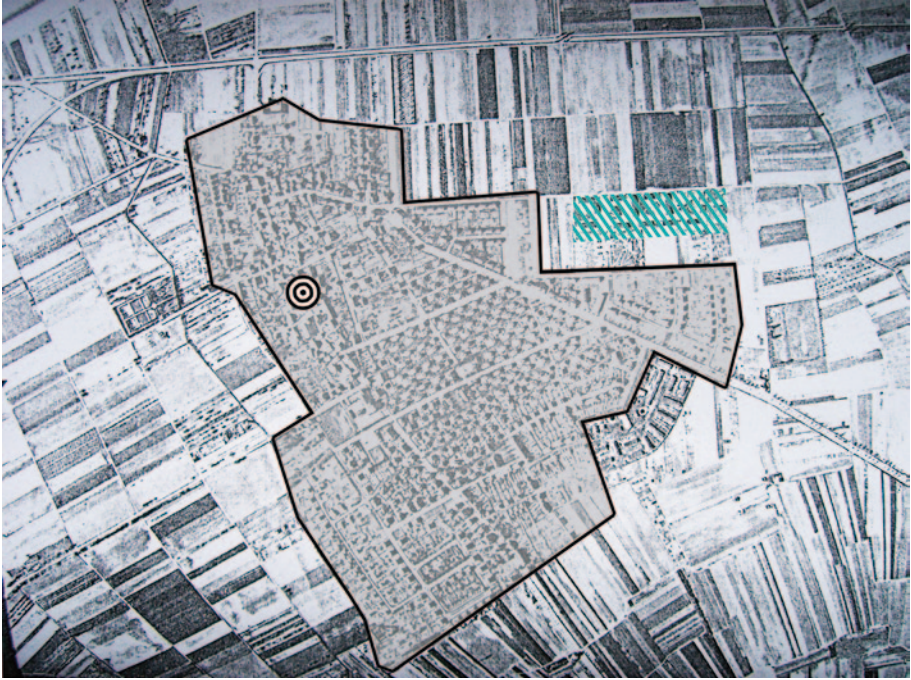


Fig. 4.1 Zeilsheim 1—The DP camp in a former forced labour workers camp. (Aerial image, 23.3.1945, Institut für Stadtgeschichte Frankfurt, Collection Ortsgeschichte S3/E/6.736)

possibilities were inspected, best of them a block of flats about 10 miles out of Frankfurt in a kind of suburb. The Town Major, who had supervision of billeting, agreed that the place was desirable and available. But the German mayor argued the flats had to be held for German civilians who were expected soon to return—and the Town Major upheld this veto. So the former forced labour camp in Zeilsheim was chosen as a Jewish DP camp. Harrison described the bad condition of the brick barracks as follows: “The sheds were so badly constructed that there were cracks in the walls, so ill heated that winter occupation was out of the question. Sanitary facilities were inadequate.”⁷ But it was a classical camp of exclusion. The typical characteristics were almost no privacy in combination with a kind of mass accommodation in pure housing space. The new inhabitants were furthermore isolated from the rural population like the former forced labour workers had been, outside the residential area and indicated by a fence (Fig. 4.1).

The DP camp Zeilsheim was established in August 1945 for up to 600 people. After some repair tasks the conditions were a little better, but as oc-

⁷ Ibid.



Fig. 4.2 Brick barracks in DP camp Zeilsheim (1947/48). (W/S #89520, USHMM, Photo Archives, Designation #322.38915)

cupancy started a lot of Jewish DPs refused to move into the camp. However, after a few weeks some hundred Jewish DPs were registered in Zeilsheim camp. After publication of Harrison-Report the people in power on the part of US Military decided to change the camp territory in a cataclysmic way: The camp should have been a model-camp. In two steps in October/November 1945 more than 200 houses or apartments were confiscated in Zeilsheim by US-Army in support of Jewish DP camp. All the inhabitants of the DP camp had been accommodated outside the former camp space. The brick barracks stayed occupied for common use like cultural and religious environment, schools, workshops, assembly room and so on (Fig. 4.2). The camp had changed its characteristic within a couple of weeks: Now there was no fence, no tagged borderline. The camp was not outside the residential area anymore, not isolated; it expanded into private space of German population nearby and was sprawled close to the centre of the small town of Zeilsheim. The capacity of the camp could have been increased up to 3000 people. Like in contemporary reports documented there was not obvious anymore where the camp territory ended and the town of Zeilsheim began—and vice versa. Jewish DPs and rural population lived in an official camp house to house, garden to garden (Fig. 4.3).

In contrast to the former situation now some privacy for the DPs was possible. But in only a few weeks the camp was again crowded; more than

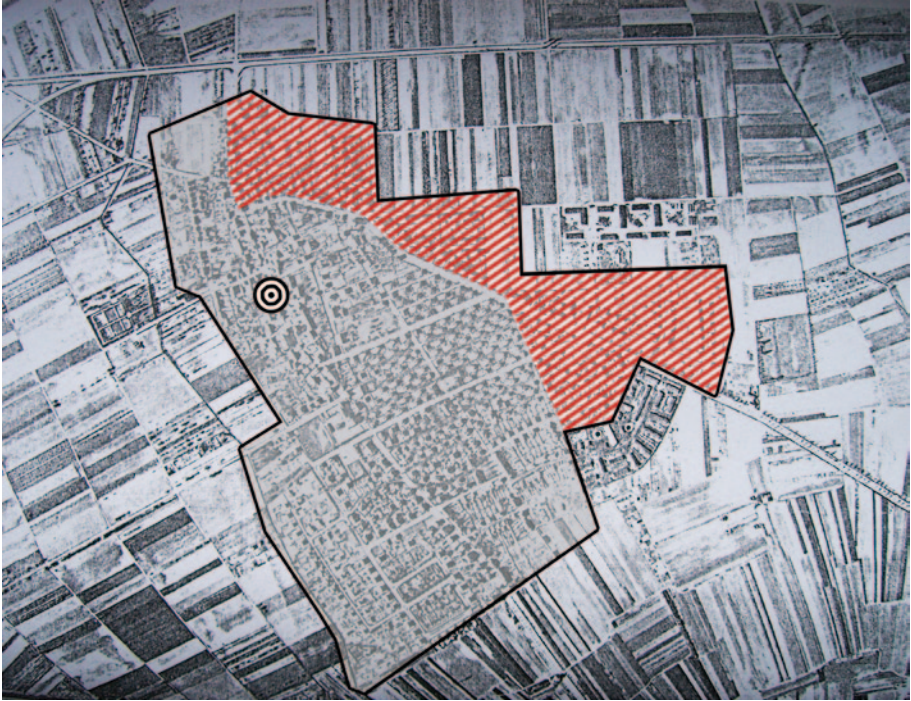


Fig. 4.3 Zeilsheim 2—The sprawled DP camp. (Aerial image, 23.03.1945, Institut für Stadtgeschichte Frankfurt, Collection Ortsgeschichte S3/E/6.736)

3000 Jewish DPs were accommodated in Zeilsheim at the end of 1945. Confiscation of more private room from the German population—like required from UNRRA and Jewish NGOs—was no longer a political accepted solution. Instead the camp territory did not change its composition till camp Zeilsheim was liquidated in autumn 1948. Although a lot of problems resulted in the indifferent camp territory (Fig. 4.4). From January 1946 the camp was officially closed for newcomers. Further infiltrates stranded in Zeilsheim were now sent to the new established Jewish DP camp in Lampertheim.

4.5 Lampertheim

Actually the idea of Military Government was to distribute the Jewish DPs over some small towns in the southern part of Hesse called Ried. Some hundred DPs should be accommodated in Biblis, Bürstadt and other places in comparatively small camps. But as a result of logistical problems Lampertheim was chosen to house more than 1000 Jewish DPs in just one main camp (Fig. 4.5).



Fig. 4.4 Raid in DP camp Zeilsheim (1948). (Jewish Museum Frankfurt, Photo Archives, F91-590)

In 1946 Lampertheim counted about 14,000 inhabitants. The municipality had developed during twentieth century to an industrial community. A lot of people oscillated between Lampertheim and the bigger cities Mannheim and Ludwigshafen, which were close by. The post-war period was characterized by a lack of living space, caused of minor war destruction, and by a lot of evacuees, who had to be accommodated.

Now living space in the best part of town was confiscated for the Jewish DP camp territory—within the town centre. Maybe maps out-of-date were one of the reasons why this untypical territory without borders was chosen by Military Government. At least there would have been a colony of small houses from the 1930s (in the north-western part of the town) which was not recorded in older maps. Anyway, the Jewish DPs and the local population were not separated in Lampertheim right from the beginning. Furthermore main streets which led to the station and touched the camp territory could be used by the native population. There was an UNRRA camp director, a Norwegian, who lobbied for the DPs. She held responsible for the confiscations in the eyes of the municipal authorities. In contrast to Zeilsheim there never existed a DP camp of exclusion in Lampertheim (Fig. 4.6).



Fig. 4.5 Lampertheim—The central DP camp. (Top: Map TK 25, issue 6316 Worms, edition 1942/2; Down: Map TK 25, issue 6416 Mannheim Nord, edition 1942/2, both Collection of Maps ULB Darmstadt)

Amongst others a synagogue, a kindergarten, some institutions of education and workshops existed within the Jewish DP camp territory in Lampertheim. In addition there was an active cultural and sportive life in the camp. The untypical spatial arrangement of the camp territory, definitely defined in February 1946, remained until the liquidation of the camp 1949.

4.6 Babenhausen

In October 1946 a quite different type of DP camp was established in Babenhausen, a town of about 3000 inhabitants some 30 km southeast of Frankfurt/Main. In autumn 1946 a peak of Jewish infiltrees was registered within the US zone. New camps had to be opened. Tens of thousands of Jewish people from Eastern Europe stranded in tent camps within Upper Bavaria. But there was no longer the possibility to confiscate private room in favour of DPs because US authorities did not want to offer good living conditions for the infiltrees. The US administration was afraid of more masses of people taken the way to US zone of Germany. Under these circumstances territo-



Fig. 4.6 Confiscated street of DP camp Lampertheim (1947). (USHMM, 2003–394, Dora Hass papers 1944–1955)

ries like former POW camps came into the focus of the US Army. One of these dissolved POW camps was the artillery caserne in Babenhausen. After Second World War the historical barracks built in 1901 were expanded with basic quarters like tents, Quonset huts and other kinds of iron and wooden huts. The complete territory was isolated by barbed wire. In summer 1946, as plans were made for dissolving the POW camp, a maximum of 12,000 DPs should be transferred to the Babenhausen camp area. In October 1946 a maximum capacity of 4000 people was defined. In fact some 3000 infiltrees were registered in DP camp Babenhausen at November 1946. The camp was cut off by walls and fences from the outside world. Furthermore the city centre of Babenhausen was separated by tracks and railroad embankment (Fig. 4.7).

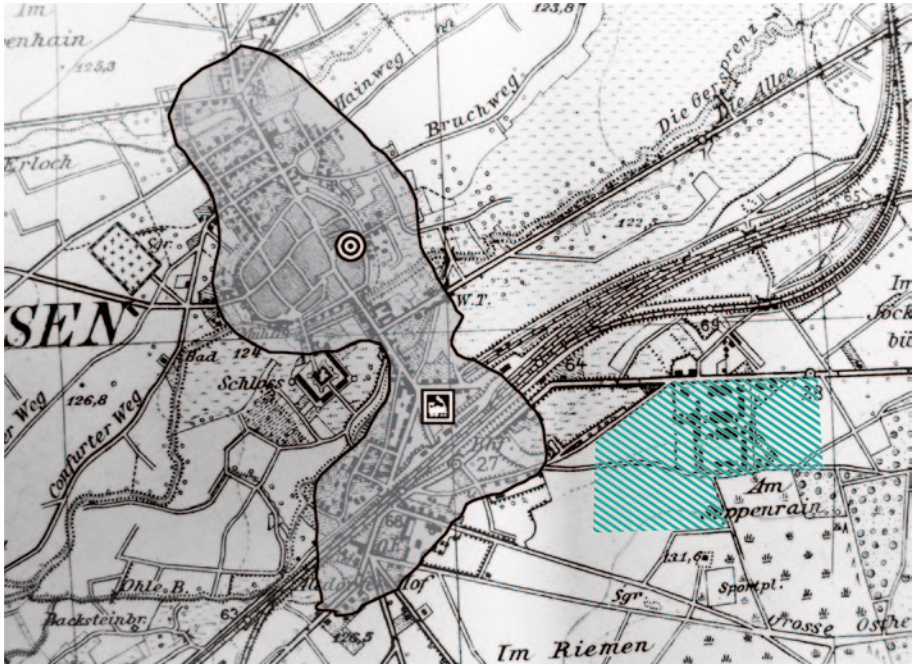


Fig. 4.7 Babenhausen—The DP camp in the casern. (Map TK 25, issue 6019 Babenhausen, edition 1948, Collection of Maps ULB Darmstadt)

A special occurrence happened at the occupancy in October 1946. The Jewish DPs—about 1000 arrived with the first transport—refused to enter the camp. They saw huts and tents and barbed wire—and remembered other camp experiences. Not until a US Military of high rank, General Keyes, arrived the Jewish people started to enter the camp. General Keyes promised better accommodations as soon as possible. The barbed wire was removed immediately. But the walls and fences lasted. The camp territory remained separated from the residential area (Fig. 4.8).

The accommodations were in very bad condition. The sanitary infrastructure was definitely disastrous and awaited rehabilitation. Altogether, the premises were not suitable for the arriving people. There were about 500 children younger than 14 years, of this almost the half small children less than 2 years old, and in addition about 200 pregnant women. Babenhausen was regarded at the time as the worst permanent Jewish DP camp in the complete US zone.⁸ Nevertheless a camp life established with synagogue, with educational

⁸ Friedman, Herbert A.: A Military Chaplain's Perspective. In: Life Reborn. Jewish Displaced Persons 1945–1951. Conference Proceedings, Washington DC, January 14–17, 2000. USHMM Washington DC 2001, p. 67–74, 73.



Fig. 4.8 Quonset huts in DP camp Babenhausen (1946). (W/S #19786, USHMM, Photo Archives, Designation #322.4045)

institutions and cultural life. The DPs for example founded a theatre group. But the Jewish DP camp Babenhausen existed only half a year. In March 1947 a big part of the inhabitants were transferred to Jewish DP camps in northern Hesse. From summer 1947 till 1950 Babenhausen was a big Baltic DP camp, but only the historical part of the territory was used as accommodations. However, in November 1946 about 1000 Jewish DPs were transferred in better accommodations to a DP camp in private room within the nearby city of Dieburg, only a few kilometres west of Babenhausen. Especially families got rooms in private houses as promised by General Keyes.

4.7 Dieburg

The Jewish DP-camp of Dieburg was no new foundation. But it was a new allocation in combination with a characteristic change of territoriality. From November 1946 till spring 1949 about 800–1000 Jewish DPs were allocated in Dieburg DP camp (Fig. 4.9).



Fig. 4.9 Dieburg—The distributed DP camp. (DP Center Dieburg 560 Installations, 1:2.500, United Nations Archives, PAG-4/3.0.11.3.2 [S-436/4/2])

Some 6500 inhabitants lived in the city of Dieburg in 1946. In the south-western area of the city existed a colony of small houses called *SA Siedlung* which was built in the 1930s from and in favour of members of Nazi organization SA and their families. This colony was part of a Latvian DP camp established in Dieburg in autumn 1945. In addition a catholic convict, a castle (*Schloss Fechenbach*) and some private houses nearby the convict were confiscated in favour of the Latvian DP camp. The Latvian camp in private room was established after the Harrison Report had been published. Now, in November 1946, the Latvian DPs were evacuated to a DP camp in Darmstadt (Camp Marienhöhe). The mayor of Dieburg was instructed by Military Government to compile a list of houses which were inhabited by Jews of Dieburg in earlier time. Some of these houses were in fact confiscated in favour of the Jewish DP camp. Because Jewish life in Dieburg till 1938 was scattered over the town the influence on the territoriality of the DP camp was in a radical way. The camp territory was not coherent anymore. In other words: There was no camp territory, at most some isles (convict, castle, *SA Siedlung*) in addition to single houses were distributed over the residential area. Therefore no marked borders like fences or other visible labels existed within the city to

identify the camp space. An eye-witness of Dieburg responded the question where the DP camp of Dieburg was located: “A camp? There was no camp in Dieburg!” Although she remembered the Jewish DPs, commemorated personal contact as well as occupied houses, she was absolutely sure that this was not a camp.

4.8 Jewish DPs in the Perception of Rural Population

In general there were negative attitudes against the Jewish DPs on the part of rural population. Anti-Semitic stereotypes and prejudices were widely spread within the German people. Conflicts were documented if there was private room occupied in favour of the DPs. The native population did not want to have Jewish DPs in their community—but if there was no other solution than in no case they should live in private room. Whenever private room was confiscated the consequence was organized and collective resistance—as observed in Zeilsheim, Lampertheim and Dieburg.

These conflicts based on confiscated houses and flats but also on gardens and furnishings, sometimes on shops and companies within the officially confiscated camp territories. Stones flew into windows of occupied houses in Lampertheim and in Dieburg, also other kinds of disputes were documented (especially in Dieburg) caused by direct neighborhood. The majority of the German population wanted the Jewish DPs out of their residential area, out of their space of identity. The chief of Frankfurt police argued in this spirit that a massacre (“*Blutbad*”) would be possible if the camp in private houses of Zeilsheim was not resolved immediately. The evacuated people wanted to get back their flats and houses. They complained about the DPs not handling the furniture carefully etc.—and complained their own sorrow. There was no understanding about the reasons of the DP problem and the problems of the DPs. However, generally the German sources draw a more negative picture than for example UNRRA files do.

Most of the conflicts are documented about the situation in Zeilsheim. The small town and the DP camp were close to the city of Frankfurt. Zeilsheim had been established as a big centre of black market—one of the greatest in the whole US zone. A lot of people from outside went to Zeilsheim to make illegal market actions. A problem that could not to be solved was the control of the camp territory. As described above there existed no fence or other marked borders in space. On the contrary, some German shops like a bakery were within the camp territory which continued to be available for

the German population. Therefore control was in fact impossible. The bakery had been the hot spot of black market anywhere. The German farmers from nearby villages brought their cows to the DP camp territory where they were slaughtered and sold illegally. Some raids were made, fresh meat, a lot of Dollars and other advices of black market were saved. The Military Government thought as well as the German administration that the camp should be closed as soon as possible. But Zeilsheim was not only a DP camp—it was a symbol of survival. This was the reason why Zeilsheim DP camp was not liquidated before the foundation of the state Israel 1948.

There were also different kinds of contact in a more positive way between Jewish DPs and the German population—but this fact is harder to prove. Conflicts were often documented; reports about positive relations were an exception. For example, we know something about common visits of local cinema only because there were some arguments between rural population and Jewish DPs reported. Sometimes a fortunate coincidence built the reason for a report of more positive kind of contact: The Military Government organized a control of all kitchens of confiscated houses from DP camp Dieburg. The supervisors found fresh vegetables which were not part of the official foot rations in 50 from 51 inspected houses. After some research the Military Government confirmed that most of the DPs in Dieburg made deals with the property owner—without knowledge of Military Government. The German owners were allowed to use their gardens but had to deliver a part of the crop to the DPs. The condition for such deals must have been a minimum of trust.

Some reports documented as well different kinds of relationships in the field of work. Germans were officially employed by UNRRA as instructors for example at workshops. But there were also especially private contacts in this field. In Dieburg as well as in Zeilsheim German women worked as household help and even as nanny for Jewish families living in private houses. The Military Government Dieburg could not believe that Jewish families hired German women to take care of their children but proved the information as true. The pastor of Zeilsheim reported indignantly of 120 German women who worked for Jewish DP families in Zeilsheim DP camp. Contemporary witnesses reported about different kinds of handcraft made from German women by order of Jewish DPs, like sewing work and knitting, with food or clothes instead of a fee.

Almost separated were the arenas of sport. The DPs had their own tournaments like football or boxing championships. Only sometimes the spectators mixed as some sources about Zeilsheim show. But the repeated prohibition of acceptance of German football players in DP teams and vice versa could be an indication for a common practice.

Obviously relationships between Germans and Jewish DPs existed, in a few cases even marriages. These were exceptions, of course, but Military Government bulletins as well as reports of contemporary witnesses documented social functions like dance events in Dieburg between Jewish men of the DP camp and women of the rural population.

Perception of Jewish DPs on the part of rural population was dependent on the camp territories. Especially the confiscation of private space within the residential area in favour of Jewish DPs influenced the perception. And in the cases in which no coherent camp territory existed the German population did not percept the accommodations as a camp.

For the Jewish DPs it was in every case a forced accommodation, not based on an individual decision. The DP status depended on registration in an official camp. Usually the DPs preferred private space. Nevertheless they did not want to stay in Germany at all—in which kind of accommodation ever. And: a lot of large Jewish DP camps remained in barracks or other kinds of non-private living quarters, for example in Ansbach, Bamberg, Eichstätt, Fritzlär and Ulm—the above introduced Jewish DP camps in southern Hesse are no representative random sample for the whole US zone.

4.9 Commemorative Culture

In the twenty-first century only a few relicts commemorate on Jewish DP camps after the catastrophe of Second World War in Germany. At the Jewish cemeteries of Babenhausen, Dieburg and Lampertheim some gravestones of DPs attested Jewish life in these towns in post-war period.

Generally the local historiography rejected the DPs—not only the Jewish—at least until the 1980s. Like other events of the post-war period (and of the time of “Third Reich”) the Jewish DPs were not part of the official local history. If there was any comment than about the suffering of the rural population which lost their homes in favour of the DPs. Especially the confiscation of private space was consistently an issue of local historiography. The *Lampertheimer Heimatbuch* from 1957⁹ for example described how 138 houses at the best part of town were confiscated by Military Government.

⁹ Lepper, Carl: *Lampertheimer Heimatbuch*. Porta-Verlag München 1957, p. 198: “Im schönsten Wohnviertel Lampertheims wurden von der Militärregierung 138 Häuser beschlagnahmt. [...] Die erhöhte Wohnungsnot machte es den Betroffenen äußerst schwer, Unterkunft zu finden. [...] Im Gegensatz zu den hungernden Deutschen erhielten die Displaced Persons eine ausgezeichnete Verpflegung, und bald begannen diese mit ihrem Überfluss zu schachern. Schöne Wohnungseinrichtungen wurden von den Juden demoliert und viele Einrichtungsgegenstände verschwanden spurlos. Die Juden fühlten sich als Herren der Häuser [...]”

