Epilogue

An inevitable disaster or another paradise lost?

Hermann Kreutzmann

The New Year of 2010 brought with it a catastrophe to the Hunza Valley, in Gilgit-Baltistan. On 4 January, a crack in the slope of the village lands of Atabad, in the Upper Hunza Valley, widened, causing terraces and houses to collapse. A major landslide subsequently caused a wave of dust and gravel, disguising huge solid blocks of rock that had come down which eventually dammed the Hunza River. Since then, that water has been collecting into a massive lake, which by mid-May was perceived as threatening to overflow its banks, inundating dozens of villages.[33]

The crack in the slope was actually discovered more than a decade ago, in the aftermath of the Astor earthquake of 1998. At that time, humanitarian organisations such as Focus, an AKDN-funded NGO, advised nearby villagers to begin moving their homes, warning that the area was highly unstable. Government authorities refrained from designing a proper resettlement scheme. Understandably, however, the villagers hesitated in doing so, as a result of which 20 people lost their lives, nearly 50 houses were completely destroyed, and about 1500 people have been displaced. Nearly two kilometres of the Karakoram Highway, Chinese-engineered work on which was taking place, was damaged and left covered by debris; other roads and bridges

33 The photograph was taken on August 26, 2013; © Hermann Kreutzmann

have been submerged in the Gojal area of Upper Hunza, including Gulmit, the administrative *tehsil* headquarters of Gojal. The lake level continued to rise.

Mitigating the disaster fell to the National Disaster Management Authority (NDMA), which was confronted with constructing a spill-over channel to lower the lake surface. This is meant to stop the water level from rising, and could eventually allow for a controlled drainage. When the landslide occurred, the Hunza River was releasing only two percent of its summer melt waters; in the beginning of summer the run-off rate increased day by day, while politicians, activists and engineers debated how to proceed. At that time some suggested utilising the lake water for power generation or tourism purposes, others discussed the stability of the dam, though often without sound geological and geo-morphological evidence. Another faction wanted to destabilise the dam by bombing it, to get rid of the potential problem once and for all.

Inevitably, culprits were sought and easily found on the side of the administration and concerned authorities, demonstrations were staged against bureaucrats and politicians, mainly accusing them of inaction. Initially, the supply of basic foodstuffs and the transport of ailing people were enabled by army helicopters. As the crisis grew, a ferry service allowing the transportation of people and goods was implemented. On both sides of the lake, trucks ready to transport goods to and from the Sost Dry Port, the hub for China-Pakistan trade across the Kunjerab Pass, were stuck. International trade along the only functional corridor between Central and South Asia was halted for some time. After introducing the ferry surface trade and goods exchange were resumed at least from spring to autumn. Winter condition with freezing of the lake surface has remained a grave obstacle for any kind of communication.

Culture of adaption and reaction

As a highly vulnerable high-mountain valley system, Hunza is characterised by the most extensive glaciation outside the polar regions, as well as some of the steepest slopes on Earth. Natural and manmade disasters are not unknown in the Karakoram, and survival under these harsh conditions has brought fame to the local Hunzukuts, contributing to their reputation as capable and hardy mountain folk. Even so, the elders in Hunza termed the January landslide the most significant natural disaster their area had experienced to date.

From 1830 to the 1990s, a total of 124 damaging events, as recorded from a range of sources, occurred in the Hunza Valley. The single greatest destructive force has been the movement of glaciers, accounting for almost half of all recorded disasters. In addition to the slow destruction that glaciers can cause to cultivated lands, irrigation sys-

tems and roads, glacial surges can be triggered by landslides. More seriously, advancing glaciers often lead to the formation of lakes and natural dams, posing the potential for dangerous glacial dams burst and the sudden massive release of temporary reservoirs. The second most destructive natural disasters are avalanches, followed by weather-related action from wind and thunderstorms.

To a significant extent, the cultural landscape of the Hunza Valley is the result of coping with these disasters. Within the period of recorded observation, there have only been four events leading to the complete abandonment of settlements in the Hunza Valley. A mudflow in 1830 and various glacier advances in the Chupursan Valley have been the most dramatic of events, as a consequence of which the whole tributary valley of the Hunza River had to be given up for habitation for decades. It was only within the last century that systematic resettlement resumed, with more than 330 households living there today.[34]

Less than two decades later, in 1858, a severe rockfall at Sarat, and the subsequent damming of the Hunza River, caused the flooding of all villages from Sarat to Pasu.[35] Incidentally the site is located within two kilometres of the present dam; the exact number of victims could not be established at that time. Before their destruction, both of these areas had been newly habituated by settlers from central Hunza and by migrants and refugees from Wakhan. After the rockfall, the young village of Sarat was abandoned and only resettled after 1931.

In general, through all of these years, direct earthquake-triggered mass movements have not been registered, although 42 earthquakes occurred in the Hindukush-Karakoram region between 1876 and 1911.[36] Out of 102 earthquakes with epicentres in northern Pakistan between 1912 and 1971, no direct destruction of habitations is recorded for the Hunza Valley. The January 2010 disaster is thus a significant addition to this data: an earthquake contributed to the destabilisation of the slope, the slope collapsed years later, causing the blockage of the Hunza Valley and the formation of the Atabad Lake.

A lake of substantial size to remain for ever?

