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"The Monster Swallows You"

Disaster Memory and Risk Culture in Western Europe, 1500-2000

Christian Pfister

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Christian Pfister is Professor Emeritus in Social, Economic, and Environmental History at the University of Bern and an Associate of the Oeschger Center for Climate Research in Bern. Pfister has published widely, in particular on the historical reconstruction of climate change, on the history of transport and pollution, and on the social impact of natural disasters. His publications have won him acclaim both in Switzerland and internationally. Among his most recent awards is an honorary doctorate from the Universidad Ricardo Palma in Lima (2010). Together with Christof Mauch, he is co-editor of the volume *Natural Disasters, Cultural Responses: Case Studies Toward a Global Environmental History* (Lanham, MD: Lexington Books, 2009).

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Memories, Learning, and Adaptation

The memory of natural disaster is, in contrast to the memory of war, markedly short-lived in a globalized world. As waters return to their pre-flood levels and the last earthquake victims recover, mass-media interest quickly subsides.[1] The victims of disaster will not forget so easily, but their memories too will fade. If such events have occurred frequently in the past, they are perceived as "more of the same," even though their unpredictable appearance still defines them as discrete events.

And yet memory is crucial for the development of coping strategies. In Franz Mauelshagen's words, "all preventive strategies are based on the expectations generated by repeated experiences. Repetition therefore becomes a key concept in historical research on learning from disasters."[2] This issue should not be discussed under the truism "learning from history," as cultural historian Gerrit Jasper Schenk recently did. He overlooks the fact that "history" is a blanket term situated on a high level of abstraction; if we seriously want to tackle the issue of learning from past experience, we need to break it down into smaller units of analysis that are closer to people's experience. Schenk claims that "theoretical and empirical case studies on learning from disasters have not yet been submitted,"[3] disregarding a number of pertinent case studies from several parts of the globe that are provided together with theoretical considerations in a recent volume of essays.[4]

The terms *remembering* and *learning* refer primarily to individual processes, but they also designate collective ones which underlay group-specific behavior. According to the sociologist Maurice Halbwachs, groups are able to envisage common experience,

1 Christof Mauch, "Introduction," in *Natural Disasters, Cultural Responses. Case Studies Toward a Global Environmental History*, eds. Christof Mauch and Christian Pfister (Lanham, MD: Lexington Books, 2009), 3.
2 Franz Mauelshagen, "Disaster and Political Culture in Germany since 1500," in *Natural Disasters*, 44; see also Christian Pfister, "Learning from Nature-induced Disasters. Considerations from Historical Case Studies in Western Europe;" in *Natural Disasters*, 17–40.
3 Gerrit Jasper Schenk, "Katastrophen in Geschichte und Gegenwart. Eine Einführung," in *Katastrophen: Vom Untergang Pompejis bis zum Klimawandel*, ed. Gerrit Jasper Schenk (Ostfildern: Jan Thorbecke, 2010), 14. This and all subsequent citations not originally written in English are translated by the author.
4 Mauch and Pfister, *Natural Disasters*.

thereby arriving at a "collective memory." As an example, he mentions family memory, which draws on everyday oral communication and also includes, of course, the remembrance of experienced disasters.[5] It is "social short term memory,"[6] which tends to be wiped out with the death of the last eyewitness of the event in question. Memories which go further back need to be underpinned with documents such as newspaper clippings, chronicles, and photo albums.

The concept of "cultural memory," introduced by Jan und Aleida Assmann, defines the "outer dimension of human memory," which is supported by media and includes the entirety of knowledge which governs our behavior.[7] Here, Aleida Assmann distinguishes between "functional memory" and "storage memory." "Functional memory" is group-oriented, value-connected, future-oriented, and necessarily selective, because it can only retain a fragment of the knowledge available. This knowledge is contained in the "storage memory," which is "a second-order 'social long-term memory,' a memory of memories in charge of the historical sciences." Issues held in storage memory need to be reprocessed in order to recall them to functional memory.[8]

Severe disasters need to be permanently remembered in order to safeguard against the same devastating impact if they recur. The more individuals and groups bear past events in mind, the greater the risk of their recurrence is perceived to be.[9] Natural hazards are of course retained in memory if they recur frequently, and the more frequently they occur, the more likely people are to anticipate them and to try to develop adequate adaptive strategies, which are always the result of learning processes and which can take different forms. In public policy, at least on the state or national level, learning from catastrophes takes place within networks that include politicians, administrators, scientists, and technical experts. At the local level, successful learning depends to a large extent on the initiative of community leaders and small groups who, at least in earlier times, tended to leave few if any records of their activities.[10] The term "cultures of disaster," coined by Harry E. Moore,[11] designates a bundle of