Because of the lack of residential space it was hard to find accommodation for the evacuated Germans, the *Heimatbuch* reported. In contrast to the fasting Germans the Jewish DPs got excellent food, and they began to bargain. In at least latent anti-Semitic style and the correspondent prejudices the author described how the Jews felt like “*Herren der Häuser*” (chiefs of houses). As well in Dieburg and Zeilsheim the local historians felt with the evacuated Germans and blinded out the reasons for confiscations.

Elsewhere, like in Babenhausen, there was no advice of Jewish DPs in official historiography. At the *Stadtlexikon Babenhausen* (encyclopedia of the town) from 1995 the only advice of Jewish DP camp and more than 3000 Jewish DPs in Babenhausen is hidden at keyword *Kaserne* (casern, barracks): 1945 till 1950 different use under American administrations.¹⁰ It is quite interesting that also publications about Jewish life in Babenhausen, Dieburg and Lampertheim rejected the Jewish DPs. They separate the “own Jews” from the “foreigners”. The Jewish DPs are not part of local Jewish history; the chronologies finish not later than 1945.

Overall some attempts since the 1980s try to commemorate the Jewish DPs in an adequate way. Besides more distinguished articles in local historiography and genuine scientific research we can find exhibitions and publications organized by interested citizens. In Zeilsheim and Lampertheim temporary exhibitions informed about the situation of the Jewish DP camps, and in Dieburg a section of the permanent exhibition at *Schloss Fechenbach* represents the Jewish life in Dieburg during the postwar period. And in Zeilsheim a memorial stone commemorates the existence of thousands of Jewish people from 1945 till 1948 in the small town.

Generally the commemorative culture depends on a historical awareness. If there are no people who are interested in that part of local history, the Jewish DP camps as well as the Jewish DPs remain in oblivion.

¹⁰ Wittenberger, Georg (Hrsg.): *Stadtlexikon Babenhausen*. Babenhausen 1995, p. 70: “1945 bis 1950 verschiedene Verwendungen unter amerikanischer Verwaltung”.

5

The Nakba—Flight and Expulsion of the Palestinians in 1948

Ghaleb Natour

5.1 Introduction

The author is a Palestinian with an Israeli and a German passport. He has been living in Germany since 1979. He holds a PhD in Physics and is director of an institute of engineering and technology at a large German national research centre and professor at a German university. “I am neither a historian, nor a politician but affected by the situation and hence eagerly interested in settling the conflict and establishing a just peace in my home country Israel and Palestine.”

The author is chairman of the registered non-governmental “Association for the Promotion of Peace in Israel and Palestine”, which provides on its website a number of lectures and presentations on the history of the Israeli-Palestinian conflict, the current situation in the occupied territories of the West Bank and Gaza Strip, the condition of the Palestinians within Israel and on perspectives for future solutions and information on the Israeli-Palestinian conflict (Fig. 5.1)¹.

In Arabic the word Nakba means catastrophe. The Nakba is a catastrophe describing the expulsion and flight of the Palestinians which reached its peak in 1948. This catastrophe continues to exist until the present day. This is because, on the one hand, many of the refugees, displaced people and their descendants still suffer and continue living in refugee camps without any perspectives for the future and, on the other hand, because the displacement of Palestinians within Israel is still taking place today. This fact is seen in the recent proposals discussed by the Knesset in 2013 (Prawer Law) to displace 30,000 Bedouins living in so-called unrecognized villages in the Negev desert.

¹ <http://www.israel-palaestina.de>.

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Fig. 5.1 Association for the Promotion of Peace in Israel and Palestine

The Nakba as the flight and expulsion is a disaster for the Palestinian people. It is a matter of fact and is a direct result of the events that took place in Palestine shortly before and during the establishment of the state of Israel.

That the expulsion was planned and was one of the preconditions for the establishment of the Jewish state in Palestine has been described by several authors who provide convincing evidence from analysis of documents and testimonies that it was a systematic ethnic cleansing of the country. This is stated e.g. in the books of the Israeli historians Pappé and Flapan^{2,3}.

Some Israeli historians and the official Israeli version offer a different description. They claim that the Palestinians left by their own free choice, encouraged by the leaders of the Arab countries. However there is no historic evidence for the existence of evacuation orders from the Arab side, as has been stated in the investigation of the historian Walid Khalidi⁴.

This article will not address the migration and flight of Jews from Arab countries as this would go beyond the scope of this topic. Furthermore the Jewish immigrants to Palestine came from all over the world, not only from Arab countries. The role played by the Jewish immigrants for the Nakba, taking over the houses and villages of displaced Palestinians, is always the same, independent of their country of origin. Many publications exist on the suffering of Jews from Arab countries; see e.g. “justice for Jews from Arab countries” on the Internet⁵ and literature lists given there.

5.2 Early History

The area between the Mediterranean and the Jordan River, which I call historic Palestine, i.e., Israel and the Palestinian territories of today, is part of the Fertile Crescent which has a long ancient history of many thousands of years.

² Ilan Pappé, “The Ethnic Cleansing of Palestine”, One World Publication, Oxford 2006.

³ Simcha Flapan, “The Birth of Israel”, Pantheon Books, New York 1987.

⁴ Palestine 1948, Journal of Palestine Studies Vol. XVIII, No. 1, Autumn 1988.

⁵ <http://www.justiceforjews.com>.

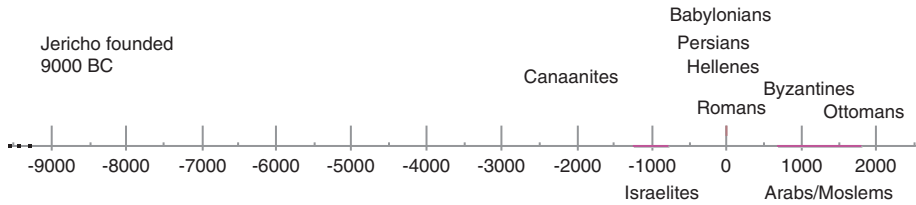


Fig. 5.2 Nations and regimes that lived and ruled in Palestine

Archaeological and prehistoric studies document the existence of cultures 13,000 years before Christ. Several thousand years later, from around 3500 until 1300 BC the Canaanites lived and ruled in this area and after them, between the years 1250 and 721 BC, it was the Israelites. Until current times there have been many peoples who have lived and ruled in historic Palestine:

The Babylonians (180 years), the Persians (200 years), the Hellenes (270 years), the Romans (400 years) the Byzantines, the Omayyad/Abbasids (460 years), the crusaders (88 years), the Mamluks (330 years), the Ottomans (400 years) and between the First and Second World War the British. Some use the fact that Jews lived in Palestine 2000 years ago for legitimizing the Jewish people's right to own the land. As mentioned above the Israelites did rule for around 530 years and the Islamic/Arab rule lasted for around 1200 years (Fig. 5.2). The numbers above and in Fig. 5.2 have been rounded up. Such legitimization and any comparison between durations of previous rules make no sense because the Israeli-Palestinian conflict is a new-age political conflict, having no origin in historic or ancient times.

The fact that various peoples lived and ruled in the area which is today Israel and Palestine, most of them for hundreds of years, underlines the demand not to reduce the history of the country to only the period in which the Israelites lived and ruled. This would mean focusing on the 530 years of Jewish history in the country and neglecting all the other peoples and nations that lasted altogether more than 15,000 years.

5.3 Modern History

The Israeli Palestinian conflict, viz. the Middle East conflict, has its origin in the period at the end of the nineteenth century. At that time many Jews lived assimilated in Western European Societies; but Jews were discriminated and persecuted in Eastern Europe, then mainly under Czarist rule. This persecution and discrimination of Jews, which spilled over from time to time to the other European countries, had its peak in the holocaust. This is an important

element to be considered when investigating the background on which the whole conflict emerged.

At the same time two other aspects played an important role: one is the widespread colonization activities of Western European countries that had colonized around 80 % of the earth at the end of the nineteenth century. The second aspect is the fact that from the middle and towards the end of the nineteenth century, many nations aspired to establish their own states in a world that was consisting of a few empires. These ambitions also motivated some of the intellectual European Jews, the Zionists (for more on this aspect as well as on Zionism and Israel of today see the book by Rolf Verleger⁶).

The Zionist movement was born on this background of the persecution of Jews, the colonial activities of European countries, and the emerging of national states. It was a nationally motivated, not a religious movement of Jews who aimed at establishing a Jewish state. Initially, different options were discussed for the location of this state; later Palestine was selected exclusively. The Zionists assumed and were right that with the historic connection of the Jews to the country, they could better convince the Othman Sultan and, in the final end, the British government to support their idea. The idea of Zionism started with the vision of Theodor Herzl⁷, an assimilated Jew, who was influenced by the Dreyfus affair (reflecting an outbreak of anti-Semitic sentiments in France).

Two important currents in the Zionist movement should be mentioned— one represented the spiritual, cultural values and wanted to develop the country to the best of all the inhabitants or at least tried not to neglect non-Jewish inhabitants. Representatives of this current are Martin Buber and Ahad Ha'am. The other stream, the so called revisionist movement, was in favour of establishing a state for the Jews at any cost and with no regard to the non-Jewish inhabitants. This movement is the predecessor of the Zionists of today and direct predecessor of the Likud.

It may be said that revisionist ideas dominate in the main streams of today's religious and nationalist parties in Israel, as well as in the socialist Labour Party, who is definitely not to be considered as follower of the spiritual wing.

The project of the Zionist movement had the aim of establishing a home land for the Jewish people in "A land without a people for a people without a land". It is rather unlikely that the Zionists did not know that Palestine was populated; it is more probable that they ignored this fact. In both cases,

⁶ Rolf Verleger, "Israels Irrweg. Eine jüdische Sicht"- PapyRossa 2008 (3. Auflage August 2010).

⁷ Theodor Herzl, "Der Judenstaat. Versuch einer modernen Lösung der Judenfrage", Leipzig & Wien M. Breitenstein's Verlags-Buchhandlung 1896.

the Nakba or “the catastrophe” is a result of establishing the Jewish state in a country mainly populated with non-Jews: Arabs = Palestinians.

Zeev Jabotinsky, leader of the revisionist current, in different publications used the terms “Zionist colonization of Palestine” and “iron wall” to protect the Zionist plan. In his paper “Colonization of Palestine—Agreement with Arabs Impossible at present—Zionism Must Go Forward” he states: “Zionist colonization must either stop, or else proceed regardless of the native population. Which means that it can proceed and develop only under the protection of a power that is independent of the native population—behind an iron wall, which the native population cannot breach”, (see publications of “The Jabotinsky Institute in Israel”⁸).

The first Jewish settlement was established in 1878 in Palestine and was called Petah Tikva (“Gate of Hope”). The “Jewish Colonization Association” which was established in 1891 to systematically buy land in South America took over the villages of Baron Rothschild in Palestine and at the beginning of the twentieth century managed the Jewish-owned land in Palestine. Because some people think Israel was established on purchased land, it is important to mention that until 1948 the amount of the acquired land was not more than 6% of the total land in Palestine.

Although not fully accepted by all of the Jews in Europe, the Zionist movement was well organized. It held congresses in different European cities, starting with the first congress in Basel 1897, followed by yearly congresses. Especially until the eleventh congress in 1913, the meetings of the Zionist movement laid the foundation for systematically converting Palestine into a state for the Jews.

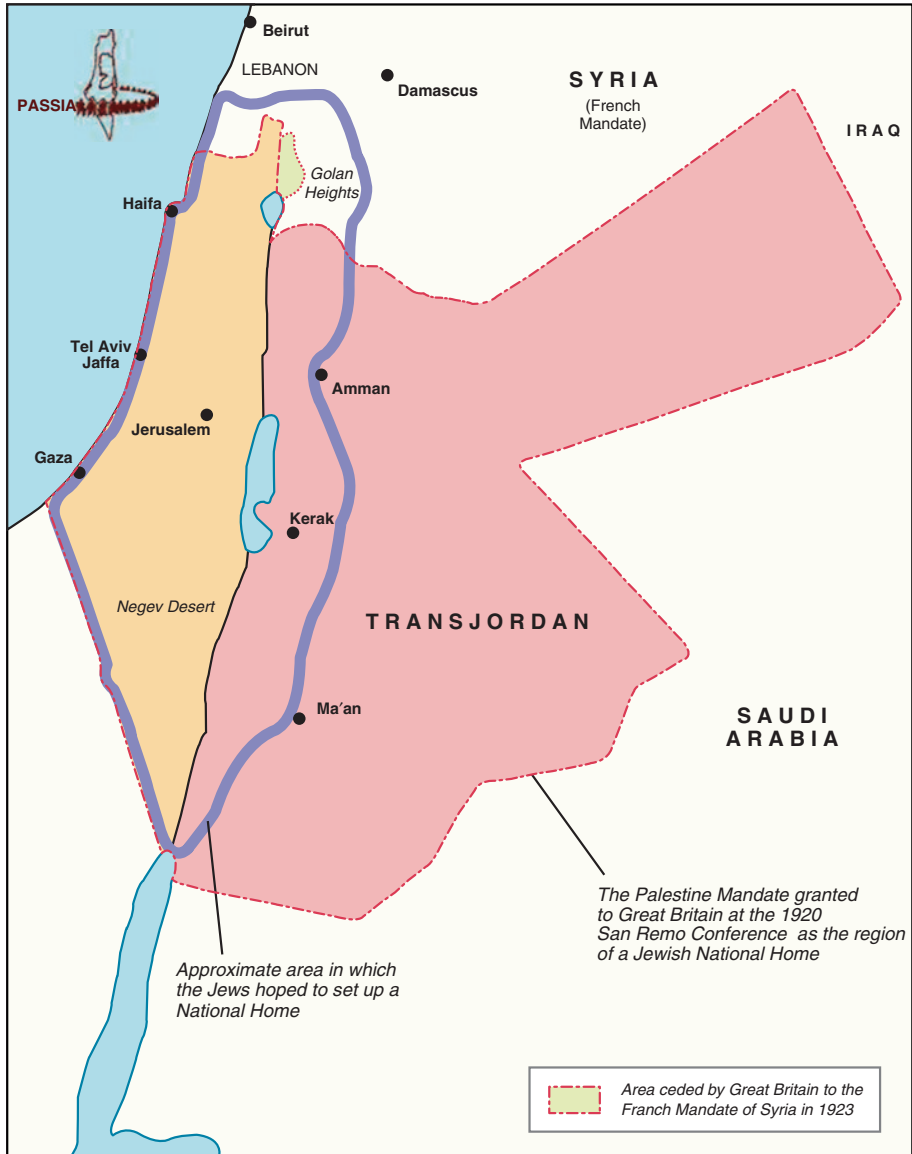
In 1917 the famous Balfour declaration dated from November 2nd was sent by Arthur James Balfour, United Kingdom’s Foreign Secretary, to Baron Walter Rothschild. In this declaration it was stated that “His Majesty’s Government view with favour the establishment in Palestine of a national home for the Jewish people, ... it being clearly understood that nothing shall be done which may prejudice the civil and religious’ rights of existing non-Jewish communities in Palestine, or the rights and political status enjoyed by Jews in any other country”⁹.

The British Mandate for Palestine, i.e., the rule of the British in Palestine, was drafted in 1920, formalized in 1923 and lasted until 1948.

The Palestinian Academic Society for the Study of International Affairs (PASSIA) published a map based on the book of Sachar H.M. “A History

⁸ e.g. www.jabotinsky.org/multimedia/upl_doc/doc_191207_49117.pdf.

⁹ See the full text at “The United Nations Information System on the Question of Palestine” (UNISPAL)—<http://unispal.un.org> and http://en.wikipedia.org/wiki/Balfour_Declaration.



Adapted from: Sachar, H.M., *A History of Israel*, New York: Knopf, 1981

Fig. 5.3 Palestine under the British mandate (1923–1948) and the area in which the Jews hoped to set up a National Home. (Source: PASSIA—Palestinian Academic Society for the Study of International Affairs)

of Israel”, New York 1981, where the approximate area, in which the Jews planned to set up a national home is shown. This area includes Israel of today, the whole West Bank, the Gaza Strip, part of south Lebanon, the Golan Heights and a strip of more than 20 km inside Jordan of today and reaching up to Amman and Maan in Jordan (Fig. 5.3).

Between the years of 1880 and 1939, five immigration waves to Palestine were registered (considered illegal according to the British laws). These immigration waves and further immigrations until 1948 brought more than 600,000 new Jewish immigrants to Palestine. This immigration is a result of the Zionist project, the persecution of Jews, the colonial activities of Europeans, the national ambitions of ethnic groups to establish own states, the holocaust and the destruction of East European holocaust survivors' hometowns by Second World War.

These reasons for the immigration of hundred thousands of Jews are uncontroversial. But the numbers, which continued to rise during the coming years, meant a massive change of the ethnic relation in the population in Palestine. This can be seen in the rise of the percentage number of Jews from 6% in 1914 to 30% of the total population in 1939:

- 1882–1903 first massive immigration to Palestine, 35,000 immigrants from Eastern Europe
- 1904–1914 second wave of 40,000 immigrants. Jews add up to ca. 6% of total population
- 1919–1923 third immigration wave with 40,000 immigrants. Jews are ca. 12% of total population and own ca. 3% of land
- 1924–1928 fourth immigration wave with 59,000 immigrants. Jews 17%, landownership ca. 4%
- 1929–1939 fifth immigration wave with 250,000 immigrants. Jews 30%, landownership ca. 5.7%

A small part of the new immigrants left again, so for instance of the 250,000 who immigrated between 1929 and 1939, around 20,000 later left the country. For more details on the immigration waves (Aliya Waves) see the internet site of the Israel Ministry of Foreign Affairs¹⁰ (from where the immigration numbers cited above were taken).

Figure 5.4 shows the development of the proportions of Jewish and Arab population from 1922 until present times. The continuous increase in the numbers of Jews from 1922 until 1948 and the dramatic shift from Arab to Jewish majority in 1948 is very noticeable. This forcible change in population numbers in 1948 was accompanied by a dramatic shift in landownership.

Until 1948 the recorded total landownership of the Jewish population in Palestine represented by the Jewish colonization association and the Jewish National fund comprised between 5.67 and 6.59% of Palestine^{11,12}. The decrease

¹⁰ <http://mfa.gov.il/MFA/AboutIsrael/History/Pages/Aliya%20and%20Absorption.aspx>.

¹¹ <http://www.badil.org/en/al-majdal/item/1055-land-ownership-in-palestine/israel-1920-2000>.

¹² <http://www.palestineremembered.com/Acre/Books/Story831.html>.

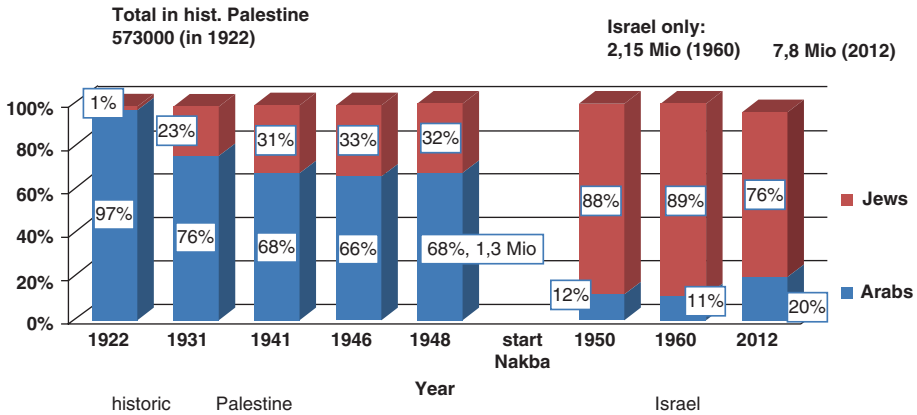


Fig. 5.4 Population development—percentage of Arab and Jews of the total population

of the Arab Population ratio in the years 1948 to 1950 (start of the Nakba) from nearly 70 to 12% and the change in landownership from above 90 to 20% (in the later West Bank and Gaza Strip) reflects the Nakba (see Fig. 5.4).

The description of the changes with the help of plain numbers should not let go unmentioned the flight and expulsion of 85% of the population and the loss of property and homeland. The numbers in Fig. 5.4 are taken from different sources, like the U.N.¹³ and the Jewish Virtual Library¹⁴.

For many 100 years, Jews, Muslims, Christians and others lived in peaceful neighbourhood in Palestine (there were always some “others”, other than Jews and Arabs who lived in the country and whose numbers complement the percentages in Fig. 5.4 to 100%).

With the start of the Zionist project and the massive immigration of Jews at the end of the nineteenth century as well as in the following years, the Palestinians started to resist to the new immigrants and to land expropriation.

After the first Zionist congress, the fear of Zionist settlement in Palestine and of the accompanying threat to Palestinian existence kept increasing constantly. Some examples of active resistance, such as political demonstrations, strikes, clashes and attacks have been recorded. For example the Nabi Musa riots in Jerusalem 1920, anti-immigration demonstrations in Jaffa 1921, protests in Jerusalem 1929, a general strike and the uprising of 1936.

In the years between 1936 and 1939, there were violent confrontations between native inhabitants and immigrants. In this period and in the following years fighting took place between primitively armed, weakly organized Arabs

¹³ <http://domino.un.org/unispal.nsf/9a798adb322aff38525617b006d88d7/07175de9fa2de563852568d3006e10f3?OpenDocument>.

¹⁴ http://www.jewishvirtuallibrary.org/jsourc/Society_&_Culture/israel_palestine_pop.html.

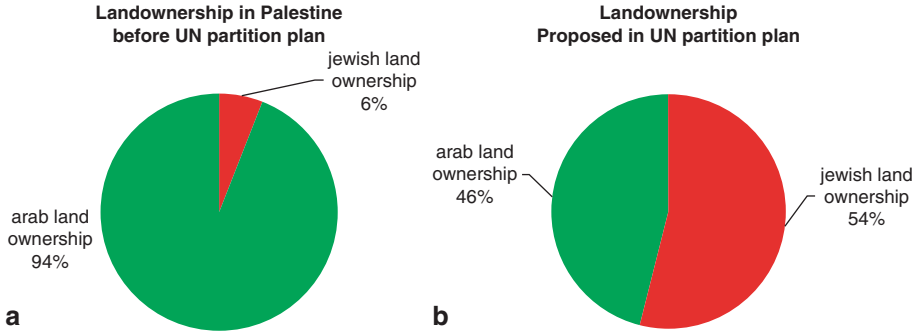


Fig. 5.5 Landownership **a** before, and **b** after the UN partition plan

on the one side and highly armed, World War experienced and well organized Jews on the other. According to official British sources and publications of the time, deaths of around 5000 Arabs and 400 Jews were recorded¹⁵. This asymmetry of power continues until today.