34 See a table with all events recorded from archival and oral sources in Hermann Kreutzmann (1994; 2006, pp. 253-255).

35 For the case of Pasu see Hermann Kreutzmann 2012.

36 See table in Hermann Kreutzmann (2006, pp. 257-258).

Just two kilometres from Atabad, Sarat is an important historical reminder of the immense potential for destruction that exists in the former today. In 1858, a lake similar to today's in Atabad was formed in Sarat. After reaching a length of more than 20 km, the dam collapsed and the lake released a flood that followed the course of the Hunza River into the Gilgit and the Indus.

At that time, the waters entering the Indus flowed with such force that the river levels rose alarmingly around Attock, where the Indus leave the mountainous terrain to enter its floodplain. A contemporary commentator, Frederic Drew, wrote in his book: "The next flood of which we have a record is ... the one that in the year 1858 did so much damage at Naushahra. My information about this is derived chiefly from the above-quoted letter of Major Beeher, from a Memorandum by Captain Henderson which precedes it, and from papers by Captain Montgomerie and Mr. Obbard. The following is the description of it. At 5 A.M. on the 10th August, 1858, the Indus at Atak (Attock) was very low; at 7 A.M. it had risen 10 feet; by half an hour after noon it had risen 50 feet, and it continued to rise until it stood ninety feet higher than in the morning. The fall was very slow; during the 12th August it returned very much to the position it occupied before the flood came. Captain Henderson speaks of the water as 'welling up quietly but very rapidly', and says that four hours after the rise began, and three and a half hours before the maximum, he crossed the river in a boat."[37]

The destruction caused in the lowlands alarmed the colonial authorities to look into the flood regime more thoroughly. Frederic Drew and others[38] wrote reports and tried to record events that sometimes destroyed valuable infrastructure and village lands down stream as well as inferring loss of lives.

What is likely to happen today, a century and a half later? If the Atabad dam would collapse and the Gojal lake would subsequently empty rapidly, the damage would be far more dramatic than it was in 1858. During the 20th century, the Karakoram Highway has changed the infrastructure and livelihoods of both the Indus and Hunza valleys, leading to an expansion of follow-up construction of link roads, extension of village lands and settlements closer to the riverbanks. Today, every tributary river is connected to the larger water bodies by a jeepable suspension bridge or concrete viaduct. Development agencies, the Public Works Department – in Pakistan sometimes labelled as 'public's worst department' – and international donors have contributed to bridge construction and road building. The Tarbela Dam on the Indus claims to be the

37 Frederic Drew (1875, p. 419). See as well the geomorpholoical investigations by Karl-Heinz Paffen, Wolfgang Pillewizer and Hans-Jochen Schneider (1956, p. 14); Kenneth Hewitt (2010).

38 E.g. Kenneth Mason 1929:

world's largest earth-filled dam, is the major regulator for Punjab province's irrigation, and houses the country's prime hydro-electric power-generation station. Above Tarbela, the Basha Dam is currently under construction, deemed a feasible plan despite high probabilities of earthquakes and flood releases. Considering the scope of the settlement, flooding resulting from the Atabad landslide would be a disaster of massive proportions.

Subsequent to the event progress was very slow and affected people were gravely disappointed over inaction. In the meantime the picture has changed. About 457 households (chula) in Gojal have received compensation from a relief package between 6 and 8 lakh Rs each. To the households who lost family members 20 lakh Rs were paid. International agencies - World Food Programme, Pakistan relief, Focus Humanitarian Assistance Pakistan, China Aid - provided food aid. Especially the role of the chinese neighbours was lauded as a new actor in the relief cooperation. Between 2010 and 2013 about 8,400 tons of food aid reached Gojal via Khunjerab Pass from Xinjiang Province.

The lake level was significantly reduced so that certain lands and stretches of the Karakoram Highway have reappeared. Others like the village of Ainabad (Goshben) seem to be lost forever. Chinese Roadbuilders and engineers who have rehabilitated the Karakoram Highway in recent years are active in drilling tunnels above the lake, shuttling equipment for blasting and construction between the ports of Atabad, Gulmit and Shishket. Optimistic guesses suggest that overland traffic might be resumed by the year 2015; the speed of action seems to support this thesis. The lake will probably remain and has significantly changed not only the infrastructure; every walk of life has to adjust to the changed environmental and logistic conditions.

References

Drew, Frederic 1875: The Jummoo and Kashmir Territories. A geographical account. London: Edward Stanford, 568 pp.

Hewitt, Kenneth 2010: Gifts and Perils of Landslides. Catastrophic rockslides and related landscape developments are an integral part of human settlement along upper Indus streams. In: American Scientist 98, pp. 410-419.

Kreutzmann, Hermann 1994: Habitat conditions and settlement processes in the Hindukush-Karakoram. In: Petermanns Geographische Mitteilungen 138 (6), pp. 337-356

Kreutzmann, Hermann 2006: Settlement history of the Hunza Valley and linguistic variegations in space and time.In: Kreutzmann H. (ed.): Karakoram in transition. Culture, development and ecology in the Hunza Valley. Oxford, New York, Karachi, pp. 251-272

Kreutzmann, Hermann 2012: After the flood - Mobility as a survival strategy in high mountain oases. The case of Pasu in Gojal, Hunza Valley, Karakoram.
In: Die Erde 193 (1-2), pp. 49-73

Mason, Kenneth 1929: Indus Floods and Shyok Glaciers. In: The Himalayan Journal 1, pp. 10-29

Paffen, Karlheinz, Wolfgang Pillewizer and Hans-Jochen Schneider 1956: Forschungen im Hunza-Karakorum. Vorläufiger Bericht über die wissenschaftlichen Arbeiten der Deutsch-Österreichischen Himalaya-Karakorum-Expedition 1954. In: Erdkunde 10 (1), pp. 1-33