5 Maurice Halbwachs, *La mémoire collective* (Paris: Presse Universitaire, 1950).
6 Harald Welzer, *Das kommunikative Gedächtnis. Eine Theorie der Erinnerung*, 2nd ed. (München: 2008), 36.
7 Welzer, *Gedächtnis*, 36.
8 Aleida Assmann, *Erinnerungsräume. Formen und Wandlungen des kulturellen Gedächtnisses*, 2nd ed. (Munich: C.H. Beck, 2006), 134–35; Welzer, *Gedächtnis*, 36.
9 Regula Enderlin Cavigelli, *Risiko und Konflikt. Fallanalyse in der Kernenergiekontroverse und theoretische Reflexionen* (Bern: Haupt, 1996), 25.
10 Pfister, "Learning from Nature-induced Disasters," 20.
11 E. Moore, "*And the Winds Blew*" (Austin, TX: University of Texas, 1964), 14.

well-rehearsed practices of risk minimization and ways of coping with extraordinary situations that people have integrated into their daily lives so as not to be taken by surprise. The best known case study was presented by Greg Bankoff using the example of the Philippines.[12] Christian Rohr prefers the term "culture of risk," as disasters have often been avoided by means of preventive practices.[13]

Memories of Disaster and Management Strategies in Traditional Western European Societies

In Europe, we can see these cultures of risk at work in, amongst others, the "hydrographic societies"[14] on the North Sea coast and the "nivographic societies"[15] in the Alps.

Avalanches were an annual risk in the Alps and communities tried to minimize damage by keeping buildings out of the usual path of destruction.[16] The loss of life, cattle, and buildings was only registered when avalanches struck large areas in exceptionally snowy winters.[17] Some villages were shielded by protective forests, which were themselves protected by the authorities from being felled or utilized in any other way.[18] Alpine shelters exposed to avalanches were equipped with wedge-shaped stonewalls designed to divert the snow masses past both sides of the building.[19] A case study of the culture of risk in the French Alps is provided by René Favier and Anne-Marie Granet-Abisset.[20]

The lives of inhabitants of the North Sea communities were shaped by storm tides. Up until the late eighteenth century, the failure of a dike resulted in the deaths of

12 Greg Bankoff, *Cultures of Disaster. Society and Natural Hazard in the Philippines* (London: Routledge Courzon, 2003).
13 Christian Rohr, *Extreme Naturereignisse im Ostalpenraum. Naturerfahrung im Spätmittelalter und am Beginn der Neuzeit* (Cologne: Böhlau, 2007), 59.
14 Mauelshagen, *Disaster and Political Culture*, 49.
15 Christian Pfister, "Die Katastrophenlücke des 20. Jahrhunderts und der Verlust traditionalen Risikobewusstseins," *GAIA Ecological Perspectives for Science and Society 3*, no. 18 (2009): 240.
16 René Favier and Anne-Marie Granet-Abisset, "Society and Natural Risks in France, 1500–2000: Changing Historical Perspectives," in *Natural Disasters*, 123.
17 Martin Laternser and Walter J. Amman,"Der Lawinenwinter 1951 und seine Auswirkungen auf den Lawinenschutz in der Schweiz," in *Am Tag danach. Zur Bewältigung von Naturkatastrophen in der Schweiz 1500–2000*, ed. Christian Pfister (Bern: Haupt, 2002), 153–168.
18 Verena Stöckli, "Der Bannwald. Lebensgrundlage und Kultobjekt," in Pfister, *Bewältigung*, 101–12.
19 Philippe Schoeneich, Denyse Raymond, Marie-Claude Busset-Henchoz, Spaltkeil, and Ebenhöch, " Traditionelle Lawinen-Schutzbauten in den Waadtländer Voralpen," in Pfister, *Bewältigung*, 147–52.
20 Favier et al., "Society and Natural Risks."

thousands of humans and the destruction of livestock, and the salt water rendered the arable ground unusable for a long time afterwards. Immigrants into the region attracted by incentives such as fertile land and political privileges developed strategies for coping with, rather than avoiding, the dangers of the North Sea. Catastrophic storm tides, which repeatedly forced people to abandon land and settlements, have acted as a catalyst for technical improvements.[21] The development of dike construction has been depicted as a learning process, in which successive floods led to greater scientific understanding, which in turn generated new technical skills.[22] Installing dikes to encircle large coastal districts needed to be coordinated and required proper funding. Institutions such as dike laws, which were orally transmitted up to the early thirteenth century, established the proper maintenance of dikes. The first written record, found in Eike von Repgow's *Sachsenspiegel* (around 1230), mentions with reference to river dikes that any landowner unable to maintain the dikes would forfeit his land.[23] "No land without dike and no dike without land" was customary law for centuries.[24] Periodic inspections were needed to ensure adequate maintenance of dikes by skilled workers. The number of supervisors with a professional background rose over time.[25] The cost of inspection and maintenance was painstakingly documented in town accounts.[26]