5.4 1948

In light of the confrontation within the country and later in light of the victims of the Nazis, more than one international proposal was discussed to divide the country between Jews and Arabs. The most prominent one is the resolution no. 181 of the United Nations. This plan proposed to divide the country between Jews, whose landownership would increase from 6 to 54% (they made up for around 35% of the population) and the Arabs with an ownership of 46% instead of around 94% (who made up for around 70% of the population), see Figs. 5.5 and 5.6. The UN partition plan announced on November 29 in 1947 was rejected by the Arab Leaders and by part of the Jewish groups.

Especially during the “war”, which started directly after the announcement of the UN division resolution, the asymmetry in power between Palestinian Arabs and Jews in numbers, arms, experience and motivation was and became characteristic for the conflict.

It is important to mention that the war in 1948 is not mainly a war with the armies of the Arab neighbours. It is also not a confrontation between the state of Israel for its independence and the Arab countries. The offensive attacks of the armed Jewish groups against the Palestinian civil population which started in November 1947, when the Jewish groups started to take with

¹⁵ Aljazeera: The history of Palestinian Revolts: <http://www.aljazeera.com/archive/2003/12/2008410112850675832.html>.

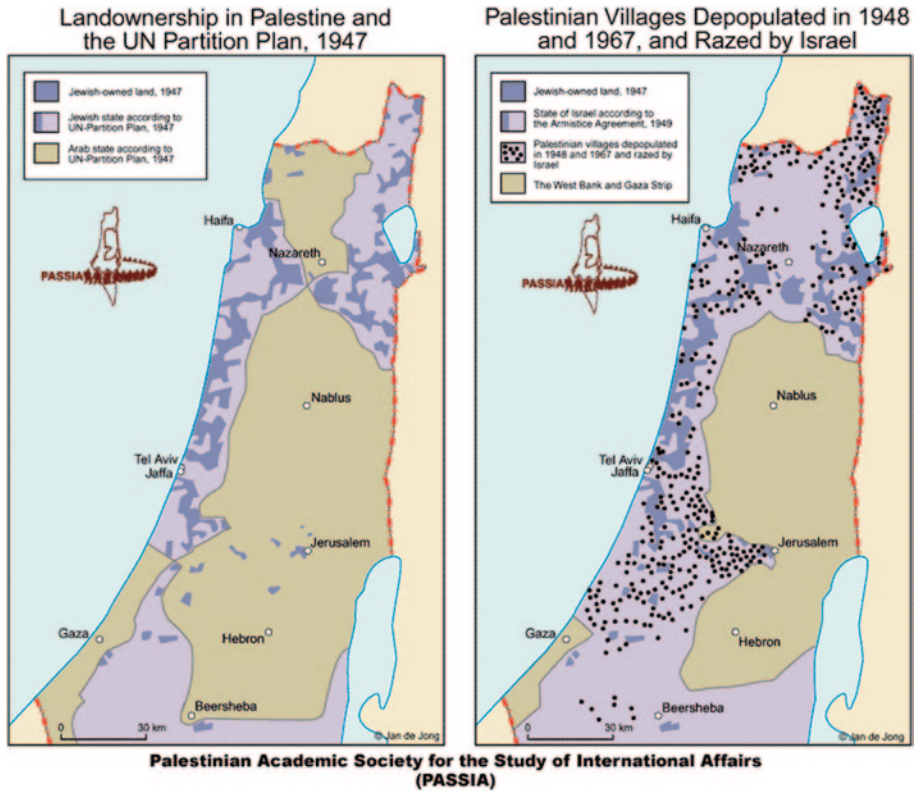


Fig. 5.6 PASSIA maps showing depopulated and razed Palestinian villages in 1948

force “their part” of the partition plan would be the appropriate description of what happened in 1948.

The strategy of the Zionist project and its plans to establish the Jewish state played a major role. Part of this strategy was the so-called plan Dalet (4th letter of the Hebrew alphabet), the fourth plan in a series which was carried out in March 1948. These plans contained extensive general and operational suggestions and formulated guidelines on, e.g., how to deal with the “enemy”.

This plan suggests to expel the Arab population into areas outside the borders in case they show resistance and recommends the destruction of villages in order to prevent the return of the displaced inhabitants, see text of plans Dalet and Gimel¹⁶. Among other instructions the following is a relevant example: “Destruction of villages (setting fire to, blowing up, and planting mines in the debris), especially those population centers which are difficult to control continuously ... the armed forces must be wiped out and the population must be expelled outside the borders of the state ... Deployment in Ma-

¹⁶ Palestine 1948, *Journal of Palestine Studies* Vol. XVIII, No. 1, Autumn 1988.

for Cities;... in case of resistance, the population will be expelled to the area of the Arab municipal center”.

These plans are in line with the position and policy of David Ben Gurion, the most prominent leader of the Zionists, who became the first prime minister and who can be considered as the founder of the state of Israel. Ben Gurion wrote a letter to his son Amos on October 5, 1937, in which he exposes his pragmatic view on the Peel commission's partition plan and about his position towards the Arabs in Palestine. He describes his expectation that the Arabs would support the establishing of a Jewish state because of the economic development this state would bring to them, but he leaves no doubt about what is to be done if they were not to cooperate: “... we will have to talk to them in a different language” further “we must expel Arabs and take their place”. The translation of the letter is published at the internet site of the Institute for Palestine Studies¹⁷. See also the recent publication “Ben Gurion Foresaw Palestinian Expulsion in 1937” by Richard Silverstein¹⁸.

Many massacres took place during 1947 and 1948. Many Arabs fled and many were expelled. In May 1948, some of the Arab armies of regimes that were established a few years earlier by the European colonial powers marched in the direction of Palestine. But one of the strongest armies, the one of Transjordan, decided not to fight against the Jewish state.

For the refugee problem, which still exists today, the version of what happened is only of secondary importance. Very crucial, especially for a potential solution of the conflict are the facts: During the war of 1948 around 530 villages were depopulated (see Fig. 5.6), most of them thereafter destroyed or taken by Jewish immigrants. The number of destroyed villages varies between sources because of different criteria of counting; a matter of fact is that their number accounts for around half of the total number of existing villages in Palestine. Also the houses of Arabs in the cities were taken over by Jewish immigrants. This is one of the Nakba facts, which is not dependent on point of view or on a particular side of the conflict.

In the book “All That Remains: The Palestinian Villages Occupied and Depopulated by Israel in 1948” edited by Walid Khalidi¹⁹ all destroyed villages have been listed with their location, the number of its inhabitants, ownership of land and other information. Many villages were replaced by Jewish settlements with new names, sometimes similar to the previous Arabic names.

¹⁷ <http://www.palestine-studies.org/files/B-G%20Letter%20translation.pdf>.

¹⁸ Richard Silverstein, “Ben Gurion Foresaw Palestinian Expulsion in 1937” December 28, 2013: <http://www.richardsilverstein.com/2013/12/28/ben-gurion-foresaw-palestinian-expulsion-in-1937>.

¹⁹ Walid Khalidi-Editor, “All That Remains: The Palestinian Villages Occupied and Depopulated by Israel in 1948” Institute for Palestine Studies, Washington DC 1992.



Fig. 5.7 The mosque in Safad

Around 13,000 Palestinians were killed in the 34 documented massacres that took place. Around 750,000 became refugees. The fact that around 85 % of the Arab Palestinian population either fled or was expelled and displaced is the second Nakba fact. As an example, in the then famous Palestinian city Jaffa, which had around 70,000 Arab and 30,000 Jewish inhabitants, only 5000 Arabs remained after 1948. It is obvious that also this fact is independent of other occurrences like the suffering of the Jews in other Arab countries or of the number of other refugee groups.

As another example, the city of Safad (Tzfat) had around 11,000 Arab and around 2400 Jewish inhabitants in 1948. Today Safad is a Jewish only city with around 28,000 inhabitants. Figure 5.7 shows the picture of one of a few mosques that remained in the city, this one currently being used as a gallery by Jewish artists of the city.

Another example is the village of Qisarya (Caesarea) which had 1000 Arab inhabitants and 21,000 Arab owned dunams, besides 900 dunams owned by Jews (1 dunam = 1000 m²). A visitor to today's Qisarya/Cesarea will find the Roman Theatre and the Aqueduct as a tourist attraction and would enter the tourist information centre located in one of the few remaining houses of the Arab village centre and see the former mosque of the village used as a pub. The numbers given above have been taken from the site "Palestine Remembered" (The Home of Ethnically Cleansed & Occupied Palestinians) with extensive information about the villages and the cities²⁰.

The fact that half of the existing Palestine villages were depopulated and around three quarters of the population were expelled or had to flee, is one of the key issues of the Palestinian Israeli conflict. The origin of the refugee question is also one major aspect of the Nakba. Thus, the Nakba cannot be seen as a historic event, the results of which lie in the past. It took place in 1948 and the results still exist in the daily life of hundreds of thousands of Palestinian refugees in refugee camps and in exile, and of thousands of Palestinians living in East Jerusalem and Israel facing discrimination and the constant threat of house demolition and displacement plans.

In 1948, Israel was proclaimed on around 80% of the surface of historic Palestine on which hundreds of new settlements for Jewish immigrants were established. This fact should be taken into account when talking about compromises and when statements like "land for peace" or "exchange of territories" are mentioned.

5.5 Nakba in Israel

The Nakba reached its peak during the spring of 1948. The day on which it is commemorated is May 15 which at the same time is celebrated as the Independence Day of the state of Israel (Israel Independence Day can be on different dates of the Gregorian calendar). Both events fall in the same time period but it is a positive day on the Israeli side and commemorating a catastrophe on the Palestinian side.

From the point of view of solving the conflict, neglecting the Nakba in the Israeli public consciousness or even from public discussion and media is a large problem. The celebration of the independence day of Israel neglects the suffering of the Palestinians. Moreover, in Israel there are more and more law proposals of the right-wing ruling parties that propose forbidding the Palestinian Arabs of Israel, who are the descendants of the people who remained

²⁰ <http://www.palestineremembered.com>.

within Israel, to mourn for the Nakba, for the suffering of their ancestors and the loss of their homes and fields (see below “the Nakba law”).

The education system and the media in Israel ignore and exclude from their national memory the whole Palestinian aspect along with the issue of the refugees and the fact that there is a relation between its emerging and the establishing of the state of Israel. On the other hand, there are non-governmental groups like Zochrot (“remembering” in Hebrew) who have been trying to bring the question of flight and expulsion of the Palestinians during the 1948 war to the awareness of the Israeli society.

Zochrot describes the Nakba as follows: “The Nakba was the destruction, expulsion, looting, massacre and incidents of rape of the Palestinian inhabitants of this country. It kept refugees out by force at the end of the war, in order to establish the Jewish state. And it continues in the ongoing destruction of Palestinian localities, the disregard for the rights of refugees and displaced people as well as the prohibition against teaching and commemorating the Nakba in schools and civic groups.”²¹ Activists of Zochrot try to remind the Israelis of this part of history and of the fact that many Israeli settlements, villages and cities existing today are built on the land of depopulated and destroyed Palestinian villages.

They do this, e.g., by holding conferences and by bringing up signs at relevant locations with scripts like “a school existed here”. A prominent example of this is the city of Tel Aviv, which was built on the lands of eight different Palestinian villages that existed before the establishing of the state of Israel.

A publication of Zochrot contains the following information about Tel Aviv: “The city of Tel Aviv was established in an area where Arab localities existed ... The Arab localities in the Tel Aviv area, as well as their inhabitants, have been largely erased from the maps of the region. While Hebrew speakers still make use of the names Abu Kabir, Manshiyya, Summayl, Shaykh Muwannis and Salama, little is known about these places, and what is known is repressed”.²² The University of Tel Aviv for example, is built on the land of the Palestinian village Shaykh Muannis.

5.6 The Refugees

The refugees, who were forced to leave their homes during 1948, were distributed to nearly equal parts to West Bank, Gaza Strip, and the neighbouring countries (Jordan, Lebanon and Syria). Many refugees were displaced during

²¹ <http://www.zochrot.org>.

²² see <http://www.zochrot.org>, “Map of Palestinian villages of Tel Aviv”.

the 6-day war of 1967 for the second time. When, besides the Golan Heights and the Sinai, Israel also occupied the residual areas of historic Palestine a new displacement took place. Today millions of Palestinian refugees and their descendants are living in the neighboring countries.

The Palestinian refugees, who lost their homes in the years 1947–1949 and who became refugees in 1967 are not the only Palestinian refugees. There additionally are the displaced Palestinians in the West Bank and Gaza Strip who (according to the Israeli definition) have no valid stay permissions and therefore are prevented from coming back to their homes. The last group of Palestinian refugees is made up of the internally displaced Palestinians within Israel; these are inhabitants of destroyed villages who moved to neighbouring villages within the state of Israel.

In light of the large number of refugees of 1948 the United Nations General Assembly on December 11, 1948 adopted the resolution number 194(III) manifesting the right of return of the Palestinian refugees: "... Resolves that refugees wishing to return to their homes and live at peace with their neighbours should be permitted to do so at the earliest practicable date, and that compensation should be paid for the property of those choosing not to return and for loss of or damage to property which, under principles of international law or in equity, should be made good by the Governments or authorities responsible; ..."²³

As of January 2013 the UNRWA—United Nations Relief and Works Agency for Palestine Refugees in the Near East—has around 5 million of registered refugees distributed in Jordan (2 m), in the Gaza Strip (1.2 m), in the West Bank (0.74 m), in Syria (0.5 m) and in Lebanon (0.44 m). More than 1.5 m of them are living in 58 refugee camps (since 1948/49)²⁴. This means that today around half of the Palestinian total population of around 11 million are refugees, making the Nakba and its results extremely explosive and still omnipresent.

Palestinians in Israel

Of the native inhabitants around 160,000 remained in Israel. The state and its secret services and security agencies developed a system for controlling the Arab citizens of the state always from a security point of view²⁵. They suddenly became a minority without leadership, since their leaders were killed

²³ <http://www.un.org/documents/ga/res/3/ares3.htm>.

²⁴ <http://www.unrwa.org/sites/default/files/2013042435340.pdf>.

²⁵ Hillel Cohen, "Good Arabs: The Israeli Security Agencies and The Israeli Arabs 1948–1967", University of California Press 2010.

or expelled. They became Israeli citizens and were put under military regime until 1966.

The military regime controlled all aspects of life of the Palestinians in Israel. After the border of the proclaimed state of Israel went between their villages and sometimes through the villages, the Palestinians were separated from their relatives. They were called “Israeli Arabs” or “minorities”.

This group of Palestinians has been experiencing diverse forms of discrimination—starting from social discrimination, when looking for jobs or houses for rent, through institutional discrimination, when resources are distributed, to even legal discrimination due to the many laws favouring Jews²⁶ (this being a logical consequence of the self-definition of the state as a Jewish state). The term “democratic” is often added to “Jewish state”, but democracy means a state for all its citizens and not only for one ethnic group. The dramatic change in the status and hence in the society of the Palestinian Arabs in Israel (today around 20 % of the total population) is shown by the fact that land-ownership of Palestinians, who used to form an agriculturally based society, is around 2.5 % of total land area today. The process of the Judaisation of Galilea, Jerusalem and the Negev is no secret project and has gained increasing priority with the different Israeli governments. This has continuously led to confrontations between the state and its Palestinian citizens, e.g., when in 1976 unarmed Palestinians protested against plans of huge land expropriation. They were massively suppressed, with casualties of 6 dead and 100 wounded. The Palestinians commemorate these events annually on March 30 as the Land Day. In October 2000, Palestinians in Israel were demonstrating against the brutal military occupation of the West Bank and the Gaza Strip, directly after the visit of Ariel Sharon to the Al-Aqsa Mosque, an event which provoked the start of the second Intifada (Uprising). During these demonstrations 13 unarmed young Palestinian citizens of Israel aged 17–25 were killed by the Israeli Security forces and hundreds were injured. It could not be proven that any one of the killed or injured persons posed a threat to the life of anyone.

The state until today sees its Palestinian citizens as potential enemies. Thus, they often have to go through discriminatory security checks at the airport or at checkpoints. They are not acknowledged as an ethnic national group but rather put in the same category as other minorities like blacks, women, or ultra-orthodox Jews.

There are many investigations comparing the “Arab Sector” and the “Jewish Sector” concerning equality in social, educational, economic and employ-

²⁶ Adalah - the Legal Center for Arab Minority Rights in Israel, List of Laws discriminating against Palestinians Arabs in Israel: <http://adalah.org/eng/Israeli-Discriminatory-Law-Database>.

ment fields. The overall result is: there is a measurable inequality for example in spending of state per pupil per year, which is around five times higher in the Jewish sector than in the Arab sector. This leads directly to a two times higher dropout rate of Arab pupils. The difference of performance of school achievement in both sectors has its origin in this fact and less in their cultural differences which the government usually puts forward as causal. This data can also be found in the yearly reports of the Central Bureau of Statistics^{27,28}.

The rights and equality of the Palestinian Arabs in the Israeli society are endangered by the continuous drift of the Israeli society to the right. Israel's political spectrum of today is dominated by a mixture of nationalism and fundamental religiosity.

In a recent conference, the government did discuss support for the Arab sectors economy, which is a good development. Economy Minister Naftali Bennett and the Governor of the Bank of Israel, Karnit Flug, talked about the need to stop the discrimination against Arabs in Israel. Bennett stated: "Let's be honest, discrimination against Arabs exists in Israel," and Flug: "Arabs, like ultra-orthodox Jews, suffer from low labour-force participation and salaries"²⁹.

Directly after establishing the state of Israel, laws were put in place to be used as demographic means of taking over the land. These are measures Israel used directly after its establishment and still keeps modifying, always with a view towards keeping a Jewish character of the state.

The **law of return** passed by the Knesset (the Israeli Parliament) on July 5, 1950, gives every Jew the right to immigrate to Israel—"Every Jew has the right to come to this country as Oleh" (Oleh, "ascender", is used for Jewish immigrant to Israel). This law was complemented by a few amendments, e.g. No. 2, passed by the Knesset on March 10, 1970, extending the "right of return" to members of the family of a Jew "... a child, a grandchild, a spouse, the spouse of a child of a Jew and also the spouse of a grandchild of a Jew."³⁰

The **Citizenship Law** passed by the Knesset in 1952 uses the law of return to make citizenship automatic for Jews and their family members: "Every immigrant under the Law of Return will become a citizen of Israel as a direct

²⁷ Ramsees Gharrah- Editor, "Arab Society in Israel (6)-Population, Society, Economy" Van Leer Jerusalem Institute/Hakibbutz Hameuchad Publishing House 2013 (Hebrew), see also same book No. 5 2011 (www.vanleer.org.il).

²⁸ Ali Haider- Editor, "The Equality Index of Jewish and Arab Citizens in Israel" - Equality Index No. 4, Sikkuy Report 2009- Sikkuy Jerusalem -Haifa December 2010.

²⁹ Hila Weissberg, "The prime minister calls for the rule of law and entrepreneurship", Haaretz October 30 2013.

³⁰ Israel Ministry of Foreign Affairs <http://mfa.gov.il/MFA/MFA-Archive/1950-1959/Pages/Law%20of%20Return%205710-1950.aspx>.

result of the return.” At the same time it denies the citizenship for Palestinians who had lived in the country before 1948.³¹

The **Entry into Israel Law** of 1952 regulates the entry into Israel. It grants preferential treatment to Jewish immigrants (Law of Return) to Israel and affords them status to enter as if they were citizens of the state. The Palestinian Refugees and their offspring are automatically denied entry by this law.

After the Israeli government in April 2013 extended the “Ban on Family Unification, Citizenship and Entry to Israel Law (Temporary Order)” for the tenth time which prevents Palestinian citizens of Israel from living together with family members from the West Bank or Gaza Strip, Adalah, the Legal Center for Arab Minority Rights in Israel asked the international community to pressure Israel to cancel “this racist law”. Adalah states that “this law is one of the most racist of over 50 discriminatory laws in Israel. It has no parallel in any democratic country”.³²

The **Absentees’ Property Law** 1950 defines the Palestinians who left the country after November 29, 1947, as “Absentees”. Most of these people were expelled or fled during the war. It also defines as “Property” all the belongings of an absentee. This can be moveable or immoveable property and includes houses, land, money, accounts etc. The state defined a Custodian for Absentees’ Property and put the property of absentees under its control. This law enabled the state to confiscate the land and the houses of Palestinian refugees. This law is also used to steal and to take over the land and houses of internal Palestinian refugees. In East Jerusalem, Palestinian “absentees” who lived not far away from their property were still defined as absentees and the property was defined as property of absentees. The application of this law in East Jerusalem was brought to the Israeli Supreme Court on September 10, 2013. The court deferred the decision in this case, because it wanted to clarify: “If the Court rules that the application of the Absentee Property Law is unlawful in East Jerusalem, should this decision also be applied retroactively or only prospectively?”³³

Nakba Today

The “**Nakba Law**” (official name: “Budget Foundations Law (Amendment No. 40) 2011”), which is a modification of the “Budget Foundations Law” from 1985, deals with “reducing a budget or support due to activity that is contrary to the principles of the state”. The law defines such activity as “rejecting the existence of the State of Israel as a Jewish and democratic state” and

³¹ See full text of the law at <http://adalah.org/Public/files/Discriminatory-Laws-Database/English/37-Citizenship-Law-1952.pdf>.

³² <http://www.adalah.org/en/content/view/8003>.

³³ <http://www.adalah.org/en/content/view/8202>.

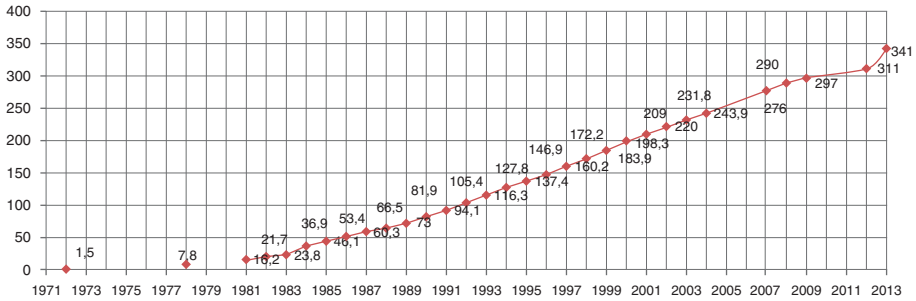


Fig. 5.8 Systematic Jewish settlement activity in the occupied Palestinian territories (settlers in thousands; numbers from Peace Now, Israel Central Bureau of Statistics)

also as “commemorating Independence Day or the day of the establishment of the state as a day of mourning”. Adalah sees in this law a violation of the rights of the Palestinian citizens in Israel: “Palestinians traditionally mark Israel’s official Independence Day as a national day of mourning and organize commemorative events. The law violates their rights, and restricts their freedom to express their opinion and will cause substantial harm to cultural and educational institutions and further entrench discrimination. The law causes major harm to the principle of equality and the rights of Arab citizens to preserve their history and culture. The law deprives Arab citizens of their right to commemorate the Nakba, an integral part of their history.”³⁴

Besides the refugee camps that still exist, the occupation and the continued systematic settlement building can also be seen as Nakba. Today there are more than 540,000 illegal settlers in the West Bank. Figure 5.8 shows the number of settlers in the West Bank (excluding 200,000 settlers in East Jerusalem) during the years since the start of the occupation, after the 6-day war in 1967.

