SOLE SURVIVOR (Petr Hlavacek)
by Burkhard Bilger

Petr Hlavacek's obsession with odd footwear stops just short of his own feet. During the week we spent together, he always wore the same shoes: crepe-soled loafers, wide at the front for uninhibited toe movement and low at the heel to encourage good posture. Their uppers were of grayish suede, without insignia or decorative stitching, and were pieced together with a thick seam down the center. Their insoles were an experimental sort, designed for the tender feet of diabetics. They were the kind of shoe that would not have looked out of place on a medieval peasant. The kind, as Hlavacek would say, "that know what the feet need."

Hlavacek is a professor of shoe technology at Tomas Bata University, in the Czech city of Zlin. He wrote his Ph.D. thesis on stitching--specifically, on the effect of high needle temperatures on thread quality in the making of leather uppers--and has mounted shoe research expeditions to Mongolia, Turkey, China, and Vietnam. He has measured the feet of twenty thousand Czech children and cross-indexed their growth patterns and deformities, and he has concluded that our feet are in trouble. "The number of incorrect and dangerous shoes is high. It is higher and higher!" he told me one afternoon in Zlin, over a bowl of garlic soup. Czech shoes were once the best-made in Europe, he said, but in recent years his country, like the United States, has been flooded with cheap, poorly designed Asian shoes, and the effects are showing. "The Czech Republic is nature's laboratory," he said. "You can give them Far Asia shoes and see what happens. And we have found that the number of complications is three times higher than twenty years ago. Half of all women have deformed feet!"

Hlavacek (his name is pronounced "la-VA-check") is fifty-five years old. He has a sturdy, companionably bulky build, like a badger's, with long, shrewd features and thick blond hair combed straight back. When he speaks English, he tends to add syllables to his words ("applicate," "observate") and to punctuate his sentences with exclamations, as if to mimic the elaborate endings and accents of Czech. "You look at the woman, she is full of pain. Who is guilty? Shoes!"

Listen to Hlavacek long enough and you may come to believe that shoes are responsible for a great deal--that human affairs proceed largely from the feet. "There is a shock when you realize what role shoes play in history," he says. Why did Alexander's armies conquer the world? Because they got shoes from the Persians. Why did Napoleon's armies overrun Europe? Because French scientists devised the most supple, sturdy leather for army boots. (Hlavacek thinks that today's soldiers, who do little marching, would be better off in sneakers.) One of the pivotal points in Middle Eastern history, he believes, came in 1956, when Egypt kicked British and French shoemakers out of the country. Eleven years later, when Egyptian soldiers fought Israel in the Six-Day War, the soles of their boots were held together with tacks. The farther they marched, the more the tacks heated up on the sands of the Sinai and drove through the leather, until the soldiers fell as if they were walking on red-hot nails. In pictures of their retreat, you see abandoned jeeps and tanks, and hundreds and hundreds of shoes.

Over the years, the plight of modern feet has prompted Hlavacek to develop a number of new shoe technologies, such as the insoles of his loafers. Mostly, though, it has led him further and further back, into prehistory. The majority of today's footwear is less ergonomic than Roman sandals of two thousand years ago, Hlavacek believes. And so, like a Renaissance scholar scouring ancient Greek texts, he spends much of his time trying to rediscover what his predecessors knew. In the past two years alone, he has analyzed a fifteenth-century German pilgrim's shoe, reconstructed a pair of ten-thousand-year-old sandals found in Oregon, and classified the shoe styles worn by angels in Byzantine religious icons. But the shoes that have taught him the most, the ones that first drew me to Zlin, are those worn by Otzi, the Ice Man.

Early one September afternoon fourteen years ago, two German tourists were hiking down a glacier in the Otztal, in South Tyrol, when they came upon a dead man, frozen up to his waist in the ice. He was emaciated and perfectly hairless, bent over a pool of meltwater with his arms propped beneath him, as if trying to wrench himself free. The hikers, Helmut and Erika Simon, took him for a mountaineer at first, as did local police when they came to investigate. But a team of archeologists at the University of Innsbruck soon reached a different conclusion: the body belonged to a Stone Age hunter, they said, who died in the valley more than five thousand years earlier. He was fully equipped and well armed--an axe, a dagger, a net, a bowstave, a quiver of arrows, and birch-bark containers were found in the ice around him--and when he died his corpse was naturally mummified by the glacier.

Otzi, as he came to be called, was subjected to countless scientific indignities in the months that followed. Excavators tore him from the ice with a pneumatic chisel, damaging his buttocks and one of his thighs; biologists probed his teeth for traces of disease and squeezed

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samples from his rehydrated colon to reconstruct his diet. At various points, they concluded that he was a vegan, a vegetarian, and an omnivore (his last meals were of cereals, ibex, and elk). He died of hypothermia or ritual sacrifice. When a stone arrowhead was found buried in his left shoulder, and DNA analysis identified the blood of four other men on his clothes and weapons, it was suggested that he had been killed by rival big-game hunters. Otzi had arrived in Europe like a time traveller, and scientists seemed to glimpse all of Stone Age culture in his remains.

