A photograph of a desk lamp with a white, adjustable arm and a conical shade, casting a warm glow. Below the lamp, several sheets of paper are spread out on a desk. One sheet prominently displays a colorful, abstract map or architectural plan with red, yellow, green, and blue areas. The background is dark and out of focus, suggesting an office or studio environment.

# Meet the man who designs ski resorts

No fewer than 370 ski areas have been developed with the help of Ecosign, the company founded by Paul Mathews, the architect of Sochi.

**Ben Clatworthy** spoke to the Canadian to find out how to create a good ski resort — from scratch if needs be

**‘W**ho designed this resort?’ you may ask in frustration, as you face a hike back to the chalet, or find yourself stranded on the wrong side of the valley after the last lift has closed. In many cases this is a rhetorical question. Most Alpine resorts were born of farming villages, which have grown over the years, linking themselves to other ski areas.

But ask the question in a brand new resort and the answer is likely to be Paul Mathews. The Canadian is the world’s pre-eminent resort designer. Even if you haven’t visited one of the resorts he has designed from scratch, such as Sochi, in Russia, or Hanazono, in Niseko, Japan, you may have visited a resort he has helped redesign, such



as Hemsedal, in Norway, or Zermatt, in Switzerland. And both creating and developing resorts is no mean feat, compared to the days of old. The early pioneers had little to consider by way of design, as they were catering for locals and a few regular visitors.

"Pistes were chosen on summer hikes and resorts were run by farm boys who learnt how to ski, and taught other people to ski," says Mathews. These days some retain that charm of a bygone era, but others want the newest technology so they can deliver the shortest lift queues. And they want to promise the most pistes, knowing that if they do not vie to be the best, they cannot attract the vast mass of ever more mobile travellers.

These are just some of the challenges Mathews faces — even creating resorts where

there is no snow. He was instrumental in winning Beijing the 2022 Winter Olympics but, as soon as the International Olympic Committee's decision had been announced in July, photos started circulating of the proposed Alpine site in Zhangjiakou in January — minus the white stuff.

The issue is not the temperature. It gets cold here, very cold. Even in town the mercury can fall to below minus 25°C — far colder than in Sochi, Mathews' previous Olympic project. The problem is that Zhangjiakou, which is 100 miles north-west of Beijing, lies on the edge of the Gobi desert, and gets an average precipitation of just eight millimetres from the start of December to the end of February. So almost all the sliding events at the 'snow cluster' venues, all of which were designed by Ecosign, along with two athletes' villages, will take place

on man-made snow, using nearby fishing lakes for water.

Many consider it an outlandish choice of venue, so I put that to Mathews who, without hesitation, replies: "I've said that myself."

He agrees that, if common sense were to prevail, it would be more cost effective and sustainable to host the Games at an established resort, where some of the infrastructure is in place.

"But that's not how it works in real life," he goes on. The reason is that no city wants to "endure" an Olympics too often, he says, "no matter how much they enjoyed the first one". But Mathews is adamant that Beijing was

the best choice for the 2022 Games — given the possibilities on offer. After widespread malaise at the demands of the IOC, all the European frontrunners

pulled out and it became a two-horse race. Mathews describes China's venues as superior to those that its rival Kazakhstan included in its bid, saying he was "perplexed" as to why the former Soviet republic chose the venues in Almaty that it did.

Despite Beijing being in the grips of a chronic water shortage, Mathews says: "Beijing winning the Games is good for the snow business in China. It will ignite a boom with many more children coming to the snow."

It's easy to be cynical, but Mathews' previous Olympic project — which was no less controversial — appears to be proving something of a success. It was he who originally decided where the resort of Rosa Khutor, the venue for the Alpine events at the Sochi 2014 Games, should be located. Mathews had been whirring around in a helicopter for hours when he spotted the area. That was in the year 2000. Some 14 years — and £30 billion — later and the resort was ready to welcome the world's best skiers.

Many thought Rosa Khutor would prove a white elephant as soon as the athletes left — and perhaps it would have done. But Russia's annexation of Crimea and the ensuing war in Ukraine, coupled

with the falling oil price, has seen the value of the rouble halve since the Games. So the resort is now buzzing with Russians who might previously have headed to the Alps to ski.