The systematic settlement activity is independent of the acting government. Even the seemingly left social democratic labour party of Peres, Rabin, and Barak followed the policy of increasing the number of settlers in the occupied territories. There is no dip in the curve, e.g., in the years 1974 until 1977 and 1992 until 1995 when Rabin had been prime minister. Still more remarkable is that also after signing the Oslo Agreements 1993/94/95 no dip can be observed.

The Nakba needs to become a historic event and should stop being a current political situation. As long as the Gaza Strip is besieged and its inhabitants, 80% of whom are refugees and their descendants, are still prevented from exercising their basic human rights and continue to be attacked from

³⁴ http://www.adalah.org/eng/?mod=db&dld_page=law&slg=nakba-law-amendment-no-40-to-the-budgets-foundations-law.



Fig. 5.9 Palestinian child sitting at the entrance

time to time by the Israeli forces; as long as the West Bank including East Jerusalem is still occupied and the settlements of Jewish immigrants and Israelis are built illegally, by all international legal standards, on stolen Palestinian land, and the young Palestinians are prevented from having a perspective (other than leaving), the Nakba will remain a present event.

In my understanding the Nakba also lies in observing this child sitting at the entrance of the home of his parents in Qalqilia and having a concrete wall, 8 m high, as his horizon. Figs 5.9 and 5.10 show a photo of the child and the wall in front of it at an estimated distance of around 20 m.

This reality can continue to exist, because, among other reasons, the Israeli public and the tourists who visit Israel are deceived by the authorities. Fig. 5.11 shows a picture of the wall from within Qalqilia, taken only slightly to the right from the picture shown in Fig. 5.12.



Fig. 5.10 The wall as viewed by the child shown in Fig. 5.9

As can be noticed, there are trees on the other side. These trees are covering the sight of the wall on the Israeli side as shown in the picture in Fig. 5.12 which was taken from a car driving on Highway 6 (here directly on the green line nearby Qalqilia).

5.7 Nakba in Germany

The association for helping refugee children in Lebanon (“Flüchtlingskinder im Libanon e.V.”) produced an exhibition documenting the Nakba in 2008.³⁵ It was supported by the EED (Evangelischer Entwicklungsdienst) and the

³⁵ http://www.lib-hilfe.de/fakten_ausstellung.html.



Fig. 5.11 The wall from within Qalqilia

SEZ (Stiftung Entwicklungszusammenarbeit Baden-Württemberg) and supported by many prominent figures. This exhibition could be shown in more than 100 different locations in Germany, Austria and Switzerland. From time to time the hosts of the exhibition are put under pressure to not show it. The exhibition itself faces unprecedented resistance mainly with the claim “it shows only the Palestinian suffering, ignores the suffering of the Jews” and “is anti-semitic”³⁶. Describing the Nakba in the mentioned exhibition or in this lecture, as is also done in many other sources describing the Palestinian situation which also includes many Jewish and Israeli peace-supporting groups, is a description of the Palestinian suffering from a Palestinian point of view.

This description should be seen as complementary to the official description made by the Israeli side, which can also be considered as one-sided, e.g., when celebrating the Israeli Independence Day without mentioning the Palestinian loss of their homeland.

The German public, especially at schools and universities, where young audiences want and are able to make their own judgments, viewpoints and positions, should study both descriptions: the official Israeli version on the

³⁶ <http://www.israel-palaestina.de/Nahostkonflikt-Nakbaausstellung.htm>.



Fig. 5.12 The wall from the Israeli side

establishment of the state of Israel and the independence war, as well as the Palestinian suffering as its direct result.

5.8 Summary

Solving the Israeli Palestinian conflict and establishing a just and lasting peace in the Middle East will be possible after solving the key issues: the occupation and the settlements, the refugee question, the border question, and the status of Jerusalem.

Any following solution can be either through establishing a Palestinian state in all the occupied territories Gaza Strip and the West Bank without settlements and with full Palestinian access and control, e.g., of the water resources,

or alternatively through establishing a unitary state in Israel and Palestine, a democratic state for all its citizens, independent of religion, like Germany or the US. The third scenario is keeping the status quo of an apartheid system which is not an option and should be urgently stopped. Also from the point of view of Israel the current occupation situation will not lead to sustainable peace or security, see statement of Ehud Olmert, 12th prime minister of Israel 2006–2009 to Haaretz daily newspaper in 2007: “If the day comes when the two-state solution collapses, and we face a South African-style struggle for equal voting rights, then the State of Israel is finished”³⁷ and statement of the Israeli novelist Amos Oz in Haaretz from January 2013: “Netanyahu government is Israel’s most anti-Zionist ever, says Amos Oz, ... Oz compared Israel to an apartheid state and made angry predictions about its future”³⁸.

These technical questions about one state or two states are only of secondary importance. More important and a precondition for achieving a practical solution is an endeavour to end the injustice the Palestinians have been experiencing since 1947/1948. First they should get back their human dignity.

After Israel will have recognized its part of responsibility for the refugee problem, practical solutions could be negotiated between the Palestinians and Israel, which may include return of refugees to Israel, to a future Palestinian state, compensation of loss of property etc. The Nakba as a catastrophe would be stopped and the result of the initial Nakba stage can be repaired. Only a just peace will bring security, prosperity and wealth to Israel and to Palestine.

³⁷ Barak Ravid et al., “Olmert to Haaretz: Two-state solution, or Israel is done for”, Haaretz November 9, 2007.

³⁸ Yossi Vertter, “Netanyahu government is Israel’s most anti-Zionist ever, says Amos Oz”, Haaretz, January 11, 2013.

6

From Dinosaurs and Humans— Geology and Catastrophes

Andreas Hoppe

6.1 First Example: The Great Earthquake in Lisbon and the Age of Enlightenment

In the eighteenth century, Lisbon was one of the richest cities worldwide. The Portuguese capital at the mouth of the Tejo River experienced for more than two centuries a brilliant rise as a seaport and centre of commerce and received gold and diamonds from Brazil, where the discoveries in the first third of the eighteenth century around Diamantina broke the diamond monopole of India.

Lisbon was also a catholic city and had more than 90 convents. In the morning of November-1-1755 the majority of its citizens participated in the service in one of its 40 churches, illuminated by innumerable candles while their servants prepared lunch on open fires at home. At 9:45 the first earthquake with a weak trembling was felt. Half a minute later a second blow followed which broke down roofs and façades. One minute later a terrible 2 min long earthquake devastated the city, and some houses seemed to ride on waves. The candles and kitchen fires caused a great fire. People panicked and fled the buildings trying to escape through the then narrow streets and alleys. Many of them ran downhill into the direction of the harbour to escape the fires where 1 hour later many of them were killed by a tsunami with a runup of approx. 10 m. Until noon two additional earthquakes shook the city triggering landslides. Dust darkened the sky and the fire lasted almost a week. Ten thousand to fifteen thousand (possibly 30,000–60,000) of the approx. 275,000 inhabitants were killed (cf. Günther 2005; see Fig. 1.3 in Chap. 1).

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Today it is estimated that the hypocentre of the earthquake was c. 200 km south-west of the Portuguese coastline at the Gorringe-Bank in the Atlantic (Barkan et al. 2009). Shock and consequences of the earthquake were felt over a long distance. It is reported that in Morocco houses were damaged. More than 1850 km away, i.e. in Amsterdam, boats within the channels were loosed from their ropes; the river Trave in Lübeck became unquiet, and the river Dale in Sweden, 3000 km away, flooded adjacent fields. The Box of Pandora was opened and the philosopher Immanuel Kant (1724–1804) wrote later: “Alles was die Einbildungskraft sich Schreckliches vorstellen kann, muss man zusammen nehmen, um das Entsetzen einigermaßen vorzubilden ...” [all evil which imagination may fancy has to be brought together in order to imagine the horror to a certain extent ...; transl. by the author]. The catastrophe in Lisbon motivated many thinkers of that time to philosophise about it—like Goethe, Rousseau and Voltaire. Georg Philipp Telemann composed a Thunder Ode (“Donner-Ode”, catalogue nr. TWV 6:3), a spiritual oratorio first released the following spring in Hamburg. In the twentieth century the philosopher and sociologist Theodor W. Adorno even compared it with the holocaust as a break of an epoch (Günther 2005).

The catastrophe also renewed a discussion that began with a statement by the philosopher Friedrich Gottlieb Klopstock (1724–1803) who wrote in January 1756: “... und sie sollten es doch vielmehr als ein überaus merkwürdiges Gericht des allmächtigen Regierers der Welt ansehen” [“... and they should regard it as a strange judgement of the Almighty”; transl. by the author]. This was a remarkable statement, because a long ongoing discussion about the *Théodicée*—the attempt to solve the theological problem concerning catastrophes and the concept of evil combined with God’s grace and power—seemed to have been ended by the philosopher Gottfried Wilhelm Leibniz (1646–1716) who stated “The world as created is the best of all worlds”.

Immanuel Kant reacted to the Lisbon earthquake with a short article in January 1756 about the Lisbon earthquake (“Geschichte und Naturbeschreibung des Erdbebens am Ende des 1755sten Jahres, Königsberg”) that yes, the Almighty had “planted terrible tools into nature for the plagues of man” but that these tools follow general laws which man should try to understand (“Selbst die fürchterlichen Werkzeuge der Heimsuchung des menschlichen Geschlechts, die Wut des in seinem Grunde bewegten Meeres, die feuerspeienden Berge, fordern den Menschen zur Betrachtung auf und sind nicht weniger von Gott als eine richtige Folge aus beständigen Gesetzen in die Natur gepflanzt, als andre schon gewohnte Ursachen der Ungemächlichkeit, die man nur darum für natürlich hält, weil man mit ihnen mehr bekannt ist. Die Betrachtung solcher schrecklichen Zufälle ist lehrreich”). His approach may even be regarded as the beginning of the Age of Enlightenment when he

supported Horace's philosophy i.e. *sapere aude!*—dare to know, be courageous to use your own intellect (Günther 2005, Walter 2010, Trempler 2013).

Apart from the philosophical discussions, the catastrophe in Lisbon delivered a gifted manager (as in the case of the flood catastrophe in Hamburg 1962, see Chap. 7 by Jens Ivo Engels) with the Marquês de Pombal (1691–1782) who immediately reacted with “Your Majesty, we should bury the dead and feed the living”. It was him who organized the rebuilding of Lisbon, with broader and less curved streets, and formed a powerful administration. He eagerly wrote more than 11,000 edicts forming the base for a modern Portugal in an enlightened absolutism (Günther 2005).

6.2 Geology in Time and Space

Many geologists who are committed to their discipline have a deep desire to work in nature. Many of us try to avoid populated areas where our view of the object of our desire—rocks!—is hindered. Away from these areas, our insights into the “book of earth history” are more attractive. Many new findings can still be gained just by walking, mapping the geology and documenting outcrops (where vegetation is lacking) equipped with a hammer, a lens (Fig. 6.1), a topographical map and by keeping continuous changes from three- to four-dimensional geological models in mind until the virtual picture fits with all data of the region and hopefully with reality. The power of such a work-mode can be seen when the prediction of a geological model is tested by reality, e.g. when a tunnel is dug through a mountain. The geological mapping of August Buxtorf (1916) who accompanied the building of the Hauenstein and Grenchenberg Tunnel in the Swiss Folded Jura may serve as an excellent example.

In the eighteenth and especially the nineteenth century geology developed in a sometimes breath-taking speed (see the profound and detailed “reconstruction of geohistory in the age of revolution” by the British palaeontologist Martin J.S. Rudwick (2005)). An elementary tool for geologists and a principle of geology is the hypothesis that “The Present is the Key to the Past” (principle of actualism) as developed by James Hutton (1726–1795) and Charles Lyell (1797–1875). It says that features like desiccation cracks in a drying mud, ripples by waves along a shore line (Fig. 6.2), hot melt from a volcano running into the sea and chilled there to pillow structures etc. formed in an analogous way as we can see today. A “Stratigraphic Principle” by Nicolaus Steno (1638–1686) states that younger sediments were deposited on top of older layers, allowing relative time determinations. Alfred Wegener's theory (1912) on “The Drift of the Continents” and the drilling programs into the oceanic crust



Fig. 6.1 Geological mapping and the study of outcrops and its rocks allow the geologist (here painted by Carl Spitzweg c. 1860) the deciphering of earth's history in time and space; like here in the Swiss Folded Jura Mountains. (Photo by the author)

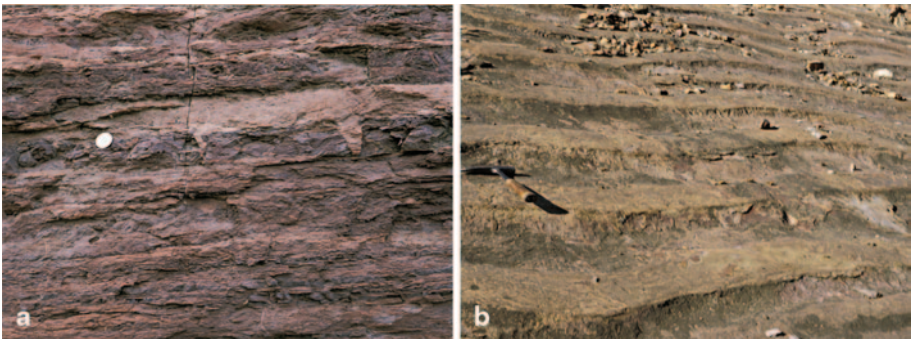


Fig. 6.2 Red colours (left) indicate a deposition on land of these c. 1.8 billion years old sediments at Lake Superior (USA) and show desiccation cracks in clays later filled by sand. Ripple marks (right) mark a shore line along the c. 3 billion-year-old Witwatersrand Basin in South Africa. (Photos by the author)

with the help of big scientific vessels in the second half of the twentieth century, show that the processes of Plate Tectonics could be deciphered—a real paradigm change for geology (Press and Siever 1995). Today, with the many laboratory methods as well as the possibilities of electronic data processing

geologists are even able to quantify geological processes. For instance, models can simulate the formation of a 200 million-year-old mountain chain from an ancient ocean basin that was subducted down into the mantle followed by a collision of continents; or the flow of groundwater through a sedimentary basin where rainfall contributes water and human settlements consuming it.

Evidently, students of geology normally need a longer time to get a feeling for the different dimensions of space and time which range from nano-metres to thousands of kilometres and from parts of a second to billions of years. Consequently, the ability “to read” a geological map needs more experience. Very likely much less than one per-mille of a society is able to do that. The responsibility is then on the geologists to translate their findings for decision makers and the public. This is especially necessary as many problems of modern societies are related to geology like energy and mineral deposits, natural hazards, soil, and water among others (cf. Penrose 1930, Wellmer and Becker-Platen 1999, Hoppe and Lehné 2013).

6.3 Geology Tools

Plate tectonics makes our globe an “unquiet planet” where earthquakes and tsunamis, volcanic eruptions and mass movements are frequent. However, and as described above, earth history can partly be divided into larger time intervals by mass extinctions in a global dimension during a geologically short time. But what does “geologically short” mean? In a best case scenario, geologists are able to subdivide geological time intervals down to a year—for instance by counting tree rings in fossil wood (dendrochronology) or by the annual deposit of sediments into a lake with coarser materials during the snow melt and finer materials during the rest of the year (varve chronology).

Powerful tools are at hand since the discovery of radioactivity and the subsequent development of mass spectrometers during the first part of the twentieth century. Here, radionuclides disintegrating spontaneously into stable isotopes can be used if their half-life is more or less in the scale of our earth’s history, so that enough of a radio-(mother)-nuclide and enough of its radiogenic-(daughter)-isotope can be measured in a mass spectrometer. Among others, important decay rows are U-Pb, Rb-Sr, K-Ar, and Sm-Nd (Faure 1986, Geyh and Schleicher 1990). Measurement of magmatic rocks, where such isotopes are integrated into a crystal lattice and then start to decay sometimes leads to astonishing results—for instance when a billion-year-old rock or mineral can be dated with a precision of ± 2 million years. It requires well equipped laboratories as well as an agreement of the leading laboratories about the half-time (or decay constant) of a certain radionuclide. Consequently, such dating

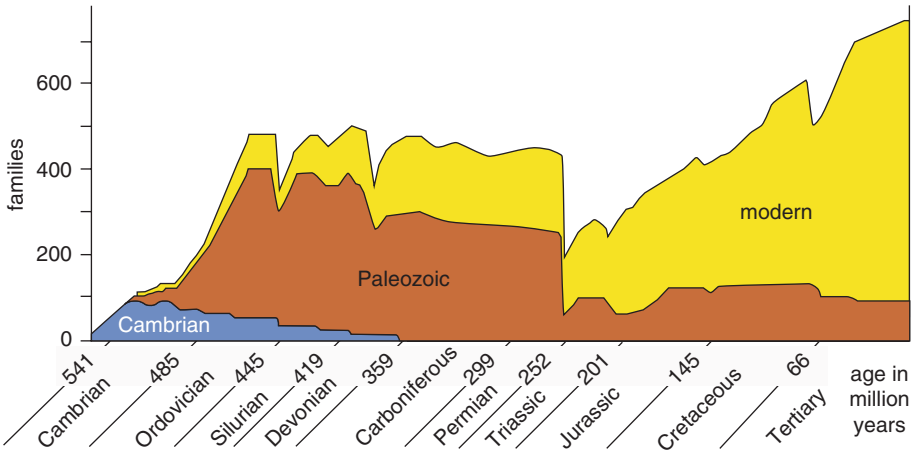


Fig. 6.3 After an “explosion” of life at the end of the Precambrian, the last 541 million years show dynamic growths and drawbacks of species and their families. (Adapted from Sepkoski 1990)

certainly does not give an absolute age but is geochronology, radiometric dating or physical dating.

Another approach is biostratigraphy (Stanley 2001, Storch et al. 2013). We owe the development of the principles of these processes to Charles Darwin (1809–1882). Fossil remnants in geological profiles clearly show the development and speciation of certain species with an adaptation to their environment as well as later extinction of certain forms (Fig. 6.3). Some groups of fossils allow a much finer subdivision of time, especially when they have been small and planktonic, which means that they lived swimming freely or drifting in a marine environment over vast areas. After death, these organisms sank down together with sedimentary particles to the ocean floor where they formed a layer. Today, the palaeontologist investigating a profile with these layers recognizes the different forms of species and sees that in a certain layer one form is extinct while a new form is distributed; a certain species or a special community of species then allows the definition of a biozone. If the palaeontologist knows the time interval of a certain stratigraphic sequence by radiometric dating of volcanic rocks (which were erupted in a short time interval) together with the number of biozones, then a time resolution for a single biozone can be estimated. For the Silurian period for instance, which lasted 24 million years, 21 zones of biozones defined by graptolites (colony-forming plankton) are known (Stanley 2001, p. 146). This means, that the best resolution here is in the range of 1 million years. Naturally, this should be kept in mind when explanations for extinction events (sometimes erroneously classified as “natural catastrophes”) are discussed. In some cases, time resolu-

tion may be even better, but still these time intervals are orders of magnitudes higher than possible reasons for an extinction event like a meteorite impact or a sequence of volcanic eruptions.

6.4 Geology and Cataclysms

The end of the eighteenth and beginning of the nineteenth century was a time of a heavy debate between plutonists and neptunists. The neptunists, with the German geologist Abraham Gottlob Werner (1749–1817), said that all rocks originated from a primary ocean by sedimentation under water while the plutonists, with the Scottish geologist James Hutton (1726–1797), stated that they derived from a central fire in the interior of the earth. Finally, plutonism established itself supported by geological mapping (see the epoch making geological map of England by William Smith in 1815; Winchester 2001). Geological events came into focus with a theory of catastrophes or cataclysms which destroyed and recreated life on earth periodically. A protagonist was the French palaeontologist Georges Cuvier (1769–1832) who established extinction as a fact. He believed that new species were created after periodic catastrophic floods. However, with the dominating theory of evolution by Charles Darwin (1809–1882) most geologists enhanced and refined the theory of a continuous evolution with bio- and lithostratigraphy until the 1970s when a closer look at single events started again and geological tools were developed to define truly synchronous geological horizons (cf. Walliser 1966).

The early geologists recognized that the sudden extinction of many species was a phenomenon in certain time intervals. They began to decipher earth's history and used it for biostratigraphy and to define specific time intervals. The most severe drawbacks of life on our planet were 252 and 66 million years ago (see Fig. 6.3). These cuts were used then to define an end of the Permian and an end of the Cretaceous period resp., and more generally, the end of the Palaeozoic (from Cambrian to Permian) and that of the Mesozoic, followed by a Neozoic era.