Floods were also a major risk along rivers. Before riverbank protection became efficient in the nineteenth century, most rivers followed a natural meandering course that was often altered by severe floods. In order to avoid major losses, low-lying land along the rivers remained communal space, on which local inhabitants were not allowed to build.[27] Traditional early warning systems were already well developed in eighteenth-century Upper Engadin (Switzerland): guards were appointed to monitor the Inn River at night if floods were expected. If the water levels threatened villages, they alerted the population. A gender-specific division of tasks was rehearsed. Men

21 Mauelshagen, *Disaster and Political Culture*, 51.
22 Norbert Fischer, *Wassersnot und Marschengesellschaft: Zur Geschichte der Deiche in Kehdingen* (Stade: Landschaftsverb. der Ehemaligen Herzogtümer Bremen und Verden, 2003), 45, as cited in Mauelshagen, *Disaster and Political Culture*, 71.
23 Hans Joachim Kühn, *Die Anfange des Deichbaus in Schleswig-Holstein* (Heide: Westholsteinische Verlagsanstalt Boyens, 1992), 83, as cited in Mauelshagen, *Disaster and Political Culture*, 71.
24 Mauelshagen, *Disaster and Political Culture*, 53.
25 Ibid., 54.
26 Adriaan de Kraker, "Reconstruction of Storm Frequency in the North Sea Area of the Preindustrial Period, 1400–1625 and the Connection with Reconstructed Time Series of Temperatures," *History of Meteorology 2* (2005): 51–69.
27 Dirk van Laak, "Infra-Strukturgeschichte," *Geschichte und Gesellschaft 27*, no. 3 (2001): 381.

assisted in reinforcing the river embankments whereas women snatched up valuable belongings and drove the cattle uphill to safe places.[28] Bridges were still exposed to the floods and needed special protection. We have documentary records of another kind of institutionalized flood prevention in late fifteenth century Basel. In the case of the Rhine threatening to burst its banks, a squad of men with hooks was called up onto the bridge, their task being to prevent the bridge from being damaged by fishing out drifting logs from the flood waters. This preventive strategy was introduced after an extreme flood in August 1480.[29]

A further form of institutionalized prevention is known from the Austrian city of Salzburg. A rockslide from the "Mönchsberg," a cliff-like hill above the town, overwhelmed the narrow street beneath it in the early morning of 16 July 1699, causing more than 220 casualties. In order to prevent this kind of disaster from recurring, "mountain cleaners" were occasionally engaged until 1778. Subsequently, "mountain cleaning" was performed annually. Since 1976, this task has been funded by Salzburg municipal council.[30] Guido Poliwoda is the first environmental historian who has systematically documented a process of learning from disaster over several decades, in this case in the German electorate and later kingdom of Saxony. The regions along the Elbe River were frequently devastated by ice floods between 1784 and 1845. The recurrence of such disasters led to the development of coping strategies that were in the end highly successful, judging by the efficient management of an extremely severe flood in 1845.[31]

The documentation of disasters, extreme events, and miraculous signs in the "cultural memory" of a community is a key element of risk cultures.[32] In China, this tradition reaches back over two thousand years.[33] Several forms of "memoria" were known in traditional societies. Communication of risk was one of the chroniclers' main objectives: their task involved noting down narratives of extraordinary events memorable for society, such as extreme weather conditions, natural disasters, fires, and famines.

28 Pfister, "Learning from Nature-Induced Disasters," 24.
29 Pfister, "Katastrophenlücke," 241.
30 Karin Hauer, *Der plötzliche Tod. Bergstürze in Salzburg und Plurs kulturhistorisch betrachtet* (Vienna: LIT Verlag, 2009).
31 Guido N. Poliwoda, *Aus Katastrophen lernen. Sachsen im Kampf gegen die Fluten der Elbe 1784 bis 1845* (Cologne: Böhlau, 2007).
32 Franz Mauelshagen, *Wunderkammer auf Papier. Die Wickiana zwischen Reformation und Volksglaube* (Zürich: Studentendruckerei, 2008).
33 Q.-S. Ge, J.-Y. Zheng, Y.-Y. Tian, W.-X Wu, X. Fang, Q. Fang, and W.-C. Wang, "Coherence of Climatic Reconstruction from Historical Documents in China by Different Studies," *International Journal of Climatology*, 28 (2008): 1007–24.

Where possible, chroniclers tried to compare the severity of such events with examples from the past. In the case of inundations, they often referred to destroyed bridges or flooded streets.[34] In the case of storms, they cited the destruction of spires and brick houses, or the eradication of large oak trees as evidence of extreme gale force.[35] This information, however, even if it was communicated to the public in some form, was soon forgotten. Sometimes memories took the form of a distinct genre of vernacular poetry, as is documented for the severe winter storm Barbara in Portugal (4 December 1739)[36] and for the devastating flood of the Drac River in Grenoble (France) on 15 September 1733. The grocer André Blanc dit la Goutte tells the story of the disaster in a long poem of 560 alexandrines written in the dialect of the Dauphiné entitled *Grenoblo malherou* (Unfortunate Grenoble), which was published two months after the event.[37] The following lines are particularly evocative:

> *The ground vanishes, the mountains descend;*
> *Observably, brooks and rivers rise;*
> *Grenoble and its surroundings are below a real sea; (...)*
> *Everything trembles, the cattle, the birds, and humans; (...)*
> *Grenoble, you are lost. The monster swallows you.*[38]

Memorials in the public sphere were particularly well suited to recall the memory of historic events, as Pierre Nora has shown in his groundbreaking work on *Lieux de mémoire* in France.[39] High water marks chiseled on the walls of public or private buildings[40] were a convenient way to compare the frequency and severity of floods over time. At the same time, they were used as points of comparison for each subsequent flood. Rather than being purely communicative, high water marks can be read as

34 Rudolf Brázdil, Zbigniew W. Kundzewicz, and Gerardo Benito, "Historical hydrology for studying flood risk in Europe," *Hydrological Sciences Journal* 51 (2006): 741.
35 Christian Pfister, Emmanuel Garnier, Joao Alcoforado Maria, Dennis Wheeler, Jürg Luterbacher, Fatima Nuñes, and Joao Paolo Taborda, "The Meteorological Framework and the Cultural Memory of Three Severe Winter-Storms in Early Eighteenth-Century Europe," *Climatic Change* 101, no. 1 (2010): 281–310.
36 Pfister et al., "Winter-Storms in Early Eighteenth-Century Europe."
37 Gunhild Hoyer and Gaston Tuaillon, "Blanc La Goutte. Poète de Grenoble. Œuvres complètes," in *Le Monde Alpin et Rhodanien*, 4/2002, 16–34, as cited in Denis Cœur, *La Maitrise des Inondations dans la Plaine de Grenoble (XVIIe–XXe) siècle). Enjeux Techniques, Politiques et Urbains*. Ph.D. diss., Institut d' Urbanisme de Grenoble. Grenoble, Université Pierre Mendès France, 2003, Vol. 1, 85. Part of this thesis was published without the reference to the poem. Denis Cœur, *La plaine de Grenoble face aux inondations: Genèse d'une politique publique du XVIIe au XXe siècle* (Versailles: Quae éditions, 2008).
38 See Cœur, Maîtrise, 86.
39 Pierre Nora, *Les lieux de mémoire*, vol. 3 (Paris: Gallimard, 1997).
40 Jan Munzar, Matthias Deutsch et al. "Historical Floods in Central Europe and Their Documentation by Means of Floodmarks and Other Epigraphical Monuments," *Moravian Geographical Reports 14*, no. 3 (2006): 26–44.

visual expressions of institutional risk memory in the sense of the insurance industry, which defines risk as the likelihood that a loss of a certain magnitude will occur.[41]

One of the most eye-catching assemblages of high water marks is inscribed on the wall of the "Gartenhaus" situated on the bank of the Tauber River in Wertheim in southern Germany (see figure 1). Each of the 24 marks on the wall of this house tells a story which can be investigated in contemporary local chronicles. For example, for the year 1732 we read that the flood on the night of 29–30 September 1732 destroyed 32 houses including the furniture, the equipment and most of the livestock therein, as well as the bridge, the church, and part of the hospital. Only three people were killed. The disaster was seen by many at the time as "divine retribution."[42]

The memorial in the harbor in Tönning on the German North Sea Coast recalls three severe storm tides in the nineteenth and twentieth centuries. Like the memorials for the victims of the world wars, storm tide memorials in the public sphere, such as these, are conceived as lieux de mémoire (Pierre Nora), except that in this case the memory concerns the victims of natural disasters rather than soldiers who died for the fatherland. The Tönning memorial is exceptional because it explicitly communicates a warning for the future: "Watch out for the next flood."[43]

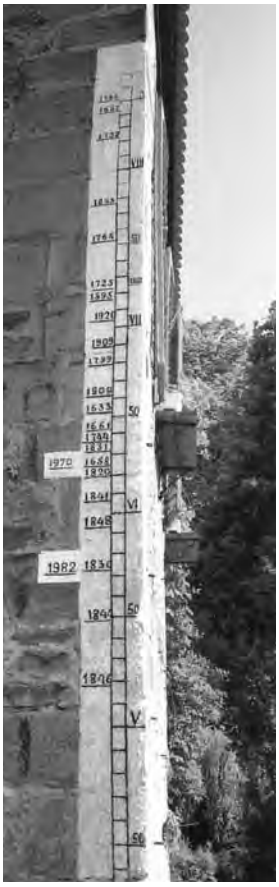


Figure 1: Wertheim.
Photograph by Rüdiger Glaser

Ex-votos are votive offerings to a saint or to the Virgin Mary in fulfillment of a vow; they represent another form of cultural disaster memory. Quite often, ex-votos were produced in order to bear witness for posterity to divine intervention which resulted

41 Christian Rohr, "Measuring the Frequency and Intensity of Floods of the Traun River (Upper Austria), 1441–1574," *Hydrological Sciences* 51, no. 5 (2007): 835; and Pfister, "Katastrophenlücke," 242.
42 Susanne Kiermayr-Bühn, *Leben mit dem Wetter, Klima, Alltag und Katastrophe in Süddeutschland seit 1600* (Darmstadt: WBG, 2009), 72–73.
43 Michael Kempe, "Memories of Natural Disasters in Northern Germany from the Sixteenth Century to the Present," *Medieval History Journal* 10, nos. 1–2 (2007): 327–54.