Mathews' decision to work with, rather than against, ski resort developments was taken at a critical point in his life. He had just finished a degree in forest ecology and landscape architecture at the University of Washington, in Seattle, in the early 1970s, where he admits he was not a model student, often skipping lectures during the winter semester in search of snow. His passion was skiing, and he liked following Canada's national ski team, being particularly in awe of the 'Crazy Canucks' — a group who earned themselves a reputation for fast, seemingly reckless, skiing in Downhill competitions.

Despite these distractions, he graduated and, aged 21, went to explore the Swiss mountains spending a season in Zermatt "being a ski bum".

"I fell in love with the place," says Mathews, wistfully recalling this "organic village". He explains that he was particularly fond of the layout of the streets and its noticeable lack of steps. The reason for this, he found out, had nothing to do with skiers, but was to help farmers herd their cows up and down the mountains. Cows, it transpires, struggle on steps even more than skiers in clunky boots. Stair-free resorts are now a concept that Mathews calls "the Zermatt solution".

During that gap year in Europe, Mathews also realised how appalled he was by the way North American ski resorts were set up. He detested the fact that everything was being built to cater for families coming on holiday often with three cars — with grown-up children joining parents separately, for example — and with little consideration for the environment.

He had two options. He could join a conservation group back in North America to oppose what ski resorts were doing there. Or he could combine his education and passion for skiing, by designing better ski resorts.

It was a gamble. Back in 1975, when Mathews founded Ecosign in Whistler, ski resort designers didn't exist.

"There wasn't a science to how these things were planned. Quite frankly we bought the first ski resort

**“God, or nature, or whoever is responsible for Earth didn't make as much ski terrain as one would imagine”**







Changbaishan, near the North Korean border, is one of the projects created by Paul Mathews to cater for the growing number of Chinese skiers

planning into the mountains," he says, rather smugly. He explains: "When you're at a poorly planned resort, you're aware of it, because you run into a lot of queues and roadblocks. But if you're at a well-designed resort everything moves smoothly and you're probably not even aware we've thought of it before."

He gives an example of the former as Grindelwald, where work is underway to modernise the Swiss resort. He says: "It was stupid. You got to the slopes and the next lift was 40 metres up a steep, icy slope."

"I was very hard on the Jungfrau region," he adds, laughing. "They thought they had the best resort in the world, but I said 'you don't come close to international standards'."

It was tough love. Mathews plans to increase the uplift capacity from 700 people an hour on the trains, to nearly 3,000 with high-speed gondolas in the so-called V-Bahn Project. But resort modernisation is just one part of his job. Developing resorts from scratch — as in Sochi — poses greater challenges.

"God, or nature, or whoever is responsible for Earth didn't make as much ski terrain as one would imagine," he says. "So it really is the case of searching for a needle in a haystack, when it comes to looking for new areas of land."

Having spent hundreds of hours of his life in the skies, Mathews says he "has an eye" when looking for new terrain, taking into account access

roads, water supply, gentle bowls, plateaux and, of course, the slopes.

"Oddly enough," he says, "good ski terrain, from the air, looks quite flat. The big dramatic areas that you see are just too steep, without question."

This means finding the right spot is a hugely time-consuming affair. Once a potential site has been identified, Ecosign begins with a study of satellite images and the creation of detailed maps. Meanwhile, a special computer programme assesses the level of solar radiation the slopes are subject to — calculated by factoring in both the orientation and steepness of a slope. Too much solar radiation and what at first sight appears an unspoilt blanket of snow will quickly turn to mush.

"When I was at university we calculated solar radiation levels for growing forestry products, and my lecturers developed algorithms," says Mathews. In his new work he realised that these would prove invaluable when he was looking at both new and existing ski terrain. Before computers were widely used, this was a hugely time-consuming process.

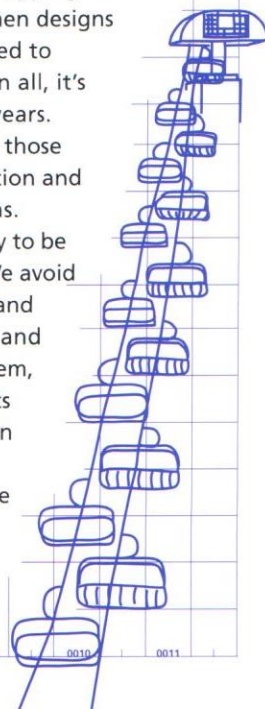
"I had a drafting department with five girls slaving away with Leroy lettering," recalls Mathews of the curious stencil system used to mark up maps. That system carried on right up until the 1990s, when he discovered a software developer in the Czech Republic who had computerised his lecturers' algorithms.