The mass extinction of dinosaurs and ammonites at the Cretaceous/Tertiary boundary was the subject of many theories during the last centuries (cf. Stanley 2001, Storch et al. 2013). Currently, the impact of an asteroid in the area of the Yucatán Peninsula in Mexico is assumed for the latter mass extinction at the end of the Cretaceous (Alvarez et al. 1980). It likely heated the atmosphere suddenly, darkened the sun with enormous ejecta of dust that subsequently cooled the climate globally (“impact winter”) and destroyed the food situation for dinosaurs. Evidences are a magnetic anomaly (Chicxulub Crater) with a diameter of almost 180 km at Yucatán and an iridium-osmium

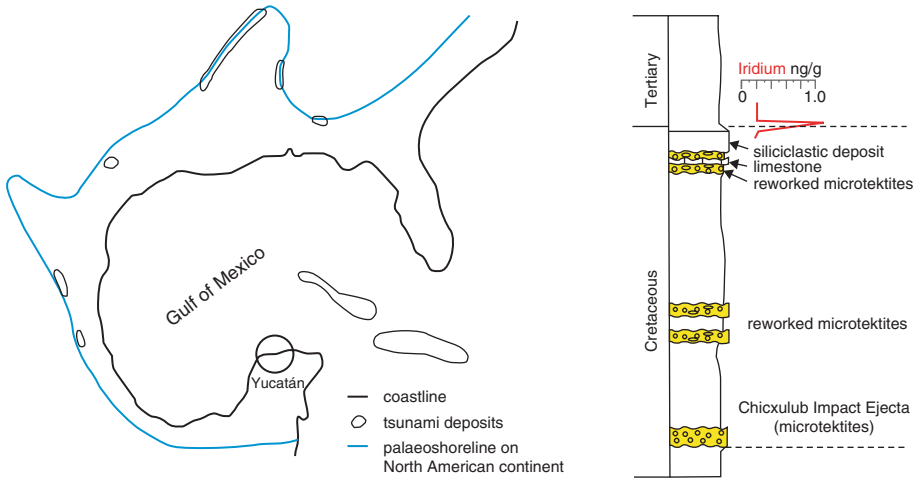


Fig. 6.4 The *circle* in the Yucatán Peninsula (*left*; adapted from Hildebrand et al. 1991 in Windley 1995, p. 40) marks the site of the Chicxulub meteorite impact 66 million years ago which likely ended the time of dinosaurs and ammonites; however, layers some decimetres below that boundary and some 10,000 years older microtektites below that time boundary (*right*; adapted from Stinnesbeck et al. 2004) open discussions

anomaly at this boundary in many places worldwide, elements which are very rare on earth. In addition, huge waves (tsunamis) flooded the peripheries of the Gulf of Mexico. However and as with many theories, some colleagues disagree, saying that ejected material already can be found below the iridium-osmium-anomaly and the Cretaceous/Tertiary boundary (Stinnesbeck et al. 2004; Fig. 6.4). Therefore, other geologists point to mass eruptions of more than 1 million km³ of flood basalts at that time in India (Deccan Traps) covering still more than 500,000 km². It is suspected they are responsible for a climate changing release of sulphur and carbon dioxide, creating toxic conditions for living species. Recent precise radiometric age dating shows that the Deccan Traps erupted over a phase of 750,000 years with a main phase 250,000 years before the Cretaceous-Tertiary boundary which would be consistent with the hypothesis that this extreme volcanism contributed to the latest Cretaceous environmental change that culminated in mass extinctions (Schoene et al. 2014).

The End-Permian mass extinction with the sudden end of c. 90% of all marine forms like trilobites, graptolites, goniatites, certain foraminifera (fusulinids) and corals seems to be even more complex. There is a coincidence with the eruption of flood basalts in Siberia (Siberian Traps) which still cover 2 (from an originally possible 7) million km². Models have been proposed that involve a large bolide impact which triggered large quantities of methane release. Other studies, focused on geochemical and biomarkers, give evidence

for the release of sulphurous acid and carbon dioxide (possibly supported by burning plants) into the oceanic environment poisoning the ecosystems. Very well preserved geological profiles through this time boundary and therefore intensely sampled area in southern China (Meishan section) together with high precision radiometric data from other areas, allow a time resolution of less than 200,000 years for the extinction event (Shen et al. 2011, Chen and Benton 2012).

However, in both cases the “catastrophes” opened new opportunities for surviving organisms. The mass extinction at the end of the Permian allowed the dinosaurs to conquer the globe, and their death at the end of the Cretaceous made it possible for the mammalia and finally the human species to develop.

6.5 Second Example: A Volcanic Eruption and Manifold Consequences—The Tambora Eruption 1815

The Tambora volcano in South-East Asia, part of the eastern Sunda Arc, started on 5th of April 1815 with an eruption audible more than 1000 km away. The peak of the once 4300 and now 2850 m high mountain was blown away, and over several days, as investigated by the volcanologist Haraldur Sigurdsson, approximately 100 km³ of lava, bombs and ashes erupted from the volcano, sometimes reaching up to 40 km high. Pyroclastic flows, fast moving currents of gas and rock fragments, up to 1000 °C and with a width of up to 20 km rushed down the flanks killing thousands of residents (Sigurdsson and Carey 1992 a, b, De Boer and Sanders 2004).

Volcanologists classify eruptions using a “Volcanic Explosion Index” (VEI) that is based on a qualitative evaluation as well as quantitative criteria like the total volume and the height of erupted material (Newhall and Self 1982, cf. Schmincke 2013). The index ranges from 0 (Kilauea on Hawaii) over 5 (Mt. St. Helens) to 8 (Yellowstone 2 million years ago). VEI 7 was the highest during historical times and attributed twice only: to the eruption of Thera (the Greek island of Santorin) which ceased the Minoan Culture in the seveneenth/sixteenth century BC and the Tambora in 1815.

The dust of the Tambora eruption was distributed globally and—together with the fluids emitted—changed the climate globally. The climatologist Michael Chenoweth (2001) collected weather data from that event and its aftermath. He looked into logbooks of ships which regularly documented time, position and weather conditions and was rewarded with more than 60,000

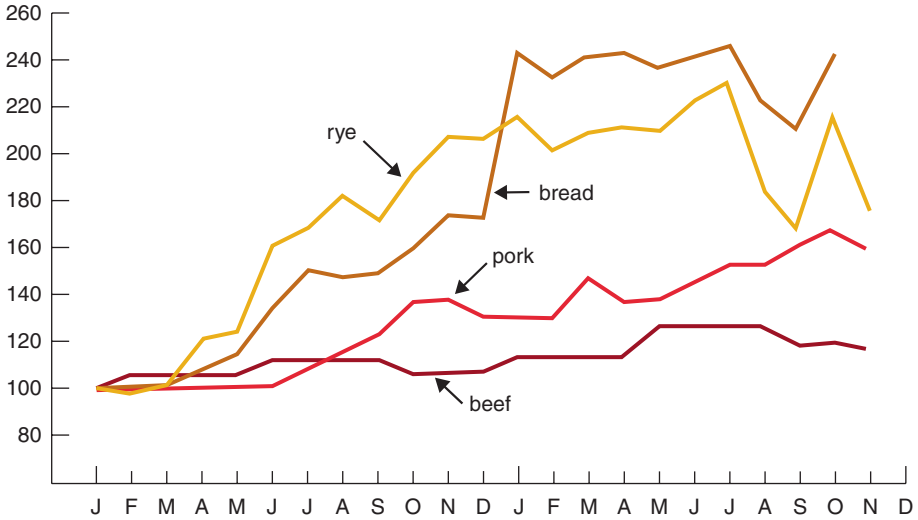


Fig. 6.5 After the eruption of the Tambora in South-East Asia and the following “year without summer”, prices of food increased dramatically between January 1816 and November 1817—even in the far away Hannover. (Adapted from Abel 1974, cf. De Boer and Sanders 2004)

data sets. They enabled not only an impression about the consequences but allowed for the development of a resilient model which fits with other reports and describes an event that resulted in extensive rainfall and a “year without summer” in Europe (Oppenheimer 2003, De Boer and Sanders 2004).

In the eastern United States, the polymath and retired president Thomas Jefferson recorded in his regular measurements severe drops in temperature and on May 17, 1816, he wrote: “...the spring has been unusually dry and cold. Our average morning cold for the month of May in other years has been 63° of Fahrenheit. In the present month it has been to this day an average of 53°, and one morning as low as 43°. Repeated frosts have killed the early fruits and the crops of tobacco of what will be poor”.

The consequences in parts of Europe have been even more severe. The bad weather brought failures of crop in Switzerland. A hunger crisis drove the land communities into the cities where food prices exploded (Fig. 6.5), crime increased, and small social rebellions erupted. In some communities the church books documented a mortality 100 % higher than usual (Pfister 2002).

Even the character of art changed in places. “Thanks to Tambora, in those years England ... under a cloud of volcanic ash spewed up from Indonesia was regaled with lacquered shadows of noon, with winy dawn and camelian dusks” wrote the philosopher Michel Serres (1997). The ash clouds resulted in beautiful sunsets over many countries and obviously changed the style of the English painter William Turner (1775–1851) leading to almost abstract ex-

plosions in red and yellow. The atmospheric scientist Christos Zerefos (Zerefos et al. 2007) has investigated the spectral colours of 554 pictures by 181 artists who painted sunsets before, during and after major eruptions between 1500 and 1990. He found a remarkable coincidence with five artists: William Turner, John Singleton Copley (1738–1815), Caspar David Friedrich (1774–1840), William Ashcroft (1832–1914) and Edgar Degas (1834–1917).

6.6 Geology and Modern Society

As mentioned earlier, the enormous impact of the Lisbon earthquake in 1755 resulted in Immanuel Kant's endorsement of the phrase "sapere aude"—dare to know (see above). The human species followed this path very successfully. It managed to reproduce extremely successfully, to make almost all kinds of biomass useful for its own metabolism and to use the geo-resources for an industrial revolution. By doing so, it eradicated other species to an extent comparable to the mass extinction at the end of the Cretaceous (see above), and emitted enormous quantities of nitrogen and carbon dioxide changing the global climate within few generations only (Fig. 6.6). In the meantime, we have changed drastically more than 50% of the global landscape (Fig. 6.7), so that the separation of a new time unit—the Anthropocene, as proposed by the meteorologist Paul Crutzen (2002) for the last 250 years—seems to be justified.

On the other hand, the human species itself is more and more endangered by extreme natural events, especially as it concentrates more and more in megacities and along geologic plate boundaries (Fig. 1.4 in Wellmer and Becker-Platen 1999).

As a consequence, the United Nations declared in the 1990s: "Recognition of the increased general vulnerability of people and property to natural disasters led the General Assembly of the United Nations to adopt a resolution in the late 1980's designating the last decade of the twentieth century as the International Decade for Natural Disaster Reduction" (IDNDR 1990–2000) in order "to reduce through concerted international action, especially in developing countries, the loss of life, property damage and social and economic disruption caused by natural disasters such as earthquakes, windstorms, tsunamis, floods, landslides, volcanic eruptions, wildfires, grasshopper and locust infestation, drought and desertification and other calamities of natural origin."

The United Nations called on all governments "to formulate natural disaster mitigation programmes; participate in concerted international action to reduce the effects of natural disasters; establish, as appropriate, national

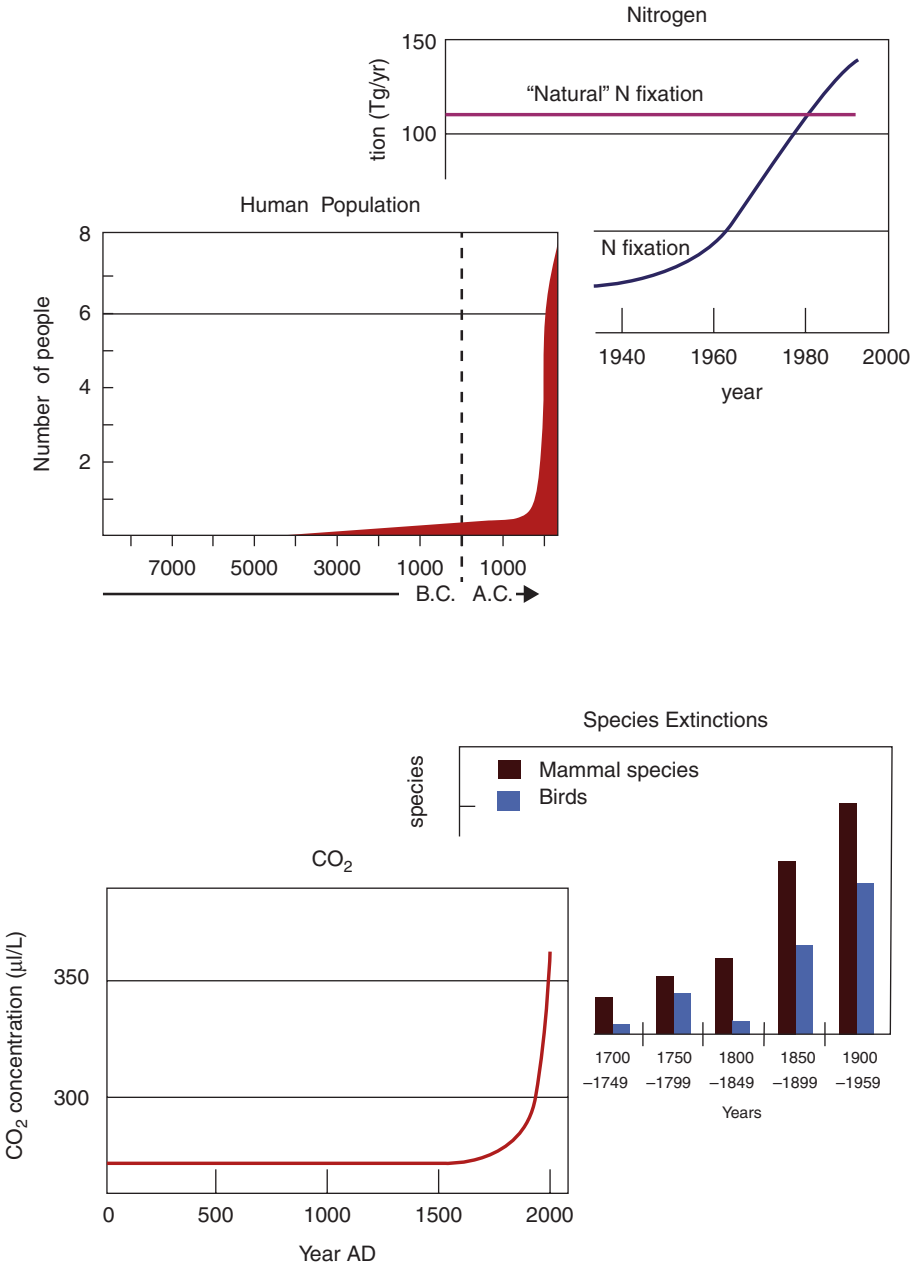


Fig. 6.6 The human species is a fast growing risk for the planet by multiplying itself successfully, emitting high amounts of substances changing the environment and suppressing or killing other species. (Adapted from International Geosphere—Biosphere Programme 2004)

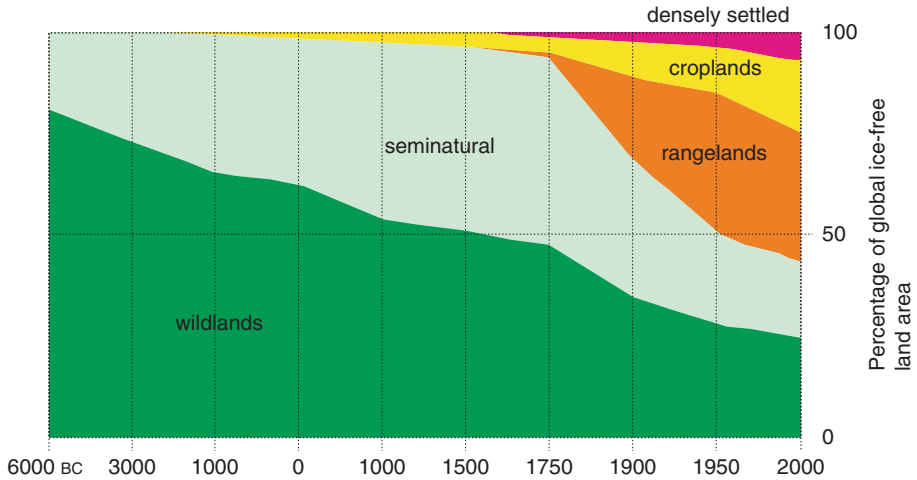


Fig. 6.7 A few generations of human species were able to change the global landscape dramatically. (Adapted from Jones 2011, cf. Ellis 2011)

committees in co-operation with relevant scientific and technological communities; encourage the provision of appropriate support from public and private sectors; and take measures to increase public awareness of damage risk potential and the value of preventative and mitigation measures”. Targets were that “all hazards in the country caused by natural extreme events are identified and reported; plans for the whole country for the avoidance of catastrophes or the protection against them are available; and all countries have access to prediction systems working on a global, regional, national and local scale”.

In addition, the European Ministers for the Environment demanded in May 2000 “immediate actions that will reduce poverty by 50% until 2015 without affecting the environment ...” which is necessary because more and more poor people settle in hazardous areas—for instance on fertile soils around volcanoes or payable building land on steep hills prone to landslides.

But what can be done to predict an earthquake (Bolt 1995, 1999, Schneider 2004) or the eruption of a volcano (Schmincke 2013) or to mitigate catastrophes?

Although enormous scientific efforts supported by high economic investment have been made to predict earthquakes, we are still far away from a deterministic prediction of place, time and magnitude of an earthquake in the future or an early warning system. Earthquakes are generated by a sudden release of rocks moving slowly (parts of millimetres to centimetres per year) along separation planes against each other. So it would be necessary to know precisely the shallow and deep underground with its geological architecture, the state of stress, the nature of the rock, the kind of separation planes and its

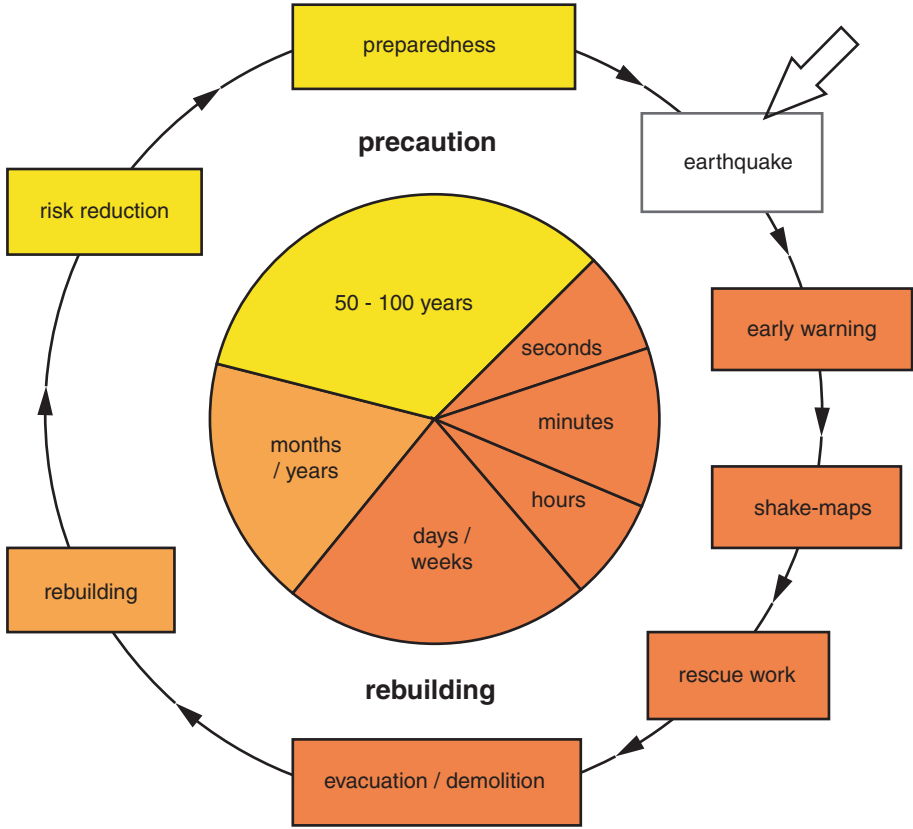


Fig. 6.8 The cycle of a catastrophe management, here for earthquakes, requires different timescales. (After Fuchs and Wenzel 2000)

roughness patterns, and the type and distribution of fluids migrating along these planes, amongst others.

But a probabilistic approach is possible. Through experience, records and research, former earthquakes can be documented in historical atlases with their place, date and intensity. The calculation of frequencies in specific areas allows the calculation of a probability. This then can be used by vulnerable communities to develop mitigation programs that should be prepared by describing a management scheme for a catastrophe (Fig. 6.8) as asked by the United Nations (see above).

Earthquakes emit different kinds of waves. The fastest (P-) wave which arrives first at a seismograph is a compressional, longitudinal wave. It is followed by a second (S-) wave which migrates transversal through solids (not through fluids) and causes with its high amplitudes the most damaging effects; sometimes people say that it felt like a snake under their feet or like riding on a horse. Depending on the distances between the focus of an earthquake and

the area where the S-waves arrive, the time difference between P- and S-waves may be some seconds.

Nowadays, many countries have their own seismic survey that is linked within a global net of seismic stations where earthquakes can be registered and processed by computer almost in real time. As earthquakes migrate through the underground with velocities of kilometres per second, they are two orders slower than radio waves. This means, that a signal of a sudden and severe earthquake with its P-wave can be radioed automatically to a vulnerable infrastructure some seconds before the devastating S-waves arrive. So, automatic reactions can be started like: turning off of computers or, in case of vital units, the immediate start of emergency backup generators, stopping operations in airports, stopping of trains, closure of gas pipes, opening of doors for fire brigades, stopping of elevators in safe positions, alarm transmitted by radio, switching off of nuclear power plants, turnoff of producing industries, warning of hospitals and operation theatres, switching on of emergency generators, turn off of oil pipelines and oil refineries, turn off of precision industry, etc. (cf. Fuchs and Wenzel 2000 with the example of “25-second-measures” for Bucarest, Wenzel and Zschau 2014). Countries like Japan and Taiwan which are frequently tormented by earthquakes manage their highly developed technical infrastructure in this way.

In cases when an earthquake pushes the oceanic crust vertically, it may generate a (gravitation-) wave with a long wavelength. Such a wave is not very high at sea-surface and often difficult to distinguish from the normal waves in the open ocean. Its velocity is triggered by gravity and water depth (and can be calculated as the radix of the product from gravity and water depth measured in metres per second) which means, that it is high in the deep ocean (like an airliner) and much slower on the continental shelves (more like a bicycle). As a consequence, the faster oceanic waves push the slower waves at the coastline causing the formation of higher waves. They can reach a runup (the maximum height on land above average sea level) of some 10 m. If the morphologies (the water depths) of the ocean are known then the velocity of a wave can be calculated for specific places enabling the modelling of wave propagation including an estimation of expected runups. Unfortunately, this was not available during the Sumatra-Adaman-Earthquake on December-26-2004 in the Indian Ocean. A model developed soon afterwards by the mathematician Vasily Titov (Titov et al. 2005) showed for instance that the tsunami needed c. 2 h to reach Sri Lanka—plenty of time for an early warning system (which is at hand now for the Indian Ocean and already since decades for the Pacific).

