

Reconstruction of Punakha Dzong Bazam

A TECHNICAL FEAT

New Bazam

A new bazam (cantilever bridge) over the Mochhu River leading to the sacred Punakha Dzong, inaugurated by H.E. Jigme Y. Thinley, Prime Minister of Bhutan, and Ambassador Harald N. Nestroy, Chairman of Pro Bhutan – Germany, a philanthropic NGO of Germany on May 10 last year, is an enormous technical challenge.

The old bridge built by Shabdrung Ngawang Namgyel, the founder of Bhutan, shortly after the construction of Punakha Dzong in 1637 was destroyed in 1958 by a ravaging flood unleashed by glacial upheaval in Bhutan Himalayas. For the benefit of pedestrians and cattle, a steel cable bridge was built. But that ungainly and improvised construction offended the beauty of Punakha Dzong which is of paramount importance for Bhutan, her monarchy, her history and her spiritualism. The only course to restore to the Dzong its ancient glory and importance was to rebuild a new wooden roofed cantilever bridge in the traditional Bhutanese architecture. Moreover, the *bazam* itself is of utmost cultural-religious importance – it *quasi*

belongs to the ritual instruments of the Dzong when His Holiness the *Je Khenpo* enters Punakha Dzong – his winter residence along with 500 monks, or when the colourful processions of monks and believers visit the Dzong on many a religious festival.

Till 1999 no one believed that the steel cable bridge could ever be replaced by a new wooden *bazam* built in the traditional Bhutanese architecture. The task looked more formidable with the additional width of the river created by the flood.

In 2000, Lyonpo Sangay Ngedup, the then Prime Minister of Bhutan asked Dr. Werner Haring, President of Pro Bhutan – Germany whether his organisation would rebuild the Punakha *bazam* in the traditional Bhutanese



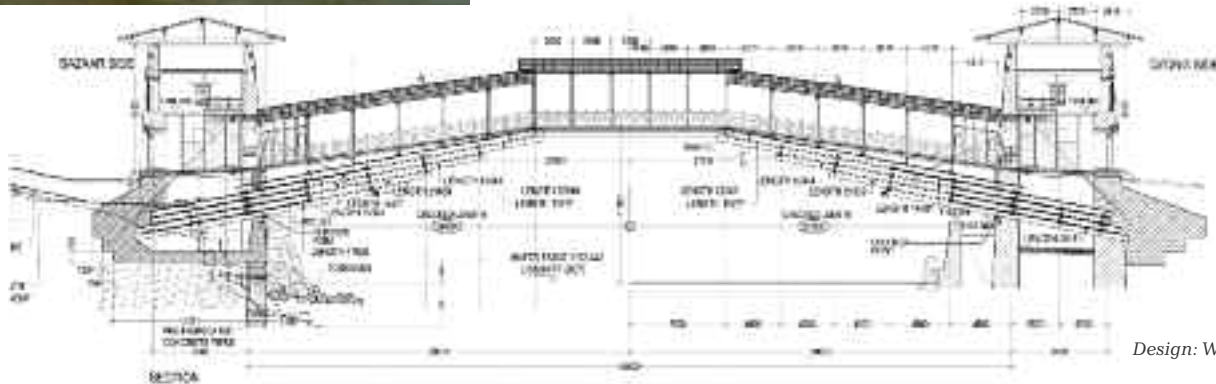
Reconstruction of Punakha Dzong Bazam - A technical feat



Bazam near completion



Work in progress



Design: Wolfram Kuebler



Work in progress



architecture. Earlier Pro Bhutan – Germany had, as a gift to Bhutan, planned, financed and built the Punakha Hospital and Policlinic and the Punakha Training Centre for medical technical staff.

Building a traditional *bazam* was a daunting task both financially and technically, especially because of the frightening dimension of the new bridge. With the widening of the river, the span of the *bazam* needed to be increased to 55 metres from the original 35 metres. Fritz Baumgartner, architect and project-co-ordinator of Pro Bhutan – Germany in Bhutan, studied traditional *bazams* and after long research, made the first feasibility plan for the project.

One of the main problems was the absence of drawings or plans of traditional *bazam* though there are still a large number of such cantilever bridges in Bhutan, of course though shorter than the Punakha *bazam*. Only some old photographs like the one of the original Punakha *bazam* could be found. Wangduephodrang earlier had a *bazam* with the largest span but that too was destroyed by the 1958 floods.

Fritz Baumgartner's study made it evident that without the assistance of an experienced engineer, fully conversant with designing long span bridges, and technical planning, the Punakha Dzong *bazam* could not be rebuilt.

Walt + Galmarini AG, Switzerland, a renowned engineering company specialised in designing bridges of all kinds agreed to design the new Punakha Dzong *bazam* in the traditional architecture with most modern technology, free of charge. Their



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design incorporated invisible steel elements into the wooden structure to stabilise the high bridge arch and to prevent it from twisting or falling sideward.

Another formidable task was to protect the new tower of the *bazam* to be built in the bend on the right bank of the river where the strongest impact of a flood is expected. Punakha Dzong and the *bazam* are situated in the 'red area' of 'GLOFs' (Glacial Lake Outburst Floods). Prof. Juerg Speerli from a Technical University near Zurich designed the fortification

of the river bank against floods, also free of charge.

After long deliberations, the final technical design elaborated by Wolfram Kuebler, engineer with Walt + Galmarini AG, was agreed upon and on November 24, 2004 Ambassador Nestroy signed the project agreement on behalf of Pro Bhutan – Germany with Lyonpo Jigme Y. Thinley, then the Minister for Home & Cultural Affairs, now the first Prime Minister of the constitutional monarchy of Bhutan.

By this time, Ambassador Nestroy had raised substantial funds as well as ensured financial commitments of private donors in Germany and the Foreign Office, Berlin.

At the end of 2006, the steel cable bridge was pulled down to pave way for the construction of the new traditional wooden *bazam*. It was completed in record time by Mr. Baumgartner and his team in May 2008.

The new *bazam* of the Punakha Dzong has with 55 metres, the longest unsupported span in the traditional cantilever architecture in the world. It is a mix of medieval traditional design and an innovative modern technology.

The *Puna Mochhu Bazam*, as it is renamed now, is an important contribution to the celebration of 100 Years of Monarchy which was celebrated last year. It provides a dignified access to the Punakha Dzong, after a lapse of 50 years. Like all the previous monarchs, His Majesty King Jigme Khesar Namgyel Wangchuck was coronated in Punakha Dzong with all the religious rituals. In addition, the *bazam* is a symbol of friendship between the peoples of Germany and Bhutan.

Pro Bhutan – Germany welcomes donations for the recovery of the high expenditures incurred on the construction of the bazam. Donors of Euro 500 or more will receive, as gift and token of appreciation, the impressive picture book BHUTAN illustrated with stunning photographs and texts in English and German by Harald N. Nestroy.

Text: Chimmi Tshering,

Photographs: Pro Bhutan, Germany and Kurt and Pamela Meyer

For more details: Contact Harald N Nestroy at h.nestroy@probhutan.com

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Post Box # 238, Thimphu, Bhutan
Tel: 00975-2-327177 Mob: 00975-1760 0396
Email: bhutanaries@druknet.bt
Website: www.bhutanaries.bt, www.bhutanaries.com