What hasn't changed is the way that potential pistes are marked on to the map. White represents flat areas, while green is used for beginner slopes, in the same way as it is on piste maps. Yellow is used to indicate intermediate terrain, while blue is reserved for the steepest, expert pistes. No-go areas are shaded red.

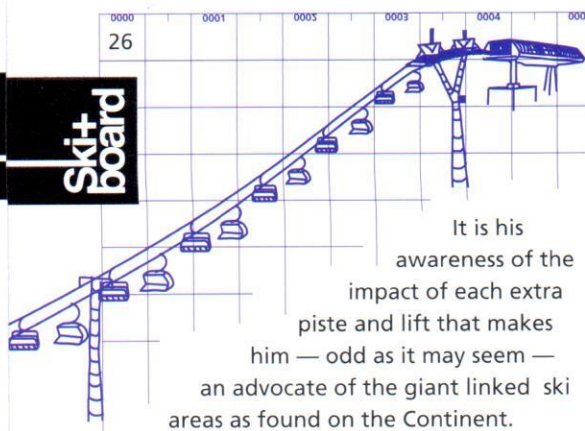
Only then do foresters head to the site to scout out the locations for the pistes. They also decide where trees need to be felled. All this information is then drawn, by hand, on the maps.

Mathews has also developed a program, which, he says, "reverse engineers the information, and calculates the capacity of that piece of terrain, in terms of maximum skiers per day". Not stopping there, the program then designs the lift system required to support the terrain. In all, it's a process that takes years.

Of course there are those who oppose the creation and expansion of ski areas. Mathews says: "We try to be extremely sensitive. We avoid water and wetlands, and we study rare plants and animals. If we find them, we make such habitats 'specially protected' in our plans and avoid them, even though we aren't immediately required to do so by regulation."







It is his awareness of the impact of each extra piste and lift that makes him — odd as it may seem — an advocate of the giant linked ski areas as found on the Continent.

Linking resorts boosts the capacity of existing ski areas and reduces the need for vehicles to travel between them. Mathews says the efficiency of huge areas such as the Portes du Soleil and Les Trois Vallées in France “makes them perfect”, with lifts that allow us to travel far further during a ski day than we could 40 years ago.

It’s a concept that has yet to catch on fully in North America. In Utah, for instance, it is possible to stand at the summit of some seven ski resorts, and see the neighbouring resorts. But you can’t ski from one to another.

“So people base themselves at Park City and travel by car on a 150-mile round trip to ski at other resorts, such as Alta and Snowbird,” says Mathews. He would like to see all seven linked

to create the ‘One Wasatch’ area. But this is going to take time, though the first step will be complete in December with the opening of a new gondola linking Park City and Canyons.

He gives short shrift to the environmentalists who oppose every change, saying: “When we deal with rocks, and want to make small rocks out of large rocks, the gravel created helps protect other valuable environmental resources.”

It is clear from our conversation that the environment is something Mathews is *genuinely* passionate about. It is also clear that his studies, combined with 40 years’ experience developing resorts, has made him exceptionally knowledgeable about the natural habitats of the mountains.

But it’s a juggling act. While he says his firm does its “best job for the environment” Mathews acknowledges the end goal is to allow “skiers to enjoy it in the winter, on the snow”.

But should that include introducing countries to skiing by staging the Olympics in places without a winter sports tradition? It is easy enough

for Mathews to defend the 2010 Games held in Vancouver and Whistler, where the construction of the £350 million Sea to Sky Highway between the two replaced one of the most dangerous roads in the country. But when it comes to creating new ski destinations, ultimately, Mathews says he is running a business, and designing resorts “keeps him in a job”.

And the apparent surge in the popularity of skiing in the East is proving highly lucrative for him. He tips Chongli Thaiwoo, in China — which has been designed entirely by Ecosign — as the next destination. The first phase of this new and “beautiful” resort opens this December. Mathews says the “ski terrain is awesome” and that the resort will be “China’s best”.

Of course, it’s unlikely that many of us will be skiing in the Far East any time soon. But the next time you find yourself cursing an ill-placed lift, or an unexpected plateau, pause for a second. Because the chances are that Mathews feels your pain.