The behaviour of volcanoes is controlled by its positions within the plate tectonic scheme which in turn controls the mineralogy and chemistry of a specific volcano (Press and Siever 1995, Schmincke 2013). One may even

say that every volcano has a specific character or a “volcanality”. This means, that detailed mapping of a volcano with its different products from ancient eruptions together with detailed investigations of mineralogy and chemistry are necessary. In cases of a possible danger, a thorough monitoring of volcanic earthquakes, morphological changes, observation of volcanic fluids is required and can help, if the volcanic activities increase, to warn and possibly to evacuate people. The experience over the years, for instance through the study of 16 volcanoes during the International Decade for the Reduction of Natural Disasters (see above) shows that successfully working early warning systems and managing plans can be installed. These volcanoes selected by the International Association of Volcanology and Chemistry of the Earth (IAVCEI) have been Avachinsky-Koriaksky (Russia, Kamchatka), Colima (Mexico), Etna (Italy, Sicily), Galeras (Colombia), Mauna Loa (USA, Hawaii), Merapi (Indonesia, Java), Nyiragongo (Congo), Mt. Rainier (USA), Sakurajima (Japan), Santa Maria/Santiaguito (Guatemala), Santorini (Greece), Taal (Philippines), Teide (Spain, Tenerife), Ulawun (Papua-New Guinea), Unzen (Japan), Vesuvius (Italy).

However and in all cases: ambitious scientific investigations aligned with preparedness of authorities for a worst case scenario, including provision of information and education of the resident population is the basis for all good emergency plans, especially as human life is endangered and as it is always more expensive to heal than to avoid.

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7

Dangerous Water in the Land of the Economic Miracle—Hamburg’s Flood Disaster in February 1962

Jens Ivo Engels

The massive storm tide in February 1962 (Fig. 7.1) was a shock in the era of the West German economic miracle. For the preceding 10 years, everything had been pointing in the direction of a secure future: growing prosperity, full employment, more leisure time, even including the prospect of vacations abroad, new consumer goods that ranged from washing machines to privately owned automobiles. People were not only doing well; they were also convinced that they would always be doing better (Wolfrum 2006).

The storm tide abruptly tore down the curtain of this idyll. The North Sea shattered the feeling of security that had been nurtured by progress and consumption. And the storm made it clear that, even at the beginning of the 1960s, there was still an immense amount of catching up to do, and that not everyone was part of the post-war resurgence. Misery and distress continued to prevail in barrack settlements—the very settlements near the Hamburg harbour which the floods destroyed.

The political consensus in the West German republic was also in question at this time. Chancellor Konrad Adenauer had won the 1958 federal elections with an absolute majority, mainly due to his promise “not to experiment” and to a very generous pension scheme reform. The dynamic pension allowed retirees to profit from the general wage increases. However, in 1961, his party (CDU; Christian Democratic Union), entered a coalition with the FDP

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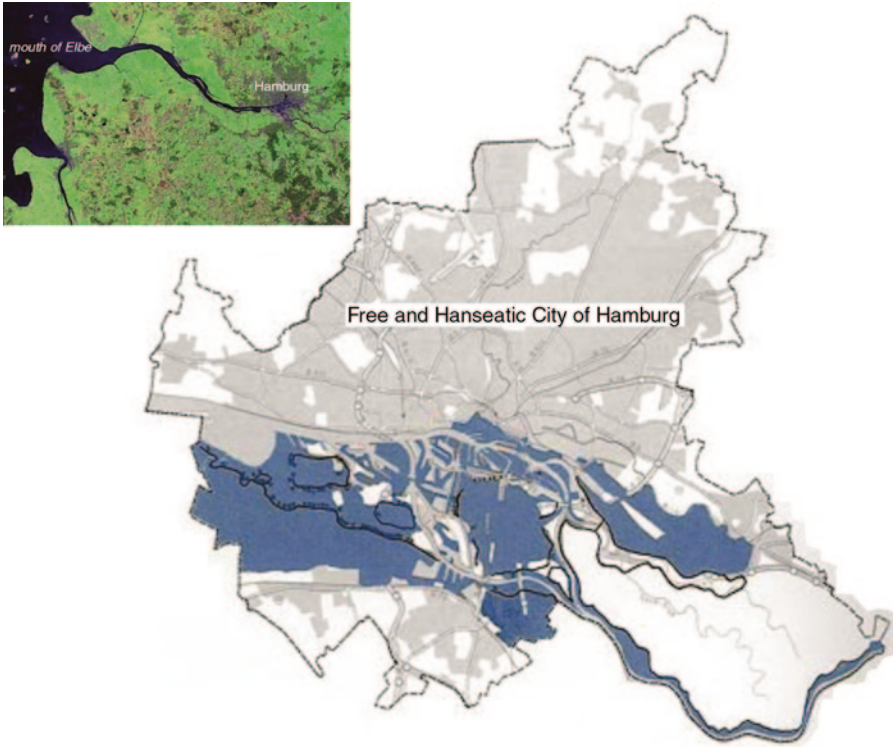


Fig. 7.1 Although more than 80 km away from the North Sea (see inset), Hamburg was flooded during February 16./17., 1962 especially south of the Elbe and between the branches of the river (flooded areas in blue). (Sources: MMCD and USGS/Landsat7)

(Free Democratic Party) and the latter made constant demands to replace the aged Chancellor with a younger person. In the autumn of 1962, Hamburg (which had become a media centre) was the scene of an event with many consequences: the so-called “*Spiegel* Affair”. The federal government, and in particular Franz Joseph Strauß, the Minister of Defence, tried to influence the contents of the news magazine and to threaten its editor-in-chief with legal action. The very vocal protests against this attempted intervention are, today, still regarded as the starting point for a critical public approach to politics in Germany. Some people began to divine that a trend towards the political left was developing. And indeed, 4 years later, the republic was governed by a grand coalition of CDU and SPD (Social Democratic Party). One of the most important managers of the future coalition, Helmut Schmidt, was Hamburg’s Senator of the Interior in 1962. He attracted a great deal of attention to himself for the first time during the flood catastrophe in Hamburg.

Catastrophes provide insights into the prevailing mood of a society. They magnify fine cracks in the collective mentality that are not visible under normal circumstances. The flood in February 1962 hit a society that seemed to be sure of itself and its success. At the same time, a search for new solutions and new values had already started (Schildt et al. 2000). The reactions to the storm tide are snapshots of an awakening society.

7.1 A Terrible Experience

What had happened? In the night from Friday, the 16th, to Saturday, the 17th of February 1962, the North Sea attacked the coasts. A low-pressure storm front over the Arctic had moved towards Europe (Fig. 7.2). The inshore hurricane pushed enormous masses of water against the coastline of the German Bight and into its river mouths. The dykes on the coasts of Schleswig-Holstein and Lower Saxony broke; the dykes along the Elbe and Weser rivers either broke or were flooded. Seawater covered countless square kilometres of land; dozens of individual farms or settlements were either isolated or flooded. Hamburg, with more than 100 breaks in its dykes, was particularly hard hit. Approximately 20% of the city was submerged, including densely populated areas like Wilhelmsburg. Floodwaters pushed furniture, automobiles, animal carcasses, and human corpses through the city's streets. Wilhelmsburg became sadly famous, because most of the victims had lived in one of its allotment garden areas. A total of 315 people lost their lives, 20,000 people were temporarily homeless. No less than 12,000 households received financial assistance to replace lost possessions. In many places, people fled onto house roofs while they waited to be rescued. The infrastructure in large sections of Hamburg and the coastal regions was severely damaged: electricity, gas, and water were not available; after the floodwaters receded, many roads were unusable for a long time. The storm tide destroyed 333 houses and over 6200 so-called temporary accommodations: garden sheds in which people lived, located in allotment gardens.

On the Saturday morning, Helmut Schmidt set up a crisis management centre that coordinated all the rescue and support measures. Above all, Schmidt made sure that rescue teams were strengthened. In addition to the Fire Department, Red Cross, and Technical Emergency Service, Schmidt was able to enlist help from the Federal Border Control, the Armed Forces, and non-German military personnel connected to NATO (North Atlantic Treaty Organisation). This made it possible to deploy large numbers of helicopters. Approximately 20,000 emergency helpers were involved, of whom 12 died.

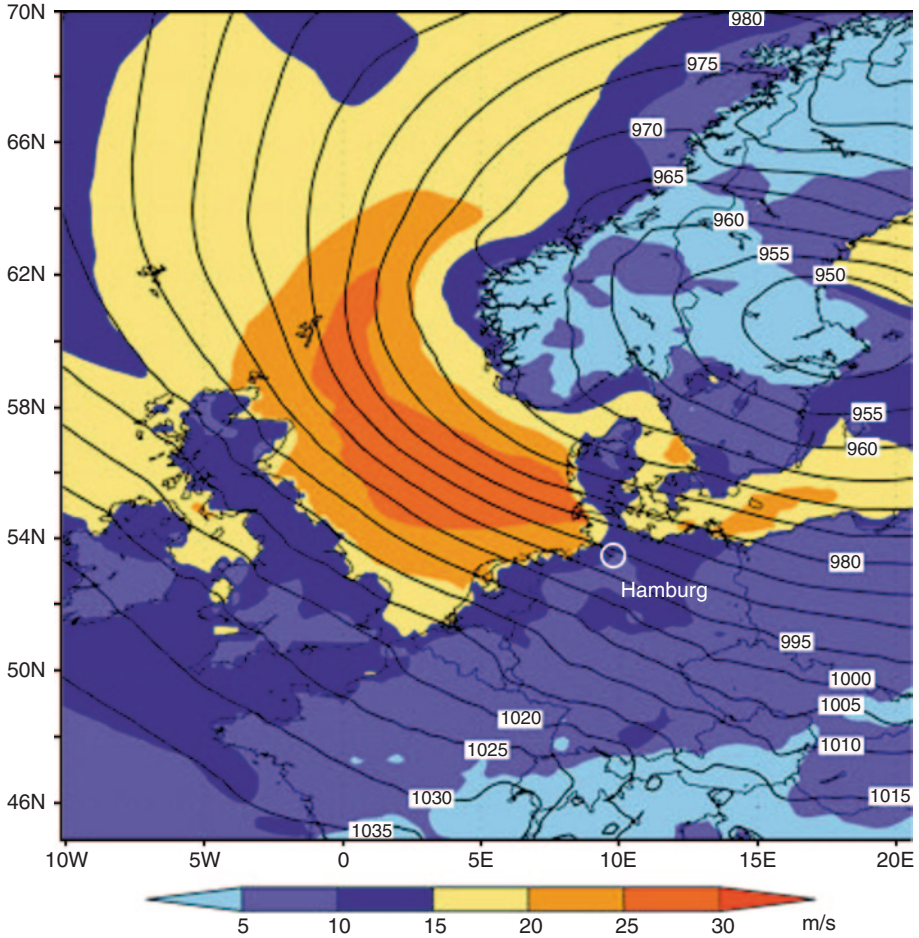


Fig. 7.2 Wind velocities over the North Sea on February 16, 1962 at 6 p.m. as recalculated by DWD (German Weather Survey; cf. Müller-Navarra et al. 2012)

The most important task of the helpers was to rescue those who had been isolated by the floodwaters and arrange emergency accommodations for them in schools and military barracks. In a large number of cases, using helicopters was the only option; more than 1100 people were rescued from the air. Finding emergency accommodation also posed major problems for the authorities, because virtually no emergency plans were in place. Organizing beds, blankets, and food for the homeless thus became extremely challenging.

As is true for almost all natural catastrophes, the storm took the population that lived on the coast and the shores of the Elbe River completely by surprise. Nobody was expecting such high water levels, much less a catastro-

phe, because 16 February was not a spring tide. Under normal circumstances, the water level would not have been much higher than usual. And, quite apart from anything else, most people did not consider Hamburg, which lies 70 km inland from the coast, to be vulnerable to storm tides. The hurricane had created an unusually strong wind pressure. This pressed water from the North Sea into the mouth of the Elbe like into a funnel, beyond which it spilled over large inland areas. The specialists could have known better: Following the great flood tide in 1953, which cost thousands of people in The Netherlands their lives, planning measures for improved dyke protection in North Germany had been initiated. The appropriate authorities knew about the deficits in Hamburg's dyke system, as was revealed afterwards. But organizational gaps, with serious consequences, also existed. The dyke that broke at Wilhelmsburg had not been maintained properly for many years, probably mostly due to the fact that it was located exactly at the line where the responsibilities of the Harbour Authority and the local City Council met.

It was not as if an early warning system for unusually high water had not existed. However, an unlucky set of events seriously delayed the transfer of the warnings to the relevant authorities. One such event was the interruption of the connection between flood marker in Cuxhaven and the Port Authority in Hamburg. A level-3 alarm was first triggered around 9 pm by the Department of Waterway Engineering. By this time, however, none of the relevant offices were staffed. The warnings broadcast over the radio soon after also did not really gain the attention of Hamburg's population. And nobody living far away from the coast really believed that danger was imminent. Many victims were sleeping when the rising waters caught them unawares. The metropolis was hit without warning and manifested its vulnerability—something that commentators in the press repeatedly emphasized (on the events see Sethe 1975; Engels 2002; Herlin 2005; Hötte 2012; Schott 2002; Heßler et al. 2014).

7.2 Religious Interpretations and Cultural Criticism

The public reaction to the catastrophe was massive—not only in Hamburg and North Germany (on the following paragraphs see also Engels 2003). Virtually all the country's newspapers reported extensively about the night of the flood and its consequences, as well as publishing long commentaries. The high death toll alone was a sufficient impetus. An additional aspect was the surprise factor, together with the demonstration of how vulnerable human existence can be, even in times of continuous prosperity.

What is striking is the extent to which, at least for the first few days, the events were interpreted from a religious point of view. The catastrophe was seen as a manifestation of the direct relationship between man and God; man cannot “wrest himself from the hand of God” (“nicht der Hand Gottes entwenden”), according to the *Saarbrücker Landeszeitung* on 19 February. The purpose behind the event was to remind people of this truth. Editorial boards, as well as politicians such as Heinrich Lübke, the Federal President, obviously thought it necessary to offer consolation, in view of the unfathomable will of God. This was also part of the Adenauer era. Recent studies have demonstrated that the importance of confessional identity and connections to church community activities had increased at this time; during the 1960s, however, their importance again clearly declined.

What was even more striking, however, was the stimulus that the catastrophe provided for criticism of civilization in general. Many editorials called for less dependence on technology. They pointed to the fragility of modern civilization, to the false sense of security, and to the hubris of modern humans. The *Hannoversche Allgemeine*, on 20 February, wrote about “people’s forgetfulness and their increasing tendency, which accompanies the increasing mechanization, to blindly believe in the perfection of the organization and of technology” (“die Vergeßlichkeit des Menschen und seine mit der Technisierung gewachsene Neigung, der Perfektion der Organisation und der Technik blindlings zu vertrauen”). In the process, “the awareness that Nature, with all its elementary forces, can eradicate humanity as mercilessly [...] as it did hundreds of years ago, has been lost” (“Bewußtsein abhanden gekommen, daß ihn die Natur mit ihrer elementaren Gewalt noch genauso gnadenlos [...] vernichten kann, wie sie es mit den Menschen vor Jahrhunderten tat”). “This insight must lead to humility”, and one has to recognize that “humans have overestimated themselves and their tools” (“Diese Einsicht muß zur Demut verpflichten; daß der Mensch sich selbst und seine Hilfsmittel überschätzt hat”). The *Kieler Nachrichten* from 19 February 1962 also employed a topos that seems to have retained its validity, even until today: “Humans are preparing themselves to penetrate the secrets of the unknown in our universe, but, once again, Nature has shown them where their boundaries lie” (“Da schickt sich der Mensch an, in die Geheimnisse des Unbekannten unseres Universums einzudringen, aber wieder einmal mehr hat ihm die Natur gezeigt, wo er seine Grenzen hat”). Inhabitants of large cities, in particular, are vulnerable, as illustrated by the large number of victims in Hamburg, compared to the relatively small number of lives lost on the North Sea coast. The uneasiness about civilisation was deep-seated.

7.3 West German Nation-Building

Preoccupation with the human feelings elicited by a terrible event is one of the clichés accompanying the perception of catastrophes. In the case of Hamburg's storm tide, there was, in addition to the horror about what had happened, above all satisfaction about the solidarity displayed by the majority of the population; this can be observed even today, when catastrophes strike. Nationwide donation campaigns, deliveries of aid supplies, and other expressions of sympathy, such as memorial services across the country, soon dominated media reports. They formed part of what can be called, symbolically, "nation building": united in pain, mourning, and willingness to help, the West German population deepened its common identity a little. International inclusions and exclusions were part of this process. For instance, aid that came from NATO troops was considered as a confirmation of the West's solidarity with the former wartime enemy, as a vital sign of the feeling of belonging to the free world, of which the Federal Republic was now a part. Newspapers, on the other hand, reported about what they considered to be cynical, divisive reactions from the communist world: the East German SED (German Socialist Unity Party) rejoiced about what had happened and declared that the federal government and excessive military spending were responsible for the poor quality of the dykes and the insufficient protection measures in Hamburg, according to the *Welt am Sonntag* on 25 February 1962.

Thus, the catastrophe revealed West Germany's precarious situation as a frontline state, both at the Iron Curtain and at the line of demarcation between land and water, civilisation and natural hazards, order and chaos. At this borderline between humane and inhumane, which was experienced from both frontline perspectives, West Germany's inhabitants were even more firmly convinced that they were on the right side of the line.

This was true for the overall picture; however, a few disturbing phenomena undermined this positive impression. Gawkers and indifference belonged to the ugly side of what had happened. In the morning after the night of the catastrophe, onlookers blocked the access roads to the crisis areas. In Wilhelmsburg, in fact, armed security personnel had to be deployed to control the crowds of onlookers and to ensure that the rescue efforts could be continued. Commentators presented a variety of explanations for this behaviour. Cultural critics saw this as a result of the increasing brutalization, itself a consequence of the loss of traditional values. Because of a tumultuous protest by jazz fans when a concert had to be cancelled, they generally assumed that the onlookers were mostly youths. This presented an opportunity to place the responsibility for moral deficits on "Americanization" and other supposedly harmful influ-

ences that were developing out of the slowly spreading pop culture. According to these conservative observers, the cultural modernization of society threatened its ability to achieve cohesion and to fight the destructive forces of nature.

7.4 Memories of War and the Militarization of Disaster

Other commentators, by contrast, were reminded of wounds from the past. It was a sign of the “desire to see others fail. The addiction of experiencing the thrill of death at a place of terror is a moral impoverishment of humans, to which the horrors of the Hitler era and the war have contributed” (“Lust am Untergang anderer. Die Sucht, an der Stätte des Grauens den Kitzel des Todes zu spüren, ist eine moralische Verelendung des Menschen, woran die Greuel der Hitlerzeit und des Krieges mitgewirkt haben”; *Der Mittag*, 20.2.1962).

The scenes in Hamburg brought back painful memories. Suddenly, hunger, death, widespread destruction, emotional and material misery were oppressively present; they came via newspapers and, sometimes, television, and also reached more southerly regions of the country. The pictures from Hamburg obviously were reminders of wartime and post-war experiences.

The large number of victims in the allotment garden colonies made it clear that, even in 1962, one of the most pressing post-war problems was still not completely solved: the housing shortage. Approximately 200 people died because they were living in an area and in buildings that were not suitable for habitation. They could not rescue themselves by moving to the upper storeys, because their garden huts were all one-storeyed. Flood protection for the allotment gardens had been neglected. A large number of those who lived in allotment gardens were either war refugees or displaced persons. Many of them were no longer young—the majority was 60 and older. The catastrophe thus cast a bright light on social deprivation whose roots reached back into the war. After the shock, the pictures of emergency accommodations and people standing in queues for drinking water or receiving food from mobile kitchens recalled, once again, the distress of the late 1940s, and were reminders of hunger, destruction, and expulsion.

What is surprising, from today’s point of view, is the strongly pronounced military component in the perception of the catastrophe, both positive and negative. The undisputed star of the storm tide story was and is Helmut Schmidt, the manager of the catastrophe. One of his most important achievements was that he, without any doubts about its legality, summoned military aid, first and foremost via the NATO High Command in Brussels. His bear-

ing and the way he communicated with the emergency task force also evoked great respect from observers. They expressed their admiration for his hands-on approach, his talent for organization, and his solution-oriented actions by saying that his style of leadership was akin to military leadership. His contemporaries considered military action to be the appropriate response to deal with the forces of nature and the threat of social chaos. On 7 March 1962, *Der Spiegel* published a story entitled “Master of the Situation” (“Herr der Flut”) and commented, appreciatively, that “the leader appointed himself” (“der Führer berief sich selbst”).

However, military rhetoric was not only a basis for self-reassurance that the catastrophe could, in the end, be controlled. The storm tide catastrophe was obviously considered to be analogous to a military threat; it called up memories of the possibility of war. Representatives of Hamburg's government, for example, mayor Paul Nevermann, compared the situation with a state of war. Against the background of the foreign policy situation, this was quite understandable. The Berlin Wall had been erected just half a year previously, and in October of the same year, 1962, the Cuban crisis would bring the world to the brink of a nuclear war. Commentators therefore described the forces of nature not only with military and war-like metaphors. On the contrary, many observers asked what could happen if West Germany became the target of an attack. Hamburg demonstrated that emergency precautions were, by far, inadequate. A stroke of good luck like Helmut Schmidt could not be counted upon to happen everywhere. Thus, the political commentaries written at the beginning of 1962 regularly called for detailed emergency plans, for the extension of civilian protection measures and, above all, for emergency legislation: “They are absolutely essential for political and national emergencies; however, the event that will have to be mastered probably will not be very different from events caused by a natural catastrophe” (“Für den politischen, den staatlichen Notstand sind sie auf jeden Fall erforderlich; doch dürfte sich das Geschehen, das dabei gemeistert werden muß, in vielem nicht von den Ereignissen unterscheiden, die eine Naturkatastrophe auslösen kann”) stated *Christ und Welt* on 2 March 1962. This would be the only way to ensure that the State would be in a position to act within a secure legal framework in case of an emergency. This demand was met around 6 years later, in the spring of 1968. At that point in time, this emergency legislation had already been debated heatedly for quite some time. For the student movement, it was an indication that Germany's political elite was seeking to restrict democracy and civil liberties. This assessment was now, at the end of the 1960s, superimposed on the memory of natural disasters and the World War.