What they didn’t pay proper attention to, in Petr Hlavacek’s opinion, was his shoes. “They were not shoemakers,” he says, flatly. “They had no knowledge of the feet.” To Hlavacek, a shoe is both a social statement—“It says who I am, how I am rich, what are my goals, what are my tendencies”—and a kind of medical file. He can read a person’s height, weight, and physical ailments in the shape of his sneakers and the scuff marks on the soles. Over the years, he has worked on a number of cases with Czech historians and police, dating and identifying murder victims and other bodies. He made a diagnosis of syphilis in Albrecht von Wallenstein, the seventeenth-century Austrian general, based on his boots alone. (Advanced syphilis gives people an awkward, stork-like walk that leaves crescent-shaped marks on their heels.) A physical anthropologist later exhumed Wallenstein’s bones and confirmed the diagnosis.

Hlavacek first heard about Otzi’s shoes five or six months after the body was discovered. “I have friends in Germany; they are shoemakers,” he remembers. “They called me and said, ‘Otzi is with shoes!’ ” The Ice Man had become an international celebrity by then. His body had nearly sparked a border skirmish between Austria and Italy—the remains were found less than a hundred metres from the frontier, on the Italian side—and Konrad Spindler, the principal archeologist, had been hounded by requests from other scientists and reporters. When Hlavacek wrote to invite him to a shoe conference and to ask if Otzi’s shoes might be examined, Spindler politely declined the invitation. But, in his reply, he noted that the shoes had been moved from Innsbruck to a museum in Mainz, Germany. “One very free interpretation of his letter was ‘The shoes are in Mainz for you,’” Hlavacek says. “So I told myself, ‘Only people with courage are successful!’ ”

A week later, he was on an overnight train to Mainz, carrying Spindler’s letter with him as an invitation.

“I am a curiosity,” Hlavacek admits. “It is not so usual to be so interested in shoes.” His father was a shoemaker, so one might suppose that he inherited his obsession, but his home town probably had more to do with it. Zlin is a city of shoes the way other places, shaped by the strict divisions of labor under Communism, are cities of linen or pipe fittings or plastic explosives. It lies two hundred and fifty kilometres southeast of Prague, in pious Moravian farming country, and has spent much of its history recovering from periodic plunderings by Hungarians, Austrians, and Poles. Until the twentieth century, the area was best known for its potent plum brandy, slivovitz, which locals drink as a kind of folk medication, muttering phrases like “Where it goes, there it heals.” In 1894, Tomas Bata, an eighth-generation cobbler with a utopian streak, opened a small shoe shop in town. Within forty years, he had turned it into the largest and most sophisticated shoe company in the world.

“It was practically a republic within a republic,” Hlavacek told me when he gave me a tour of the city on my first day there. As we walked, his right arm swept periodically across the skyline in the manner of a civic booster from the nineteen-fifties: Here was the first Czech escalator! There the country’s first skyscraper! There its tallest chimney and its largest movie theatre! By the nineteen-thirties, Bata was producing fifty-eight million pairs of shoes a year and had sixty-five thousand employees, in thirty-three countries. (In parts of Africa, a sneaker is still called a Bata.) As the company grew, Bata hired modernist architects to rebuild Zlin along the lines of Le Corbusier’s Ville Radieuse, with modular factories of brick and glass. He built schools, hospitals, and homes for his peasant workers, then sent his wife, Marie, door to door to teach them modern manners and hygiene.

In its heyday, Zlin was known as the Czechoslovak America. But by Hlavacek’s time it had lost most of its utopian spirit. Bata was killed in a plane crash in 1932, and the rest of the family fled to Canada after the Nazis invaded Czechoslovakia. By 1950, when Hlavacek was born, Zlin’s name had been changed to Gottwaldov, in honor of the country’s first Communist President, and Bata was sending most of its shoes to the Soviet Union.

Hlavacek might never have studied shoes at all had his father not had a feud with the local Communist Party boss. It began when his father refused to play the flugelhorn at a May Day celebration. (He was annoyed at having been denied an extra allotment of coal the previous winter.) By the time Petr graduated from elementary school, the Party boss so disliked the Hlavaceks that he had the boy designated for farm labor, despite his high grades. Petr’s father visited the high schools in Zlin to plead his son’s case, and eventually arrived at the shoe academy that Bata had established. Though geared toward industry, it offered a full baccalaureate degree and excellent instruction in math and science. There had been a shortage of male applicants that year, the principal remarked, to which the elder Hlavacek replied that his son had always had a deep interest in footwear. By that night,
the decision had been made. "He came back and he said, 'It is clear!' " Petr remembers. "You will not be a farmer! You will not mine! You will not join the Army! You will study the shoes!"

Hlavacek says that he is apolitical, but he seems to have inherited his father’s rebellious streak. He led student protests in Zlin during the Prague Spring, in 1968, and again during the Velvet Revolution, in 1989. As a young man, he had little patience for the Communist social clubs he was told to join, so he took refuge in the local shoe museum, where he led tours. There one could see history’s bloody reforms and counter-reforms reduced to oscillating toe lengths and heel heights. The French traded in their high heels for modest slippers after the Revolution. The Germans renounced their sabatons, with foot-long, articulated toes, for the stub-nosed shoes favored by Martin Luther.