# AWARD-WINNING SKI HOLIDAYS IN THE FRENCH ALPS

Ski Olympic





# Bring on the lifts!

One of Paul Mathews' biggest projects is linking two Swiss resorts. And the new lifts can't come a moment too soon, says reluctant ski tourer Arnie Wilson



Something big is stirring in the beautiful, remote hinterland between the two central Swiss resorts of Andermatt and Sedrun. They are joining forces in a long-awaited union with the help of 14 lifts to form a linked ski area. It is part of a £100million development backed by Scandinavian resort owner Skistar and Egyptian businessman Samih Sawiris.

The project has been described as a "fairy tale from the Arabian Nights", with plans for six hotels offering "five- and six-star" accommodation in 850 rooms, 500 apartments, private villas, a sports centre, concert hall and an 18-hole golf course that Sawiris is happy to share with a farmer's beloved cows.

But don't hold your breath. Though work began in July, the lifts opening this winter won't link the resorts just yet. And the final stage of the project won't start before 2019. Until then skiers will continue to rely on the Matterhorn Gotthard railway to get from Andermatt's 86km of pistes to Sedrun's 50km.

"The problem here is lots of south-facing exposure," said Paul Mathews, who is working on the project. But using his solar radiation maps, which show subtle undulations of terrain, he has been able to find areas suitable for pistes. He took Bernhard Russi, the Olympic and World Cup champion,

to a proposed site. Mathews recalls: "I said 'follow me' and we found dry powder in early April. Bernhard laughed and said, 'Paul, how in the world do you — sitting in Whistler — figure out where the dry powder snow is that only a few of us old local people in Andermatt know about?'"

Some readers may lament the sacrifice of this ski-touring haven to lifts, but — as far as this writer is concerned — the new lifts can't come fast enough... as I found on the Ski Club's Andermatt Escape trip.

Don't get me wrong, the skiing was glorious. We were dazzled by the pin-sharp clarity of the mountains for three days running in February. I have been coming to Andermatt off and on for decades, and even learnt to ski on the more benign slopes of nearby Hospental. But I'd never seen it in all its glory before. More often than not the mighty Gemsstock, which has enough off-piste to keep the most active skier happy for weeks, is shrouded in mist. Never in my many visits have I caught the sun in a cloudless blue sky, even for a day.

Our group was led by Andrea Enzo, a delightful Italian — think Poldark with longer hair. And following his sweeping, graceful turns on the first day, we barely scratched the surface of the area. And therein lay the problem. The Gemsstock has just one red and one black run from its 2,961m summit. There are a handful of easier runs mid-mountain. But the rest of this vast, sprawling peak... is off-piste.

The highlight for most of our group — if not entirely for me — involved slithering down a longish, steep pitch at the back of the Gemsstock to a broad plateau. From here, the plan was to climb a steep ridge to reach a

stash of legendary off-piste. At this point — too late! — I made it clear that walking up mountains, with or without skins, has never been my favourite pastime. I'm happy to ski almost anywhere, but I contend that ski lifts are a wonderful invention. I leave ski touring to the Luddites.

"Don't worry, Arnie," Andrea reassured me, "it's only a quick walk to the top. Maybe ten minutes."

How many times have I heard this from guides as they try to lure me up agonisingly long stairways to heaven? I gazed up at this snowy schlep and I knew in my heart it was going to take me at least half an hour, while my considerably younger companions would hop to the top in no time, and watch my slow slog with amusement.

"Can I not get back to the base by skiing the other way?" I pleaded.

"Afraid not," said Andrea. "There's no way back that way."

So that was it. Committed, again, to doing something I dreaded. When will I learn? Perhaps I need a badge to say: "I love off-piste. I'll traverse to get to it. A ski lift would be preferable. But please don't make me walk up."

Yes, it was a struggle and, yes, it did take me far longer than the rest of the group. But the skiing, when I finally made it, was sublime. And perhaps next time I'm back, I will even be able to enjoy it without the big hike up.

Arnie travelled as a guest of the Ski Club ([skiclub.co.uk/freshtracks](http://skiclub.co.uk/freshtracks); 020 8410 2022), which offers the Andermatt Escape from December 10 to 14 for £850 per person based on two sharing, staying half-board at the Hotel Sonne, including flights, coach transfers and four days with mountain guides. See also [myswitzerland.com](http://myswitzerland.com) or call freephone 00800 100 200 30.

Photo: Robert Boesch/Switzerland Tourism