7.5 A Technocratic Momentum

The way in which Hamburg's storm tide was dealt with also revealed changes in a completely different area. On the one hand, a great deal of space in the newspapers was devoted to cultural criticism and transcendental interpretations of what had happened. On the other hand, immediately after the catastrophe very concrete questions were also posed about whether the disaster could have been prevented. In general, pragmatically oriented commentators answered such questions with "yes". The commission of enquiry that was immediately constituted by Hamburg's State Parliament also concluded that professional flood protection measures could easily have prevented the large number of victims and the worst damage (Friedrich 1962). The critical question and the solutions employed by the administration, experts, and politicians pointed to an understanding of technology, civilization, and nature that was completely different from that implied by the cultural criticism. In fact, all these actors assumed, almost unanimously, that total flood protection was technically possible. At the request of the federal states that were affected, experts for water protection calculated the required height of the dykes. They simulated waves and flows in laboratories, using a model coastline, and searched for ways to predict the occurrence of high storm tides. Despite the appearance of uneasiness about technology that surfaced at the moment that the tragedy occurred, the decisive actors hailed technocratic, planned, large-scale solutions as the order of the day. This applied both to Hamburg and the coastal states. Considerable investments were made, for example, in the "General Plan for Dyke Strengthening, Dyke Shortening, and Coastal Protection for Schleswig-Holstein" ("Generalplan Deichverstärkung, Deichverkürzung und Küstenschutz Schleswig-Holstein") that was quickly initiated (Arbeitsgruppe Küstenschutzwerke (1962). Dykes were uniformly heightened to 8.8 m. The length of the line of dykes was reduced from a total of 500 to just 290 km. A huge barrage was erected at the mouth of the River Eider, which hermetically sealed off the riverbed against the sea at storm tide. These measures are evidence of the experts' certainty that natural risks are, in principle, and with the help of good organization, controllable. They are thus an example of the planning and feasibility euphoria that inspired a large segment of West Europe's elites in the 1960s and at the beginning of the 1970s. Futurologists of the time, in stark contrast to the warnings of 1962, formulated by civilization critics, predicted a technologically controllable and, therefore, golden future for humanity. In the wider political arena, far-reaching planning concepts were to be implemented in the coming years. In 1966, when the West German grand coalition had to respond to a first economic crisis, it resorted to using the instrument of economic overall management ("Globalsteuerung"):

With the collaboration of the most important actors in government, industry, trade unions, and society, economic development was to be guided on the basis of scientifically validated planning. Further areas, such as education, were also pinpointed for planning in the near future, before confidence in planning and controlling evaporated at the beginning of the 1970s, not least because the much-discussed environmental crisis demonstrated that complete control of natural processes is virtually impossible.

In retrospect, the 1962 storm tide in Hamburg proves to be a key event for which a multitude of narratives about the early Federal Republic can be pulled together. The shock about the deaths, the misery of the survivors, and the fragility of technical security exposed not only various layers of contemporary emotional states but also society's considerable capacity for solving problems. Despite numerous storm tides with frequently higher water levels than in February 1962, a comparable catastrophe on the North German coast has not occurred since.

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8

Medicine—and its Catastrophes

Walter Merkle

8.1 Introduction

Clicking on Google “catastrophes in medicine”, one is lead to numerous web-sites dealing with the medical treatment of catastrophes such as car accidents, airplane crashes, natural catastrophes, military combats etc. Although this is an interesting topic of discussion, it is more or less part of the chapter on earthquakes, the great flood in Hamburg etc.

Medical catastrophes in this context are a totally different issue i.e. related more toward individual catastrophes following e.g. an operation which does not go correctly. For that reason, presented in the following pages are examples of individual catastrophes which obey completely different rules. They comprise single cases, are non-paralleled, and non-comparable to events in the past and/or future. Why should it be of any interest to report these cases?

Thinking this over one will find that catastrophes in medical treatment are strictly the problem of a single human being, however thinking twice it will be obvious that the causes for those are general. Thus everybody should be concerned at some point when seeking help with a health problem.

Why does this happen? It's simple—because we all are human beings, both the patient and his doctor. And to err is human!

Thus it is somewhat surprising that—compared with the large amounts of medical treatment conducted daily for millions of people by hundreds and thousands of doctors worldwide—that only a few cases of malpractice are reported in the newspapers. These cases are the theme of this chapter.

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8.2 First Steps

Coming into a hospital with a minor routine problem and returning as a severely handicapped person—this nightmare was reported in March 1999 in Alaska after a 13 year lawsuit. A new born boy was circumcised and caught an infection thereafter which was not sufficiently treated. The infection spread to the brain causing severe brain dysfunction and blindness. This catastrophe definitely is not the regular follow-up of a circumcision. But then why does it take place?

Second case—a young African emigrant to Germany suffered from discomfort when passing urine. He visited an urologist and was treated with antibiotics. So far—a very, very simple case. But the urologist also took a blood sample to estimate the Prostate Specific Antigen (PSA) value, a prostate specific antigen. It was significantly elevated. So he urged his patient to undergo a prostate biopsy to exclude or confirm the presence of prostate cancer. The histology came up with no cancer but did show signs of an infection. After the mentioned antibiotic treatment the PSA level was measured again—and levels had more than doubled. The urologist took fright and performed another prostate biopsy fearing an exploding prostate cancer as he pointed out later. Again there was no cancer, but rather signs of an infection. And again the young man was treated with antibiotics. A couple of weeks later he could not walk on his own and needed a wheel chair—which he is still on. He suffered from a severe infection which destroyed his vertebra where it cracked and affected the spinal cord followed by paraplegic injury. The bacteria came from his prostate. Unbelievable? Yes, but it happened. I was involved with this case as the medical expert after the catastrophe.

What happened, what was the final cause for this fatal outcome of a routine medical case? First—a few principals:

- a young man is far too young for developing prostate cancer, which is the cancer risk of the elderly (40 years and above with significant percentage after 60 years)
- a young, sexual active man can suffer from prostatitis
- PSA can show the possibility of prostate cancer, but not necessarily so
- an increased PSA level is common in infection and prostate cancer, but there are a lot of (rare) other causes for its elevation
- PSA is an activity marker that is increased after riding a bicycle, having sex, having constipation etc.

Reading the list everybody is an expert in this tragic case of the young African man. The knowledge of these principals is routine in urologists.

Thus—what caused a well-trained urologist to make such a mistake that resulted in a personal catastrophe for his patient? Principally it is simple—it is the principal of human error.

8.3 Human Error

The Harvard Medical School published a study on the causes of medical treatment errors in the late nineties of the last century. It was found that about 3% of medical treatments are followed by a wrong procedure, treatment, medication, diagnostic, technical problem etc. etc. Three percent!

Independent of the status of the hospital (university hospital vs. a small rural clinic somewhere), of the status of the doctors (chief of department vs. beginner and trainee), of the status of medical staff (well trained operating room team vs. people working together by chance) and of technical equipment (latest available machine vs. old equipment with bad maintenance)—in average 3% of patient contacts were affected by some kind of failure!

These overwhelming numbers of medical failures do not always cause devastating treatment outcomes, because most failures are detected and immediately corrected without any harm to the patient; at the same time most of these failures are minor problems not having the potential to cause any harm. But—and this is also obvious—a few of these failures lead to the fatal consequences of the above mentioned catastrophes. It occurred more or less by chance—or rather: by accident—whether a failure detected in the retrospective study was a formalistic failure of no harm and no direct negative effect or a failure leading to a catastrophe.

So—is it our fate as patients to never know whether we will leave a hospital in regained health, properly cured, or will we suffer thereafter more deeply and eventually from complications and de novo diseases we did not have before entering the hospital? The answer is yes and no. It depends on how we deal with failure. Medical personnel who work without reflecting on their own personal behaviour/actions will make errors and failures by accident, and these errors and failures will occur more and more often. On the other hand, when one reflects on one's own work, not only as a personal need but also in conjunction with properly organized hospital procedures, than these failures and mistakes can be learned from and actions improved. No doubt, errors and failures will still occur, but the frequency will be reduced to the unpreventable baseline of human action. And—in the latter scenario real fatal catastrophes would not take place, only minor mishaps—still not nice indeed, but not fatal—would occur.

8.4 Back to the Cases

Ad first: Operation in new-borns is always a sensitive issue due to the size of the body and due to the still unripe biochemical and physiological systems during the first months of living. Therefore—doctors with a good sense of responsibility will refrain from doing an operation on a new-born or suckling when it is not strictly necessary. Phimosis in the first months of life is a natural physiologic situation not requiring a circumcision under general anaesthesia. Thus ignoring physiologic principals increases risk—and can lead to a fatal catastrophe.

Murphy's Law teaches us that "what can happen will happen". Even if it might not be as strict as this, the probability for errors and problems definitely is highly increased by not observing biologic necessity.

Additionally there is the issue of overconfidence. The more experienced you are the more confidence you have. First of all this is correct; the more experience the less likely to fail. But sooner or later the number of failures increases again. Why? It's psychological—confidence into one's own work is created by correct results. Thus one knows what he is able to do successfully. This then leads to the taking over of more problematic cases that one is not trained or qualified for. Success in these areas further increases his confidence, eventually increasing his willingness to take risks or short cuts and perhaps even becoming careless. And exactly at this point Murphy's Law strikes him. He was overconfident and therefore reckless. This recklessness could also be part of the problem in what led to the new-born's catastrophe.

When this period is overcome the person has reached the baseline level of failures (Fig. 8.2). Obviously this was not reached in the fatal baby's case.

Ad second: The human fear of cancer lead the urologist to overlook the other well-known probable causes of increased PSA level. His decision did not reflect all details of the case (i.e. age, infection, having sex etc.) although they were known and obvious. Due to fear humans tend to act quickly thus causing lots of risks and unexpected outcomes somebody would never accept when taking the time to think things over in a calm non adrenalin atmosphere or when discussing and debating concerns with a colleague.

8.5 Conclusion

We know—human action, whatever it is, can lead to failure—failures which nobody wants to perform. And we also know that almost everybody feels remorse when a fatal outcome has occurred due to his personal mistake. This seems to be the best prerequisite for avoiding any failure. However—we also

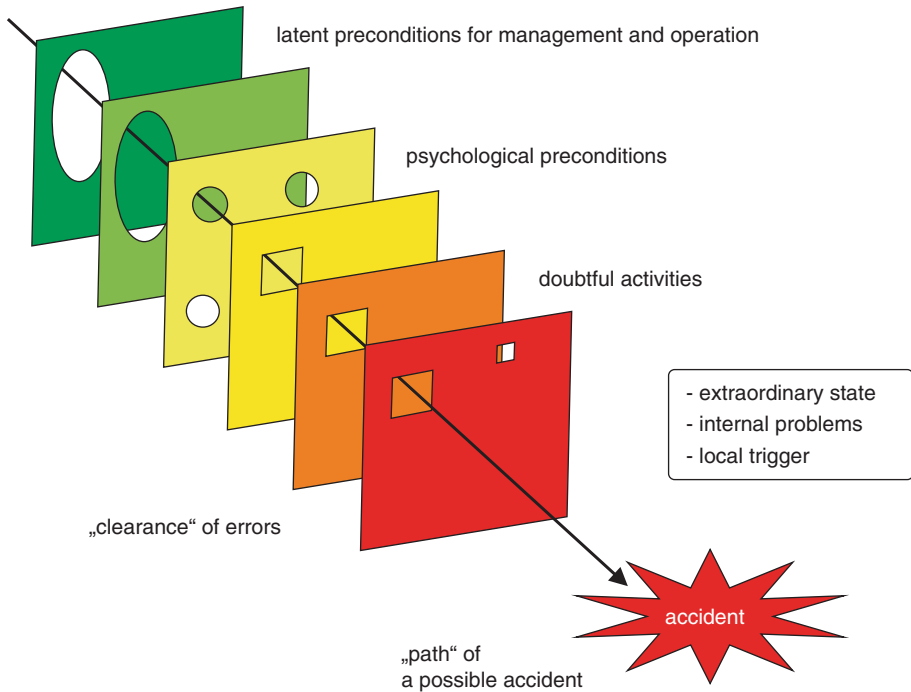


Fig. 8.1 A “Swiss Cheese Model” (after Bühle in Merkle 2014, p. 47) demonstrates how working together can avoid individual gaps and failures

learnt that failures and errors are part of human nature, thus more or less unavoidable. How does this fit together?

It is simple—the difference can be found between subjectivity and objectiveness. Subjectively we are human beings who by nature will fail and make errors. But when we work as part of a group, the abilities and knowledge of the group overlap and reduces personal limitations. Teamwork can work towards detecting individual errors that may occur and thus can be corrected in time (Fig. 8.1). An individual can make mistakes—but a group can work towards avoiding them.

This is the secret between good, successful medical procedures and malpractice and catastrophes.

This is not only theory, it is reality.

8.6 Learning from Others

For example: In the sixties of the twentieth century, the aviation business was a risky sector as indicated by the number of reported crashes in the newspapers at that time. Meanwhile flying has become the safest transportation

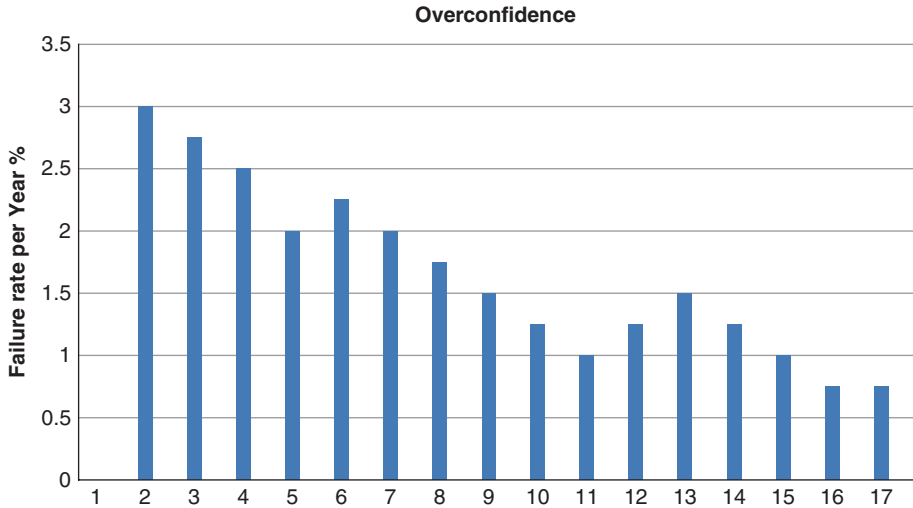


Fig. 8.2 Diagram of overconfidence

method of all. Surprising? No—there's no secret but rather hard and sophisticated work. All pilots of all airlines began to report openly and frankly about their own problems when flying. All these reports were registered and evaluated thereafter. All events and failures that occurred were analysed and investigated—and over time improvements were made.

The main risk factors involved: First it was the pilots themselves. Second the quality of planes was not stable and technical problems were obvious. Third there were failures which were independent from the airline and pilot on board; there were systemic failures.

To this day all pilots continue to report on problems they face during flights and all accidents are consequently investigated. Furthermore—individual experience and the investigation reports are shared between airlines and pilots, through internet platforms.

8.7 Consequences were Drawn

Very important is—as confirmed by the Harvard Medical Study for the field of medicine—the human factor. Well, there are some people who are better at solving a problem and some with lesser abilities, but more or less everybody makes mistakes—and this was clearly demonstrated in the airline survey. Through crew resource management, a flat hierarchy, open communication and strict training and positive drills, individual pilots are groomed to be a team player whose first approach to his job is safety. The so called Swiss

Cheese Model (Fig. 8.1) demonstrates how working together can avoid individual gaps and failures; such that should one single person not contribute, failure can occur.

Furthermore the psychological assessment process for choosing a person for the cockpit job is directed to find people who are risk averse. Combined with proper training, these future pilots will do everything to avoid any risks and failures.

The second problem to solve was the technical issue. The analysis of crashes, destruction and previous failures was the first approach to improve the technical material. One of the key processes was the FMEA—failure mode and effects analysis. Before a new plane went airborne the engineers checked it for possible problems and tried to solve them before the first hour in air.

Third—the systemic error, which was difficult to solve. But with open communication and the consequent use of checklists the problem inherent in the system itself can be reduced to a minimum.

Checklists have to be adjusted to the process and system for which they are going to be used. The principle of checklists is the same, but the approach to the checked system is always individual.

8.8 Back to the Fatal Medical Catastrophes

During the last 15 years there has been increasing conviction that malpractice in medicine no longer is a fate, but a cause for honest concern. The mentioned Harvard Study was the ignition to start investigations as well as looking for solutions to reduce the failure problem in medicine. The pressure by the public when reading e.g. about the circumcision catastrophe (<http://www.beschneidung-von-jungen.de/home/berichte-betroffener/beschnitten-blind-und-behindert.html>—August 2014) lead to efforts to find the underlying cause. In Germany the law defining the rights of patients, PRG, issued in 2013 forces all partners in medicine to improve their work and reduce malpractice.

As with the risk factors linked to the aviation industry, similar risk factors were involved with the malpractice situation. However—in the medical profession a problem is often more complicated. Planes and pilots have to cope with, for example, weather conditions they cannot influence. Nevertheless in the worst case they can avoid the problem by not flying in bad weather. In medicine it's not so easy. Under unprepared conditions, e.g. an emergency situation or an operation that must be performed, increased risk is accepted due to the special circumstances involved. Despite these circumstances safe behaviour of the medical staff members and strict acceptance of correct procedures

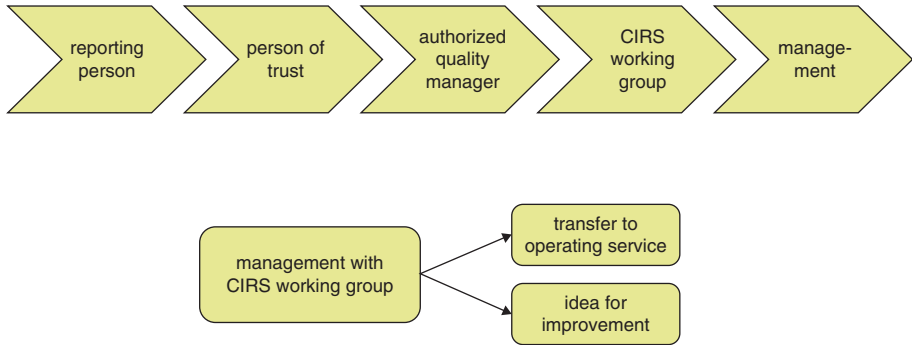


Fig. 8.3 An example for the implementation of a Critical Incident Reporting System, CIRS (*top*) with related duties of the management (*bottom*; after Blehle in Merkle 2014, p. 105)

are still mandatory. Additionally team work is the key to solving issues that could arise during these exceptional situations because while one individual is unable to oversee to every detail and requirement, a team working together will reduce the limitations of the individual (see Fig. 8.1).

Although bad and unforeseen circumstances might be the main cause for a fatal outcome of an emergency case it is mandatory to learn from it, too. In those cases the so called CIRS-procedure should be started thereafter. Critical-Incident-Reporting-System means: Thank God everything went well, but we've learnt that there are some things or critical procedures which must be improved before the next accident. (Fig. 8.3).

Not only after an emergency case is the Critical Incident Reporting Systems (CIRS) helpful. All processes in medicine that do not go smoothly must be reported and systematically analysed and investigated to find e.g. a systemic failure to be solved.

Furthermore medical staff and OR-teams can learn from the pilots and hospitals from the aviation business on how to improve. Risk management in medicine is not clearly understood at present, neither in the US nor in Europe or Germany. Additionally installation and implementation of a risk management process is expensive. This combined with political agenda to reduce costs in the health care sector, increases the inherent problems of the medical sector to work safely und successfully. Thus medical catastrophes like the two examples described at the beginning could be solved and avoided if there would be enough resources and financial support to implement a working risk management process in medicine with the same high level of quality that we are used to in daily aviation.

Catastrophes in medicine are not fate, but the result of a lack of awareness for the problem, personal arrogance, lack of team work, unconscious fear, lack

of correct procedures, limited financial resources and training, unorganized CIRS etc.

8.9 Other Catastrophes in Medicine

There are further problems in hospitals leading to catastrophes. E.g. it was reported in Japan, that a man died because a hospital was overloaded and doctors and medical staff were missing. This is an extreme example that money to fund hospitals and their medical staff seems to be more important than human life. There is also a discussion in Germany concerning nursing—how many minutes (!) a nurse should spend caring for a patient; this is a catastrophe for all patients as they get the feeling they are cost factors more than human beings.

Three well known university hospitals in the US with a good reputation also reported about nursing problems. They pooled their data to protect themselves because the result of their study is alarming. Should only one single nurse go missing from a ward's team the mortality of all patients there is significantly (!) increased. This was an identical reality in all of the three hospitals which are known as the best medical centres in the US. With this in mind, how severely might the mortality rate rise in hospitals with a lower medical standard?

In summary: most of the medical catastrophes are manmade—by staff members as well as by hospital organization and funding—worldwide. It is not comprehensible why political representatives do not seriously act against this although the methods to prevent those catastrophes are well known and available.

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9

Natural Disasters as a Business Case—Risks and Opportunities from the Insurance Viewpoint

Gerhard Berz

9.1 Introduction

The last 40 years or so have prompted growing concern among insurers in regard to the rapidly increasing burden of claims resulting from natural catastrophes (Munich Re 2009). Most of these losses were caused by extremely powerful atmospheric phenomena such as windstorms, floods, heat waves and hailstorms (Fig. 9.1), prompting insurers to suspect that the environmental and climatic changes observed throughout the world were playing an important role in this trend toward more frequent and more extensive disasters. Even though this correlation cannot be easily confirmed scientifically, there can be no doubt as to its plausibility and staggering significance. In planning and providing for the future, the political and financial world must take into account the likelihood that the expected climatic changes will further intensify this trend in catastrophic events, and weigh their consequences against the costs of implementing effective mitigation strategies.

9.2 Trends in the Frequency and Severity of Catastrophic Events

Particularly in the last few decades, the burden of claims resulting from natural catastrophes has taken on dramatic dimensions, especially for the insurance industry. Analysis of all the natural catastrophes that have cost the insurance industry more than US\$1 billion, shows that prior to 1987, this threshold had been reached by only a single event, Hurricane Alicia of 1983.

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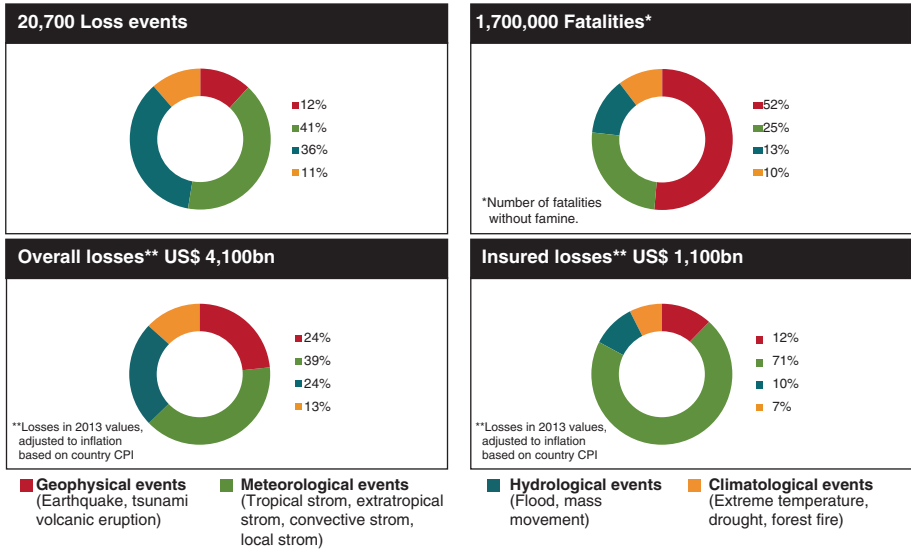


Fig. 9.1 Loss events worldwide between 1980 and 2013. (from Munich Re as at February 2014, Geo Risks Research)

Since 1987, however, this figure has been surpassed by two more events in the 1980s, but not less than 28 in the 1990s and already more than 40 in the first decade of this century. The record holder so far, Hurricane Katrina in 2005, cost insured losses of approximately US\$60 billion and some US\$125 billion in economic losses.