Figure 2: Painting of the Flood of Solothurn 1651. On display in the Spitalkirche zum Heiligen Geist, Solothurn, Switzerland.
Photograph by Erich Weber

in escape from a situation of individual or collective emergency.[44] An ex-voto may be a painting, medal, or even a football shirt that is exhibited in a public space, often in a church. Figure 2 shows a painting commissioned in memory of a dramatic flood in the town of Solothurn (western Switzerland) on 30 November 1651. At that time, the waters of the Aare River carried a huge amount of driftwood which jammed at the bridge, damming the water and diverting it into the town. In despair, the frightened citizens vowed to recognize the help of Virgin Mary if the town was spared. Subsequently, the bridge collapsed and the water level within the town decreased. Today, this ex-voto is on display in a local church.[45]

Likewise, religious buildings may serve as disaster memory in the public domain. In 1606, a small chapel, which can still be seen today, was built near Lake Ruitor in the Aosta valley, some fifteen kilometers south of the southern entrance of the Mont Blanc tunnel, above the town of La Thuile (see figure 3, p. 11). Its significant human history is known from a lengthy article by Martino Baretti published in the Bulletin of the

44 Georges Didi-Huberman, Ex-voto: *image, organe, temps* (Paris: Bayard, 2006).
45 Christian Pfister, "Klima und Naturkatastrophen," in *Berns mächtige Zeit. Das 16. und 17. Jahrhundert neu entdeckt*, ed. André Holenstein (Bern: 2006), xx.



Figure 3:
Chapel Lake Ruitor, built 1606.
Photograph by Christian Pfister

Italian Alpine Club in 1880.[46] At the climax of the second major phase of the Little Ice Age in the 1590s, the advance of the nearby glacier led to annually recurring floods which lasted for almost a decade. The imminence of the advancing glacier was first noticed in 1594, when a wall of water from the lake destroyed houses, barns, forests, and meadows on its way down to La Thuile. A disaster of similar magnitude occurred the following year. The recurrence of the flooding upset the political authorities of the Duchy of Aosta. During the years that followed, they tried to find a technical solution to the problem by having an "engineer" construct a tunnel to evacuate water from the lake. However, this project ultimately failed for technical reasons. In 1603, efforts to prevent the floods by technical means were abandoned. Instead, it was decided to build a chapel near the lake in order to halt the further advance of the glacier. The chapel, dedicated to Santa Margherita, became the destination of a procession to the lake each year on 20 July which contributed to the renewal of the memory of the flood disasters.[47]

46 Baretti, Martino, "Il Lago del Rutor (Alpi Graje Settentrionali)," *Bollettino del Club Alpino italiano* 14, no. 41 (1880): 43–95.

47 Christian Pfister, "Climatic Extremes, Recurrent Crises and Witch Hunts: Strategies of European Societies in Coping with Exogenous Shocks in the Late Sixteenth and Early Seventeenth Centuries," *The Medieval History Journal* 10, nos. 1–2 (2007): 1–41.



Figure 4: The "hail memorial" in the urban district of Kripp (in Remagen, Rhineland-Palatinate, Germany). *Photograph by Horst Krebs.*

Hailstorms in history have so far been largely disregarded, even by disaster historians.[48] With the exception of the well-known hailstorm in June 1788 (the year which preceded the French Revolution),[49] the fact that a hailstorm could almost annihilate crops within a broad area, completely ruining the affected households and villages, has been overlooked. In some regions, experiences of hailstorms gave rise to annual "hail processions" in the early summer, which were another form of institutionalized disaster memory. Often they ended near small stone cross memorials in the fields, where a high mass was celebrated (see figure 4).[50]

Deleted, Suppressed, and Lost Memories

What happens when these processes of remembering disaster are not initiated? Like remembering, forgetting is chiefly an individual process, but there are also interfaces with collective processes. Some disasters, even severe and large-scale ones, were never inscribed in the "cultural memory," as will be shown. In some cases, the collective memory of certain individuals was intentionally deleted, whereas the memory of an event tends to be forgotten in the "storage memory" after some time has passed.

Firstly, some words about the deleting of memory: the Latin term *damnatio memoriae* refers to expunging all memory of a person from the collective mind for posterity.

