

Bridges of the thin air

Jürg Conzett is a high wire act, following in the footsteps of the Swiss engineering tradition. This belies his central contribution to reviving vernacular strickbau buildings in contemporary form, with Graubünden architects like Zumthor, Gion Caminada and Conradin Clavuot

ONE MARCH MORNING in 1999 Jürg Conzett woke in his Graubünden home near Chur. He went, as he does most days, to the engineering firm offices he'd set up with two partners, Gianfranco Bronzini and Patrick Gartmann, seven years earlier. At some point during the day, however, some stunning news came through. The Traversina bridge, a truly extraordinary and beautiful footbridge which spanned a steep gorge along the Viamala – a regionally well-loved hiking trail to the south of Chur – had by some chance been struck by a falling boulder, and been thoroughly destroyed.

'It was really, really shocking. I didn't sleep at all that night. I sat up thinking how that could have happened, completely restless. We hadn't known about the possibility that a boulder could reach the part of the gorge where the Traversina bridge was at all,' Conzett recounts. In a country with a formidable engineering reputation, Conzett is one of Switzerland's best known current generation of engineers. He is also a poet in the profession of structural engineering. The Traversina was as much a poetic as a pragmatic design, employing an elegant and extremely lightweight larch wood truss system, known in engineering literature as a fishbelly. The fishbelly truss was joined to the heavier glu-laminated upper deck walkway section of the footbridge through vertical struts pushing outwards from the deck and a cats-cradle of suspended chrome-nickel-steel wires. The two systems were overlaid and together provided the strength to hold the bridge across the gorge. It was a striking piece of engineering and a personal threshold in Conzett's career thus far, when it was being completed three years before the accident in 1996.

If he went through massive doubts over the next days and weeks, Conzett appears to have been charged



with a renewed energy, as within two years a second Traversina bridge was being maneuvered into a new, higher and less vulnerable position. It is equally exquisite, hanging across the ravine, joined by gossamer thin pieces of thread, draping 57 metres across the gulley gap below. What he needed to resolve, Conzett told an audience at the Architectural Association talk in early 2007, was the problem of 'finding a curve which is contact free during a snow load.' The challenge was in the detailing of the abutments, completed without the usual software, since computers 'could not deal with such deformations.'

Those who have visited the second Traversina bridge will know the sense of astonishment when rounding the track corner and coming upon the bridge, after the first sighting of the concrete abutments which hold and anchor its suspension cables in place. The bridge is not in the middle of nowhere, but the narrow, steeply climbing path betrays no sense of any major European engineering project lying imminently ahead. If the Viamala walking trail is renowned for its breathtaking Alpine grandeur, Traversina 2 is equal to the stunning landscape which it is part of. The day I was there an old man was crossing with his dog, and once over and before I had begun crossing we talked in Schweizer Deutsch. He was pointing to something down in the gulley below. At first I couldn't make out what it was, but then realised that he was pointing to a



The two large photographs show the new Traversina bridge with its wooden stairway. Above is the original bridge in a snowy landscape, plus a closeup view.

tree, and began to realise he was saying that we could only see its unusual and beautiful leaves because of the bridge. I felt, even if the bridge was man-made, Traversina 2 was a design which was in deep sympathy with its natural surroundings. It confirmed the frequently made observation that for Conzett and his generation of Graubünden architects and engineers, the natural world is very important. Certainly looking down is precipitous and dramatic, and if you're beginning at the southern lower end, as you look out across the slowly rising steps like some softly inclining escalator, the sense of wonder only increases. An alarmed inner voice momentarily questions the wisdom of crossing, but once you step (from the south side) onto

the bridge's ascending wooden steps, they are reassuringly firm. During our meeting in the Chur office, I'm surprised that Conzett makes just this point about the hanging steps. During public meetings about rebuilding Traversina, he remembers that people said it would be frightening for people walking across it: 'This meant we changed it, and it was improved by this discussion. It was a very democratic procedure.'

Technically Traversina 2 is what is called a prestressed cable truss, with two sets of cables thrown across the gulley from each of the gorge's rocky edges. While the higher, northern set of cables ends at the abutments where a hiker begins or ends their crossing, on the other side the cables rise high above, where the