Worldwide, natural catastrophes show a pronounced trend to higher frequencies and economic as well as insured costs (see Figs. 9.2a and b).

Statistics of great weather-related natural catastrophes since 1950 reveal very clearly that there has been a dramatic increase in losses resulting from such catastrophes in recent decades. Economic losses in the last decade (2001–2010) have increased, already adjusted for inflation, by a factor of 2.8 over the 1980s level, and insured losses by a factor of 6.4 (Table 9.1). Compared with the great natural catastrophes of the 1980s, those occurring in the past 10 years have caused an increase of almost three times as much in economic losses and more than six times in insured losses. These figures reflect only the claims that are attributable to great weather disasters; all the other claims resulting from smaller events, of which Munich Re registers approximately 700–900 around the world each year, increase the volume of total losses substantially.

Certainly, these increases in losses are attributable in large part, or even for the most part, to increasing values and insured liabilities, particularly in large conurbations in regions of high exposure (Fig. 9.3, Munich Re 2005a and b) and are due to

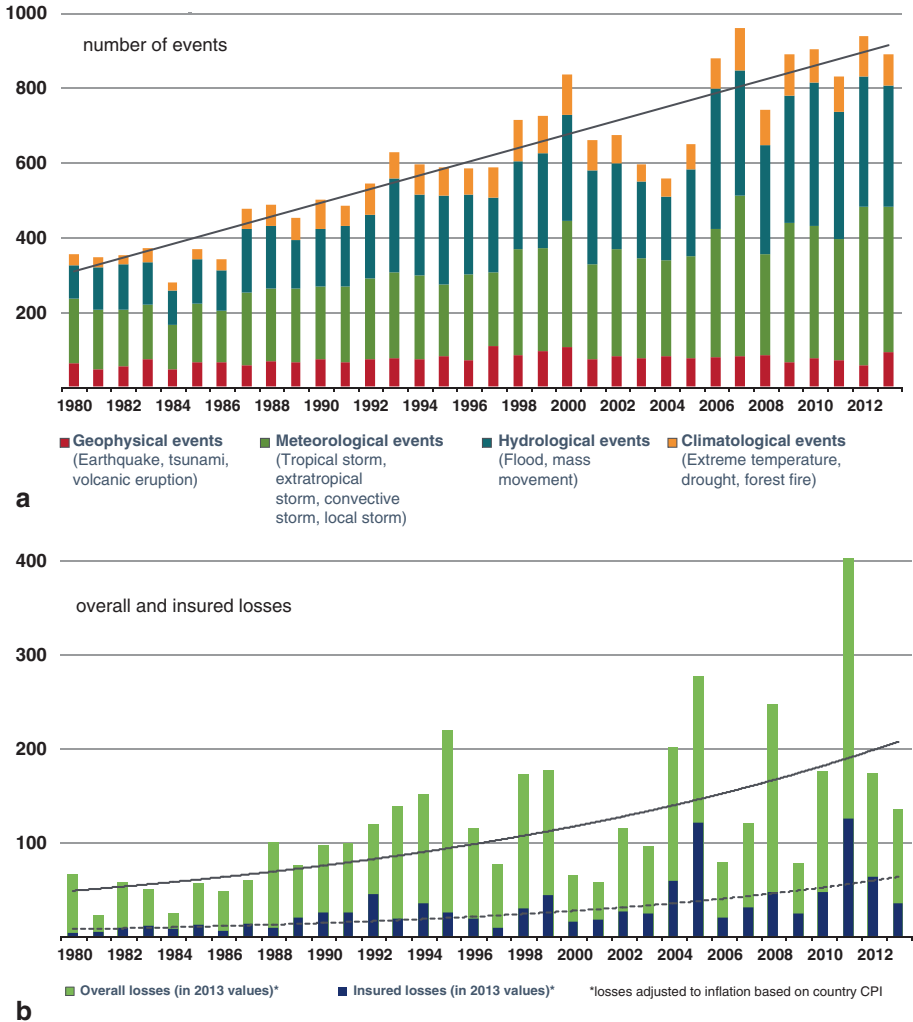


Fig. 9.2 a and b Worldwide increase of natural disasters between 1980 and 2013 in numbers and costs. (from Munich Re as at February 2014, Geo Risks Research)

- rise in population
- better standard of living
- concentration of people and values in large conurbations
- settlement in and industrialization in high-risk zones
- rising susceptibility of modern societies and technologies
- increasing insurance density
- environmental/ climatic changes

Moreover, natural catastrophes have demonstrated repeatedly that buildings and infrastructures have become not less, but even more susceptible to dam-

Table 9.1 Great weather catastrophes 1950–2010. (from Munich Re as at January 2011, Geo Risks Research; losses are in billion US Dollars in 2010 values)

	Decade 1950– 1959	Decade 1960– 1969	Decade 1970– 1979	Decade 1980– 1989	Decade 1990– 1999	Decade 2000– 2009	Last 10 years 2001– 2010	Factor last 10 years: 1980s
Number	13	16	29	44	74	28	29	0.7
Overall losses	61.0	73.6	102.6	163.5	534.7	444.9	457.0	2.8
Insured losses	1.8	8.3	15.5	30.7	128.0	197.9	197.8	6.4



Fig. 9.3 World map of a natural hazards risk index for megacities. (Munich Re 2005a)

age, despite all building regulations and technological advances. This was shown very clearly by many recent earthquakes, tsunamis, storms and floods.

At the same time, however, there is an increasing body of evidence that the emerging climatic changes are influencing the frequency and intensity of natural catastrophes (Munich Re 2005b). On the one hand, there are the major windstorm catastrophes of recent years, which have set new loss records and, on the other hand, there are the innumerable flood, tempest, drought and forest-fire catastrophes that seem to occur more frequently now than ever before. In comparison, the number of geophysical catastrophes like earthquakes, tsunamis and volcanic disasters has much less increased in annual numbers (Fig. 9.4).

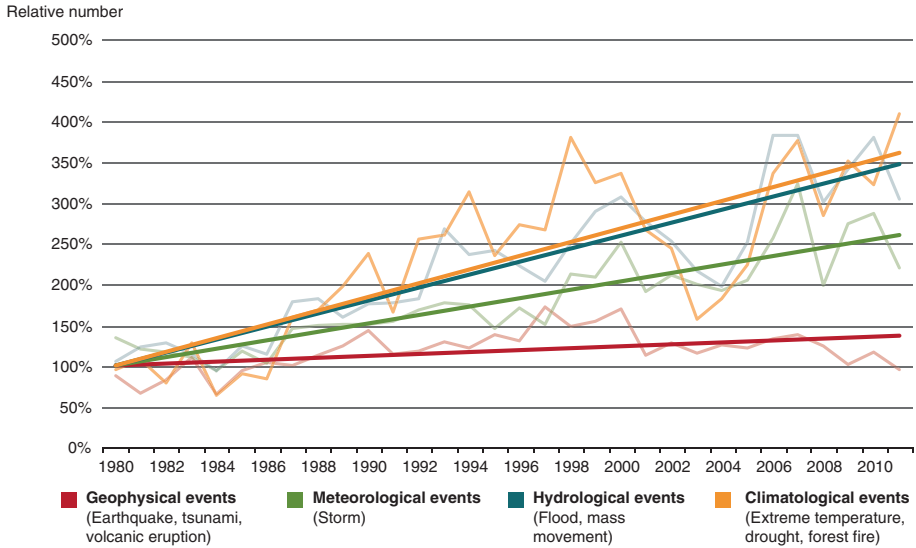


Fig. 9.4 Natural catastrophes worldwide between 1980 and 2011; relative trends of numbers of all events recorded. (from Munich Re as at January 2012, Geo Risks Research)

In spite of these phenomena, the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, IPCC, in 2007 still sees no general scientific proof of the correlation between global warming and the increased frequency and intensity of extreme atmospheric events. Many studies and simulations, however, have provided a good deal of evidence that the probabilities of various meteorological parameters reaching extreme values have already changed or will change significantly. Some examples are provided below:

The further increase in average temperatures is anticipated to cause an extraordinarily sharp rise in the probability of extremely high temperatures. For example, an increase of 1.6°C in central England's average summer temperature, which is expected to occur by approximately 2050, will mean that a hot summer such as that of 1995—which according to the 1961–1990 temperature distribution was a 75-year event—would then occur once every 3 years on average (Fig. 9.5, Dept. Environment 1996). Similarly, a heat wave like the one in the summer of 2003, which caused more than 70,000 deaths as well as some 10 billion € in economic losses in Central, Southern and Western Europe, will probably become a rather normal summer situation in the last third of this century. Since we are currently in no way prepared for such heat waves, considerable adjustment costs and losses are to be expected.

In Central Europe, recent decades have brought significantly wetter winters and drier summers. A greater proportion of winter precipitation falls as rain,

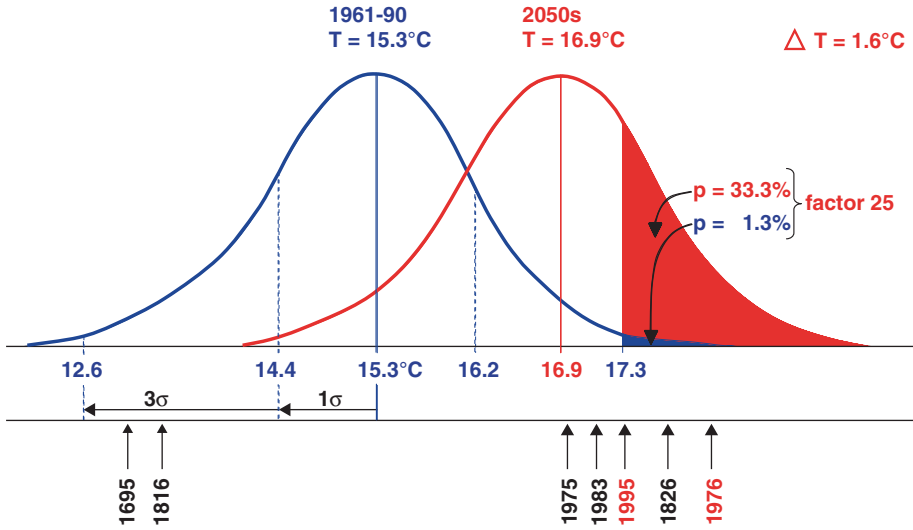


Fig. 9.5 Exceedance probabilities of high summer temperatures in Central England, 1960–1990 and in 2050. (source: Climate Change Impacts UK 1996)

rather than snow, with the consequence that most of it runs off before being absorbed. Evidence of increasing runoff quantities is provided by measurements from the Rhine basin and other major rivers. Global warming also increases the capacity of the air to absorb water vapour and thus the precipitation potential, as well. In conjunction with intensified convection processes, this will lead to ever more frequent and ever heavier downpours, which are already responsible for a large part of flood damage every year.

The milder winters that have meanwhile become typical of Central Europe have reduced the extent of the snow-covered areas, above which stable high-pressure zones of cold air used to form a barrier against low-pressure storm systems approaching from the Atlantic. The barrier is therefore often weak or shifted far to the east, with the consequence that the series of devastating gales such as occurred in 1990, 1999 and 2007 can no longer be considered rare and exceptional phenomena (Fig. 9.6, Dronia 1991).

There is also a not yet confirmed North Atlantic trend toward more frequent and, in particular, more intense cyclones, that is to say toward increased windstorm activity itself. In regard to the connection between global warming and tropical cyclone activity, which could well become a question of survival for densely populated coastal regions, particularly in view of the expected rise in sea level, recent analyses reveal a significant upward trend at least in the number of the most powerful Atlantic hurricanes (Munich Re 2006).

Against the bleak backdrop of these dreaded changes, which are summarised in Fig. 9.7, the crucial question is not whether or even when there

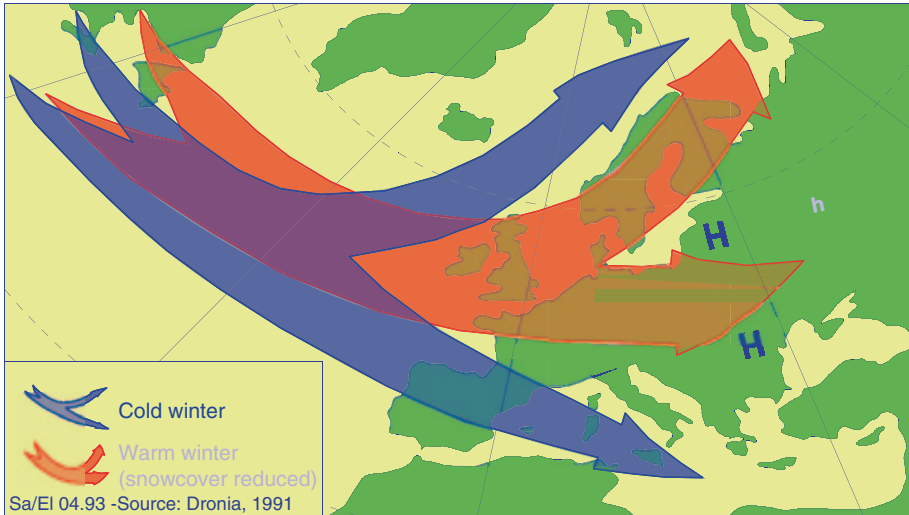


Fig. 9.6 European mean winter storm tracks in cold vs. mild winters

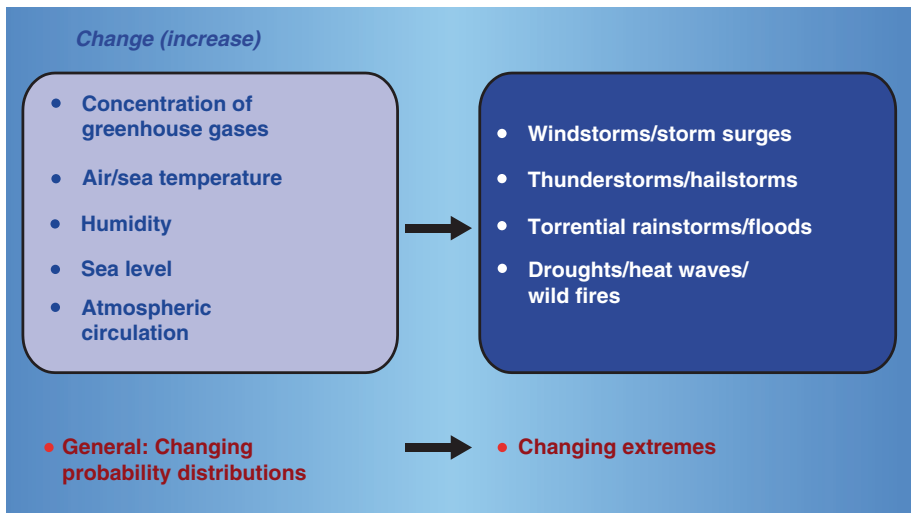


Fig. 9.7 Climate change: trends and effects. Changes in the atmosphere and oceans caused by mankind thus far and in the future will presumably increase substantially the frequency and severity of catastrophic weather events

will be conclusive proof of anthropogenic climatic changes, but whether the climatic data and models used thus far offer an adequate basis for sensibly assessing future changes and developing appropriate adaptation and mitigation strategies in a timely fashion. Given the fact that the risk of error will remain great for the foreseeable future, it is all the more important that the strategies

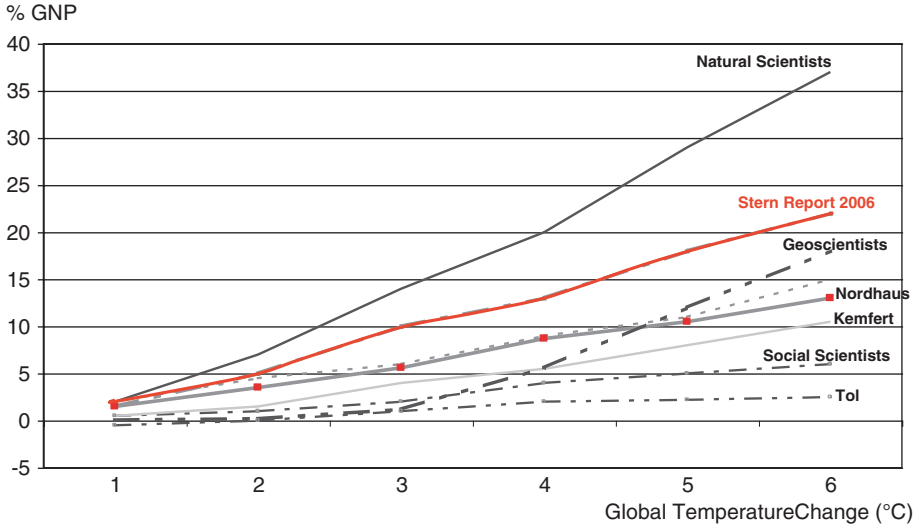


Fig. 9.8 Economic losses due to climate change as calculated by different models. (sources: Stern 2006)

themselves be adaptable, and their results are measurable in terms of the losses that are to be avoided. Success is guaranteed from the start in the case of “no-regret” strategies such as measures to reduce the fuel consumption of motor vehicles or energy consumption in general because, even if the strategies prove to be less relevant to the climate than is currently supposed, they will in any case yield desirable savings and demonstrate the industrial nations’ awareness of their responsibility toward the Third World.

However, not all the effects of climatic change will necessarily be negative. In many countries in the temperate and subpolar latitudes, for example, there would be reason to expect increased agricultural yields and substantially reduced heating costs during the winter. On the other hand, regions closer to the equator will need more energy for cooling during the summer, and more frequent heat waves and droughts may be expected to cause additional losses.

Recently, several attempts have been made to estimate the worldwide costs of anthropogenic climatic changes and to compare them to the costs of measures for bringing about sustainable climatic stabilisation, i.e. a global temperature increase of less than 2°C until the end of the century (Fig. 9.8). The results are disturbing, as they indicate that climatic changes will trigger worldwide losses that could total trillions of US dollars per year or up to 20% of the global gross domestic product, GDP, if nothing is done to curb the greenhouse gas emissions. In contrast, the costs of taking action now are lower by a factor of 10–20 and would mean for most countries, that they can expect their losses to range from a few per mille to a few per cent of their respec-

tive GDP each year, but even then certain countries—especially small island states—could face losses far exceeding 10% of their GDP (Stern 2006). These studies might now be able to convince even those governments and business enterprises that are still undecided or even oppose the framework agreement for a world climate convention reached in Rio de Janeiro in 1992 as well as the climate protection strategies provided by the Kyoto Protocol 1997 and all the annual climate summits (Conference of the Parties, COP) since 1995.

9.3 Effects on the Insurance Industry and Countermeasures

With the confidence born of its extraordinary ability to adapt to changing risk conditions, the insurance industry could take the stance that climatic change is relatively unimportant for insurers. The industry should be earnestly warned against adopting such an attitude, however, for several reasons: on the one hand, because there is reason to fear that climatic change in nearly all the regions of the earth will affect numerous parameters of relevance to insurance and give rise to new, more extreme maxima or minima. This will lead to natural catastrophes of hitherto unknown force and frequency and trigger considerably greater capacity problems on the national and international insurance markets than those observed so far. Incorrect assessment of these developments could jeopardise the future of the entire industry in some regions. In this case, moreover, premium adjustments would continually lag behind loss trends. Some impacts of climate change on the insurance industry are

- increase in weather variability
- new extreme values
- new exposures
- more frequent and larger natural disasters
- greater loss potentials
- lagging premium adjustment
- rising demand for cover of natural hazards

On the other hand, the insurance industry has the ability to effectively protect itself against the consequences of climatic change, while helping substantially to promote and gain acceptance for measures to protect the climate. Some areas of possible action are

- information and (financial) motivation of clients and authorities (also through limitation of cover)

- developing climate-“friendly” insurance products (i.e. in motor liability insurances)
- eco-audits in environmental liability insurance
- including environmental aspects (e.g. sustainability) in investment decisions
- sponsoring of climate protection projects
- eco-balance of insurance business and real estate

No other sector of the economy has such effective instruments for encouraging risk reduction as the insurance industry does, but only if it can win over its customers and the public authorities as partners. If the insurance industry can, for example, convince its customers that natural hazards policies with a substantial deductible are advantageous for both sides because this type of cover relieves the insurer from having to pay large numbers of minor losses that can be regulated far more effectively by the customers themselves and thus makes possible substantially more cost-effective insurance protection, then customers will be far more inclined to adopt loss-prevention and -minimisation measures. If, on the other hand, the insurance industry were to respond to threatening loss potentials by excluding from cover certain hazards or risk zones or by narrowly limiting the scope of cover, there would inevitably be growing pressure placed on public authorities to take regulatory measures to improve the risk situation or to combat the causes.

It would be wrong, however, to transfer tasks, which are properly those of government to the insurance industry by making it responsible for penalising environmentally deleterious behaviour and rewarding environmentally friendly behaviour on the part of its customers, as has occasionally been demanded by environmental activists. This cannot be the task of the insurance industry, even if it were in its own interest in view of the connection between environmental impairment and natural catastrophes.

Nonetheless, the insurance industry should take action autonomously in regard to climate-protection issues and take full advantage of its options for promoting protection. Here, the industry could have a big impact and, as the industry specialising in the management of future risks, it would be only fitting that it do so.

9.4 Concluding Remarks

The frequency and scope of loss of major natural catastrophes will continue to increase dramatically throughout the world. Unless drastic measures are taken soon to prevent it, this trend will be intensified considerably by the ever more

evident warming of the atmosphere, the resultant increase in sea level, and the intensification of storm and precipitation processes.

In its own interest, the insurance industry must assume a major role in implementing preventive measures in order to ensure that it can provide cover for natural hazards over the long term. By designing insurance products appropriately, the insurance industry can motivate not only policyholders, but even government agencies to adopt loss-prevention and -minimisation measures and thus also reduce its own loss potentials.

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