

An aerial photograph of a rugged, rocky mountain landscape. The terrain is characterized by numerous ridges, valleys, and sharp peaks. A large, light-colored rock formation, possibly a glacier remnant or a large rock outcrop, is prominent in the lower right foreground. The overall scene is one of a high-altitude, mountainous region.

GLACIER GRAFTING

BIRTH OF GLACIERS IN BALTISTAN

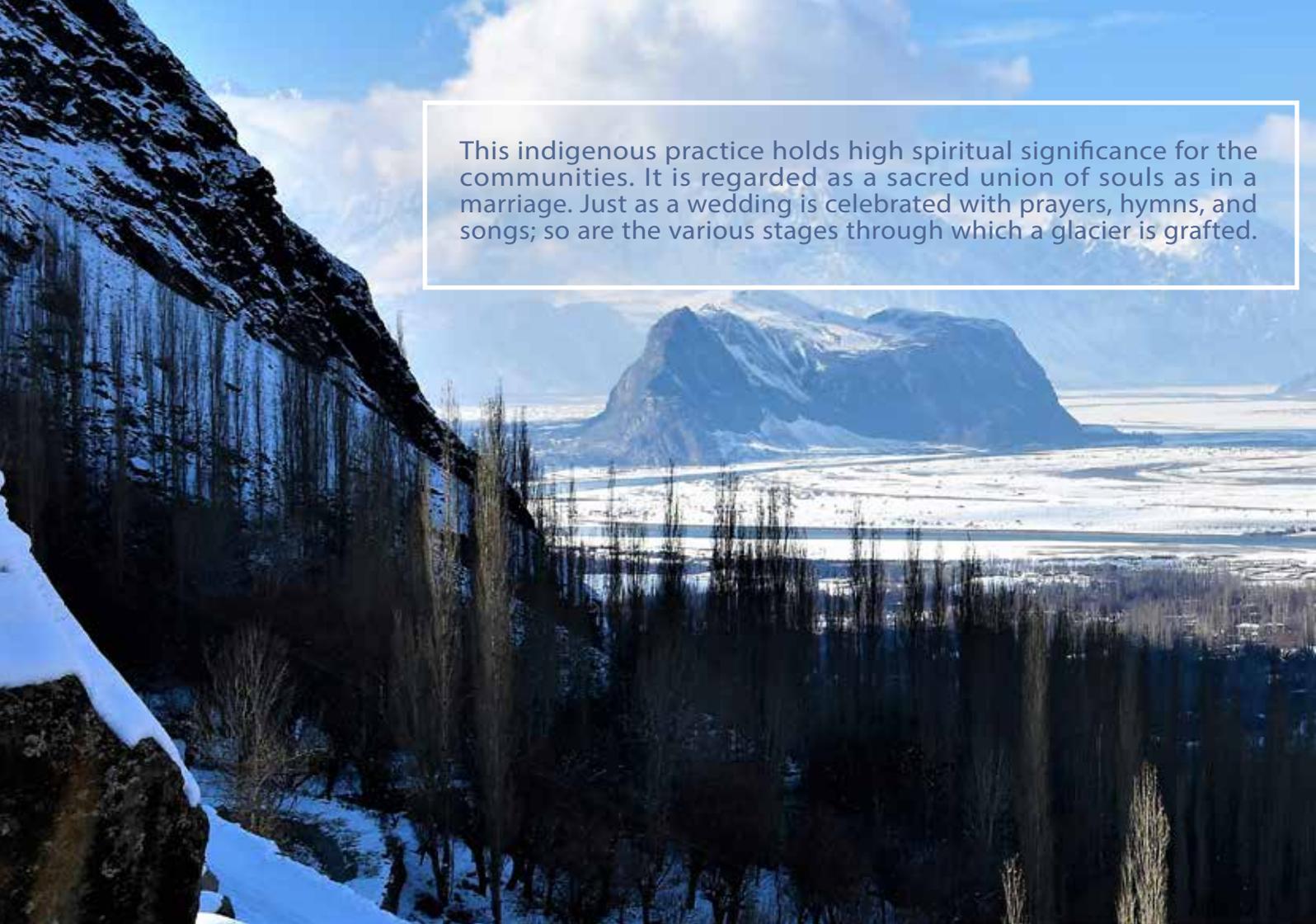




As the globe warms up due to the impact of climate change, the glaciers of Gilgit Baltistan and Khyber Pakhtunkhwa in Pakistan are beginning to melt at an increasingly fast pace, resulting in catastrophic disasters like Glacial Lake Outburst Floods (GLOFs).