48 Rudolf Brázdil, Hubert Valášek, and Zbynek Svitak, "Meteorological and Hydrological Extremes in the Dietrichstein Domains of Dolni Kounice and Mikulov between 1650 and 1849 according to Official Economic Records of Natural Disasters," Geografický časopis 55, no. 4 (2003): 325–53; Rudolf Brázdil, Hubert Valášek, and Katerina Chromá, "Documentary Evidence of an Economic Character as a Source for the Study of Meteorological and Hydrological Extremes and their Impacts on Human Activities," *Geografiska Annaler* A 88, no. 2 (2006): 79–86; Franz Mauelshagen, "Sharing the Risk of Hail: Insurance, Reinsurance, and the Variability of Hailstorms in Switzerland, 1880-1932," *Environment and History* 1 (2011); and Eleonora Rohland, *Sharing the Risk. Fire, Climate and Disaster. Swiss Re 1864–1906* (Lancaster: Crucible Books, forthcoming).

49 Richard Grove, „The Great El Niño of 1789–93 and its Global Consequences: Reconstructing an Extreme Climate. Event in World Environmental History," *The Medieval History Journal* 10, no. 75 (2007): 92–93.

50 Krebs, Horst. "Kripper Hagelkreuz," http://www.geschichte-kripp.de/32.html (2008, accessed May 2010); Hans Ehlert, "Der Hagelfeiertag im Lande Braunschweig," *Braunschweigische Heimat* 1 (1974).

Although the term itself is a neologism, it refers back to actions that were customary in the Roman Empire, in which the names of detested persons were deleted from the Annals and their statues destroyed. Merely pronouncing the name of the damned person was taboo. The felling of monuments is a present-day form of damnatio memoriae, as with the toppling of Saddam Hussein's statue in Baghdad in spring 2003. Another form of this process is documented from the dark period after the end of Nazi rule in 1945, when the only stamps still available in Germany bore the portrait of Adolf Hitler. Various measures were taken in different postal districts to avoid the memory of the now hated *Führer*. Some officials had his portrait garbled with a rubber mark or with a skull. Others branded it with the overprint "Deutschlands Verderber," meaning Germany's ruin.

The memory of some severe disasters was blurred by obscuring the real causes. The best known case is the San Francisco earthquake of 1906. It caused damage costing fifty billon dollars (in modern terms; this was the value estimated in 2008) and is therefore one of the most expensive natural disasters ever recorded.[51] The extraordinarily high cost of the damage was chiefly the result of leaking gas pipes causing fires that could not be easily extinguished, and the town was swiftly rebuilt. However, the authorities were unable to cope with the earthquake and its consequences. Efforts by geologists to introduce standards for earthquake-proof buildings were disregarded. Instead, the fact of the earthquake fell victim to a "conspiracy of silence" (Christof Mauch), and the disaster was officially renamed the "Fire of San Francisco."[52] The underlying message is obvious: fire is a hazard that humankind can handle, in contrast to earthquakes.[53]

Moreover, there are cases in which even extraordinarily severe disasters were not inscribed in the cultural memory at all. One example is the series of violent winter storms which ravaged western and central Europe between 14-18 January 1739. In

51 The losses amounted to between 350 and 500 million US dollars (estimated value in 1906). The equivalent value in the year 2009 was estimated using the change in wages for unqualified labour, see MeasuringWorth, "Seven Ways to Compute the Relative Value of a U.S. Dollar Amount—1774 to Present," http://www.measuringworth.com/uscompare/ (accessed May 2010).

52 Christof Mauch, "Silberstreifen. Naturkatastrophen und Fortschrittsoptimismus in der amerikanischen Geschichte," in André Kirchhofer, Daniel Krämer, Christoph Maria Merki, Guido Poliwoda, Martin Stuber, and Stepanie Summermatter, *Nachhaltige Geschichte. Festschrift für Christian Pfister* (Zurich: Chronos 2009), 149–67.

53 Christoph Strupp, "'Nothing Destroyed that Cannot Speedily Be Rebuilt.' San Francisco und das Erdbeben von 1906," in *Städte aus Trümmern. Katastrophenbewältigung zwischen Antike und Moderne*, eds. Andreas Ranft and Stephan Selzer (Göttingen: Vandenhoeck 2004), 132–71.

the main study of this event, the storm series is named Hilaire-Prisca after the saint's days of the first and the last day of its occurrence ("Hilaire" on 14 January and "Prisca" on 18 January), in line with the age-old practice of naming historic storms and floods on the North Sea coast after the saint's day on which they occurred.[54] On the continent, the storms persisted for about 100 hours, which is unique within at least the last 250 years. Given the extensive damage caused to buildings and the uprooting of forests and orchards, the socio-economic impact of the storms can be described as war-like. Just in the one tiny Swiss community of Beckenried (Canton Nidwalden), the local priest recorded the destruction of a thousand fruit trees. In several places in France and Switzerland, chroniclers mentioned spires destroyed and church roofs blown away by the gales. Even people were swept off their feet, and waterspouts were observed on lakes.[55] In many cases, people fled outdoors in panic when their homes were devastated by the high winds. The majority of farms in rural communities lost their roofs at the harshest time of year. Though these storms were well-chronicled, they were not retained in the collective memories of France and Switzerland.

