

Architecture | Can we inhabit nature without disturbing it?

The best mountain dwellings both harness and preserve the awesome natural landscape, writes *Harriet Partridge*

Sublime heights

In 1923 Aldous Huxley noted that “a walk among the hills was somehow equivalent to church-going”. Centuries of artists and philosophers have mused on the ability of hills and mountains to evoke a sense of greater being and the power of the “sublime” – the experience of being both awestruck and uncomfortable, appreciating the terrifying magnitude of nature.

Mountains offer a challenging environment for architecture, and the increasing number of visitors to mountain regions has often resulted in a greater need for heavy infrastructure. These factors raise questions beyond the subject of engineering. Can we inhabit nature without disturbing it? Can we capitalise on extreme conditions for the design of new structures? And can architecture enhance our enjoyment of the natural environment?

Whatever the approach, future generations' experience of mountains depends on how we value them today. Last year, the *Constructive Alps* exhibition and award for sustainable building in the Alps received 400 entries – twice as many as in 2010, across an alpine territory that encompasses eight countries, 192,000 sq km and an arc 1,200km long (from Nice to Vienna). This is a promising sign of the respective Alpine Clubs' engagement with the importance of these areas and the need to preserve and harness our natural landscape.

Any reflection on mountain architecture would not be complete without a mention of Peter Zumthor's *Therme Vals*, already a seminal work in not only Swiss but global architecture. Formed in stone cut from the surrounding mountains, Zumthor intervenes



Monte Rosa Hut interior — Tonatiuh Ambrosetti

with nature through thoughtful and ascetic architecture to create a realm where our views of the surrounding landscape are guided and our senses heightened through the deliberate use of mist, water, sound, light, shadows, temperature, smells.

At 2,833m, Zermatt's Monte Rosa Hut embraces the challenge of building somewhere without existing infrastructure. The architects Bearth and Deplazes were keen not to lose the essence of this project: a simple “hut” to house mountain explorers, while also employing the latest technologies: the luxury of piping hot solar-powered showers, a reservoir 40m away that doesn't freeze, stored solar energy (providing 90 per cent of the building's electricity) for overcast days and a computerised energy management system constantly monitored by scientists in



Monte Rosa Hut in Zermatt, designed by architects Bearth and Deplazes — Tonatiuh Ambrosetti



Therme Vals designed by Peter Zumthor — 7132 AG

The ethos is for zero-impact dwellings that counter heavy footprints and respect nature

Zurich to respond to weather conditions and the visitors' needs. The project, a collaboration with ETH Zurich university, benefited from the luxury of time. A workshop of students spent six years exploring a range of concepts in concrete, stone, steel and timber, before presenting them to an external jury and gradually honing the end result. The building is almost entirely energy self-sufficient and the surrounding landscape glistens in its aluminium façade.

Deplazes draws on a pre-20th-century understanding of and living

in balance with nature. Now, increasingly, we delegate our ideas of how to live to technical inventions – take cooling or heating systems, for example – which he says are clever but should not drive design. He refers to this as “global silliness”. “We build glass skyscrapers in the desert” and this, he explains, is the problem: contemporary architecture has forgotten to solve problems.

The Italian Architecture studio LEAP-factory (LEAP being an aim for all its structures: “Living Ecological Alpine Pods”) – talk to me about how the economic boom and mass tourism have “endangered the balance” of alpine regions. But there is a crucial distinction between the well-trodden valley floor and the high-altitude peaks that present opportunities for more daring solutions. The studio's ethos is for architecture on

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“tiptoes”, zero-impact dwellings that counter heavy footprints and leave no trace on the landscape.

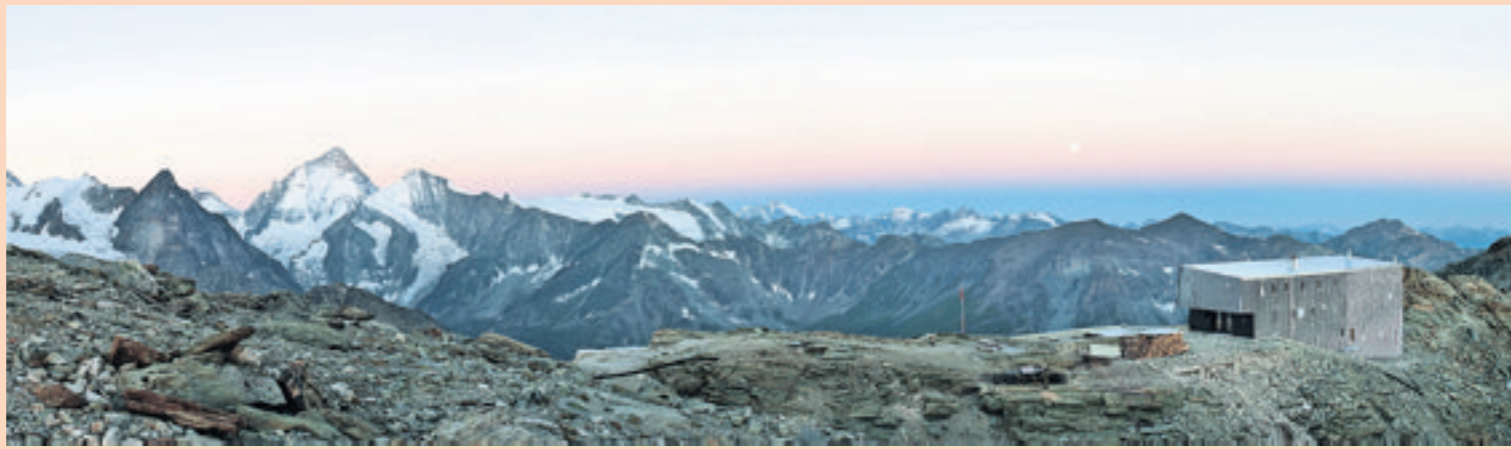
LEAPfactory's Gervasutti bivouac follows in the (tiptoe) footsteps of many traditional alpine refuges in the Scottish Highlands and wilderness huts in the Nordic regions. A shared etiquette applies at these refuges: they are left as found, unlocked and with a fire laid ready for the next visitor.