In response to the melting glaciers, an indigenous practice of Glacier Grafting has been preserved by the people of Baltistan known as 'Gang Khswa' (گنگ کھسوا), in their native language, meaning to 'nurture with deep affection'.



A scenic view of a glacier flowing down a rocky mountain slope. The glacier is a mix of white ice and dark rock, with numerous vertical crevasses. In the background, a large, snow-capped mountain peak rises against a blue sky with scattered white clouds. The foreground is filled with a dense forest of evergreen trees, some of which are covered in snow. The overall scene is a beautiful representation of a high-altitude, cold environment.

This indigenous practice holds high spiritual significance for the communities. It is regarded as a sacred union of souls as in a marriage. Just as a wedding is celebrated with prayers, hymns, and songs; so are the various stages through which a glacier is grafted.



Legend has it that the Kondus Glacier in Khaplu in Gilgit Baltistan is known as the oldest glacier grafted by the Natives in the region and is estimated to be about 636 years of age.







With the first step, a site is selected of an altitude higher than 4000 metres and the soil temperature below 0° Celsius. The Glacier Grafting initiates with the glaciation process, where minimum exposure to the sun and maximum exposure to the wind during spring and summer is required for the hardening of the ice. A terrain with debris of medium sized stones and boulders is selected for 'Glacier Breeding'.





The next step is collection of ice masses from twelve different glacial sites, with equal parts of the female (mo-མོ) and male (pho-ཕོ) glaciers. Pho-ཕོ is darker in color due to its debris and Mo-མོ is beautifully transparent, with white to blue hues in colour. The Mo glacier is also attributed to having a high ablation (melting) rate, while the Pho glacier is able to push through boulders.

As tradition holds, the ice pieces are transported in bi-hook baskets (ཇིས་ཡོལ་ཚོ་རོང་) by the young and strong on their backs, continuously walking on foot without any break, to ward off bad luck during their journey.



The ice masses are taken directly to the bed of birth or the ice-well of the glacier, which is either a naturally formed cave or a purposely dug 'freezing room.' Just as the wedding of two lovers, the ice-well is where the pieces of the Mo and Pho glaciers are placed, along with supplements and gifts.



Elders deemed at a higher spiritual level perform the 'plantation' ritual of the ice masses. Three to four people get inside the ice-well to lay the ice pieces onto the ground in an orderly manner. Considered to be the 'parents' of the glacier being grafted, elders place the ice pieces with prayers on their lips, purity in their intentions, and a great devotion in their hearts for a healthy growing glacier baby.



Pieces of the 'mo' and 'pho' glaciers are placed side by side, with apricot kernels, pumpkin pots, husks of wheat, and a blanket covered with apricot nuts to leave no space between them. Organic spring water transported in a goat-skin leather bag (called 'mashak') is sprinkled onto the ice. Catalysts like coal are added into the ice-well to keep the glaciers safe and enabling them to amalgamate at a faster rate.

A folk song is then sung as a lullaby by the 'parents' for the baby glacier and as a wedding ritual for the union of both glaciers.

The hymn assures all the love and care to the baby glacier, encouraging her to have courage and resilience, and to survive and grow through all tests of time and circumstances.



A HUNZA RAJAH'S BAND.



Verses of the Holy Quran are then recited along with narrations from the Battle of Karbala, and a female goat is sacrificed for the glaciers to be divinely protected.





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No one is allowed to visit the site for the next five years to protect the nascent glacier from getting affected by any sort of worldly activity. Walls and shades are also built to protect the glaciers from the sun.



The wedding of the glaciers is an event of great joy, symbolizing hope and continuity in the form of the most potent source of life – water.

The indigenous practice of grafting these glaciers becomes a source of drinking water, keeping both humans and pastoral lands refreshed; while ensuring the growth of vegetation and biodiversity, particularly for flourishing the native flora in the region.





GLOF-II project is helping the communities in preserving these indigenous practices, such as Avalanche Harvesting, Glacial Grafting and Ice Stupas for water conservation in vulnerable valleys of northern Pakistan.



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Scaling-up of Glacial Lake Outburst Flood Risk Reduction in Northern Pakistan (**GLOF-II PROJECT**)

A Project by
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