The fact that this disaster was effectively lost to memory was a significant factor in the greenhouse discourse in France in the wake of the winter storm Lothar which devastated France, Switzerland, and southern Germany on 26 December 1999. In France, eighty-eight people died, and 400,000 telephone and power supply lines were knocked out, leaving two million people without electricity, in some cases for weeks. The insured losses were estimated at 5.5 billion Euros.[56] The unexpected vulnerability of modern society to the forces of nature traumatized the French public. In order to allay public anxieties, both the media and politicians stressed the exceptional character of the "storm of the century." The famous climate historian Emmanuel Le Roy Ladurie declared: "France has never experienced such a disaster! No event of comparable severity is known in the sources for at least four centuries."[57] Le Roy Ladurie's claim contributed to strengthening public acceptance of climate change. If the storms were really unprecedented, as he suggested, then the most likely explanation must be the

54 Today, the German Weather Services (DWD) name cyclones in alphabetical order, respecting gender equality by alternating between female and male names; FU-Berlin: Institut für Meteorologie, "Geschichte der Namensvergabe," http://www.met.fu-berlin.de/wetterpate/historie/ (accessed July 2009).

55 Daniel Krämer, "Als die Buchen und Tannen 'wie Vögelein' flogen. Die Winterstürme 'Marcellus' und 'Prisca' am 16. und 18. Januar 1739 und ihre Auswirkungen in der Zentralschweiz," *Geschichtsfreund* 162 (2009): 143–76.

56 Schweizerische Rückversicherungs-Gesellschaft (ed), *Natur- und Man-made-Katastrophen im Jahr 2006* (Zurich: Swiss Re, 2007).

57 Pierre le Hir, "Les historiens stupéfiés par la violence des dernières tempêtes," *Le Monde*, 7 January 2000.

hitherto disregarded greenhouse effect. For many French, the shock of Lothar was a wake-up call in this respect,[58] though its interpretation turned out to be questionable later on.

Why was the memory of Hilaire-Prisca not retained, neither in France nor in the Swiss cantons? One reason might be that the storms did not claim many victims. In England, the memory of a similar event, the Great Storm of 7-8 December 1703, was retained because it took the life of about eight thousand mariners and sunk thirteen Royal Navy vessels at a pivotal time (England was engaged in the War of the Spanish Succession against France).[59] Another reason might be related to the magnitude and ubiquity of the damage Hilaire-Prisca caused. Only the very poorest households were assisted in the Swiss cantons. Being more generous in such conditions would not only have exceeded the resources of the municipal and national treasuries, but even the capabilities of modern insurance prior to the introduction of a worldwide reinsurance system. The sheer inability of authorities to provide desperately needed assistance contravened the principles of paternalism, which was the primary legitimacy of the ruling aristocracy, and this may be an important reason why this event was not inscribed in the cultural memory.[60] The earthquake in 1556 in Shaanxi, China, seems to be a similar case. Though it tops the list of the deadliest earthquakes in human history, scoring eight on the Richter scale and allegedly claiming 830,000 victims, it is only scantily described in the Chinese historiography. According to Andrea Janku, the imperial administration was not able to provide disaster relief because it it no longer had adequate resources, having had huge expenditures for frontier defense in previous years. Hence, court historians did not have any motive to glorify the generosity of the regime.[61]

Finally, in looking at the non-remembrance of disasters, we have to consider the case of Switzerland, where the sheer lack of severe disasters between 1882 and 1976 led to a process of unlearning, resulting in a total lack of civilian disaster awareness and

58 Pfister et al., "Winter-Storms in Early Eighteenth-Century Europe."

59 Historian Trevelyan describes the possible role of the event in history thus: "English naval supremacy was nearly broken and the war lost by the sudden, brief and unprovoked intervention of a neutral power. The Great Storm, without rival in the recorded history of our islands." George Maculay Trevelyan, *England under Queen Anne. Part 1—Blenheim* (London: Longmans, 1930), 308.

60 Pfister et al., "Winter-Storms in Early Eighteenth-Century Europe."

61 Andrea Janku, "'Drei lebenslange Freunde / In einer Nacht dem Sand anheim gegeben.' Das Erdbeben von 1556 in Shaanxi (China) " in *Katastrophen. Vom Untergang Pompejis bis zum Klimawandel*, ed. Gerrit Jasper Schenk (Ostfildern: Jan Thorbecke Verlag, 2010), 81–92.

preparedness. Most flood marks were gradually destroyed and the centennial of severe events was no longer commemorated. At first sight, this trend seems to be a result of the introduction of natural hazard insurance, the availability of new technologies for managing disasters (helicopters, bulldozers, and radio communication), and cultural change. However, a recent investigation concluded that the impulses necessary for reviving the "cultural memory" of natural disasters were almost completely absent.