The Gervasutti refuge (named after the 1940s pioneer of the hard route up the Grandes Jorasses, Giusto Gervasutti) is a year-round “bivouac” for hardy climbers or the base point for day excursions. This was the first of LEAP's S1 modules. Three others are part of the LEAPrus alpine station, 4,000m up Mount Elbrus (the highest peak in Europe, at 5,642m) in the Russian Caucasus. They are currently working on their S3 module for the Courmayeur ski area in Italy - a foundation-free, lightweight structure that can grow in size (through its modular components) or be relocated elsewhere, leaving behind it no trace or damage on the landscape beneath.

At high altitude all these buildings invite the intrepid traveller to contemplate the sublime



Construction of a LEAP dwelling — Mattuzzi Francesco



Tracuit Mountain Hut in Val d'Anniviers, designed by Savioz Fabrizzi Architectes — Thomas Jantscher

The LEAP modules are not without critics for their futuristic appearance. Defenders believe this deliberately high-tech aesthetic is a good thing, acting as a beacon for surrounding travellers. It is the paradox of architecture on “tiptoes” in terms of footprint on the ground but the opposite in terms of appearance - a stunning outpost on the mountain peak. LEAP's inspiration comes from 1960-1970s experimental architecture: modularity, prefabrication, ready-made objects and visions of the future, from Buckminster Fuller to Archigram, Superstudio, Jean Prouvé and Charlotte Perriand, plus inspiration

from pop culture and the 1955 film *Conquest of Space*. The studio likens its refuges to outer space pods, describing them as a “last human outpost, a temporary guest of a hostile and untouched territory, having a light relationship with the ground”. Its designs, though, are ultimately led by functionality and the challenging demands of the site: wind and snow loads, energy efficiency, shell performance, portability of components, assembly and disassembly.

It is perhaps easy to understand critics' reservations over what might appear to be superficial or flippant aesthetics for mountain proposals in view

of the recent competition entry from Czech studio, Atelier 8000, for a hostel among Slovakia's High Tatras mountains. Balanced on its side, the sight of this cube-shaped building is tantalising, extraordinary, apocalyptic even. Despite claiming to have minimal carbon footprint, its actual imprint on the ground is significant and its appearance perhaps more in defiance of nature than in homage to it.

Cattle herds do not graze (in the summer months) above 2,000m and therefore no historic tradition of construction can be found beyond this altitude in the Alps, except for huts built in the past

100 years or so for climbers. Most of the basic high-altitude huts of this kind are now in need of significant repair, as well as upgraded energy use and waste management. Refurbishment proves inefficient both economically and environmentally, as do previous construction methods in such extreme conditions. The Tracuit Mountain Hut (3256m) in Val d'Anniviers, completed last year by Swiss Savioz Fabrizzi Architectes, replaces the existing, energy-demanding 1929 hut below the



“The Wanderer above the Sea of Fog” by Caspar David Friedrich

Getty Images/Bridgeman



Interior of LEAP Gervasutti (Living Ecological Alpine Pod) — Mattuzzi Francesco

ascent to the Bisshorn, Weisshorn or Tête de Milon. On a ridge between cliff and glacier, every part of the site's extreme conditions is utilised in the new building: its southern façade acts as a solar collector from its expanse of glazing and solar panels, while other façades have few openings and effective insulation. Concrete is restricted to the foundations and the building is a prefabricated timber structure, delivered to the site by helicopter and clad in situ with stainless steel, the entire assembly taking only nine days. The building shimmers in all lights, capturing and distorting the surroundings in its reflective exterior: a distinctive and intelligent building on this cliff edge.

There are some who mourn the loss of the traditional hut - stone walls, double-pitched roof and wooden shutters - but, says Savioz, “It generally takes one night in a ‘new generation’ hut to make them change their mind.”

At high altitude, only accessible on foot, in their distinct and balanced ways, all these buildings invite the intrepid traveller to contemplate the sublime - they are perhaps today's version of the figure in Caspar David Friedrich's “Wanderer above the Sea of Fog” (1818) - but also the architects' ingenuity.



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