Firstly, in this respect, "severe" disasters needed to be properly distinguished from less severe ones. It is generally accepted that the severity of a disaster depends on two parameters, namely the number of victims and the financial cost of damage. While the number of victims may be compared in space and over time, the financial cost of damage has to be converted from the currency of the time into present-day monetary values. This can be calculated as follows. First, a representative table detailing a mason's daily wages for the period 1800-2007 was produced. Monetary losses as a result of historical disasters were then expressed in terms of a number of mason's workdays. This number was finally reconverted into contemporary Swiss francs by multiplying the number of workdays with the daily wage in the respective year.[62] Needless to say, this procedure can only give us an approximate figure. The baseline of a "severe" disaster was set at 300 million francs (at their value in the year 2000), or fifty victims (figure 5).

The graph only shows the monetary losses caused by natural disasters. Between 1806 and 1881, 650 people were killed by natural disasters in Switzerland, mostly by the two rockfalls at Goldau (1806) and Elm (1881).[63] The average sum of annual losses reached 42 million francs (at their value in the year 2000); most of these losses were the result of severe floods and the Glarus fire (1861), which was exacerbated by violent *Föhn* winds. Between 1882 and 1976, 213 people were killed, most of them by avalanches in the winter of 1950-51,[64] and by the glacier break-up in Mattmark in 1965. Average monetary losses were four times smaller than in the preceding phase. From 1977 to 2008, the number of disaster victims fell to forty. On the other hand, monetary losses

62 Roman Studer and Pascal Schuppli. "Deflating Swiss Prices over the Past Five Centuries," *Historical Methods* 41, no. 3 (2008): 137–56; Christian Pfister and Roman Studer, "SWISTOVAL—Der Historische Geldwertrechner für die Schweiz ab 1800," in Traverse 1 (2010): 272–84.

63 Stephanie Summermatter, "'Das Thal in Schutt und Grauen.' Der Bergsturz von Goldau (Schweiz), 2. September 1806," in Schenk, *Katastrophen*, 119–31; Hans-Peter Bläuer, "Der Bergsturz von Elm am 11. September 1881," in Pfister, *Am Tag danach*, 113–30.

64 Laternser and Amman, "Der Lawinenwinter 1951," 166.

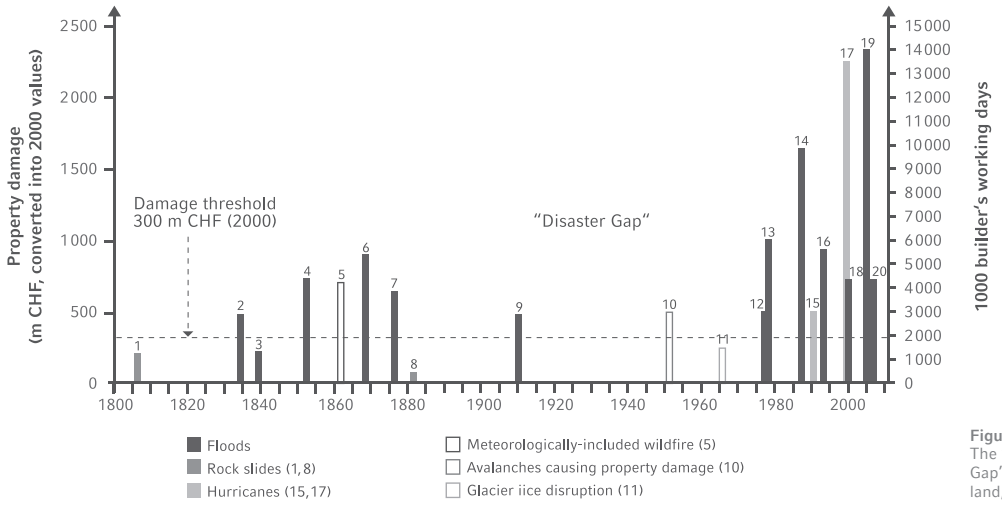


Figure 5:
The "Disaster Gap" in Switzerland, 1882-1976

skyrocketed to 343 million francs (value in the year 2000), which is thirty-four times more than in the preceding period. This increase results from a much higher number of severe cases, rapid urbanization, and a higher value density.

The disaster gap, the rare occurrence of severe hazards during almost a century, is a significant element in explaining the loss of functional disaster memory. This interpretation is underlined by the fact that the historically unique increase in the frequency and severity of disasters over the last thirty years, possibly as a consequence of the increased greenhouse effect, has contributed to the development of a new kind of risk culture based on a systematic retrieval of disaster memories from the archives.[65] This knowledge is used to keep local "risk areas" subject to a building ban, something which should be understood as the legal institutionalization of past disaster memories for the future.

65 Pfister, "Katastrophenlücke," 245.

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