In time, Hlavacek traced the patterns back through Crispin, the patron saint of shoemakers, to the Egyptians, who were buried with sandals for their long walk in the afterlife. But there the line seemed to end: shoes were either too perishable or too disposable to survive from prehistoric times. "It was my dream to see the oldest European shoes," Hlavacek says. And then came Otzi.

When Hlavacek first saw the remains at the museum in Mainz, they didn’t look much like shoes. The leather was torn and partly decomposed, mixed with blackened hay and bits of twine, like a clump of horse dung. The curators had given Hlavacek only twenty minutes, so he worked in a state of near-panic, making sketches and taking measurements, examining abrasions and noting what looked like repair marks. In twenty minutes, he managed to contradict much of what previous researchers had found—noting, for instance, that the right and left shoes were identically shaped, rather than asymmetrical, like modern shoes. He faxed his report to Konrad Spindler the next day, a Friday. By Monday, Spindler was making arrangements for him to see the Ice Man’s feet.

"It was like winning the Nobel Prize," Hlavacek says. "It was like flying with angels." In the months that followed, Hlavacek painstakingly reconstructed the shoes’ original design. He took imprints of the mummy’s feet, then converted them to three-dimensional drawings on his computer. He compared the joint and heel measurements, examining abrasions and noting what suggested that Otzi’s shoes were processed with some sort of fat. The obvious candidate was fish oil, which Native Americans often used for tanning, but Otzi lived far inland. Squeezing enough fat from local trout would have been out of question. They ended up paying the hunter three hundred dollars--about half a month’s salary in the Czech Republic--and hanging the bear’s mangy head on the wall of their shoe laboratory.)

Hlavacek’s reconstructed design called for plain leather uppers and soles, stretched across a netting of braided linden bark, with a thick stuffing of hay. It seemed simple enough. "But I have experience that these simple things become very complicated," Gresak says. There was the matter of materials, for instance. Microscopic studies of the leather had shown that it came from three sources: deerskin on the uppers, calfskin on the bindings, and bearskin on the soles. Deerskin and calfskin were easy to find, but bears are endangered in Europe and strictly protected. To get a fresh hide, Hlavacek and Gresak had to hire a bear hunter in Canada and have him send his kill to the Czech Republic. In return, they agreed to stuff what was left of the animal and send it back. (As it turned out, the bear’s hair fell out on the trip over, so taxidermy was out of the question. They ended up paying the hunter three hundred dollars--about half a month’s salary in the Czech Republic--and hanging the bear’s mangy head on the wall of their shoe laboratory.)

That left the knottier problem of technique. Tanned leather is a fairly sophisticated material. It has to be salted, soaked, and scraped, then treated with an agent that chemically toughens and preserves it. People have used everything from chestnuts and sourdough to urine and saliva as tanning agents, but microscopic analysis suggested that Otzi’s shoes were processed with some sort of fat. The obvious candidate was fish oil, which Native Americans often used for tanning, but Otzi lived far inland. Squeezing enough fat from local trout would have taken months. Olive or grape-seed oil might have worked, but only if applied under high pressure, and marrow fat was a disappointment: when Gresak and Hlavacek tried it on the bear hide, after boiling down twenty kilos of bones, the leather turned hard and brittle.
It was Gresak who hit upon the answer. Leafing through a nineteenth-century book on tanning, he found a reference to the early Inuit, who tanned polar-bear hides with the animals' own brains and liver. To test the technique, he bought some pig organs from a butcher (the Canadian hunter hadn't sent the bear's innards) and took them to a cabin he has in the Beskydy Mountains, fifty kilometres east of Zlin. He boiled the fat out of the liver, mixed it with the brains, and smeared it on pieces of skin hung outside on a primitive wood frame. "The smell was so powerful that all the flies from a five-kilometre area, minimally, flew to this concentrated place," Hlavacek says. But the results were gratifying: enzymes in the liver acted as an emulsifier, dispersing the fats through the hides. When Gresak washed them clean in a stream a few days later, they had become decay-resistant and moderately flexible. All that was left was to cut them to size with a piece of flint, stitch them together with a bone needle, and take them for a walk.

One afternoon not long after I arrived, Hlavacek, Gresak, and I drove up to the Beskydy Mountains, to a hiking path not far from Gresak's cabin. The land had once been a collectivized farm, Gresak explained, but now belonged to a private riding stable, with mounds of hay in the fields for the horses and flower boxes hung from the windows of an old red barn. When we arrived, Hlavacek opened the trunk of his Ford Fiesta, took out a brown paper sack, and pulled out two pairs of shoes. The first were replicas of the oldest known American footwear: ten-thousand-year-old sandals from a rock shelter in central Oregon. The original sandals had been found under a layer of ash from a volcano that had killed the wearer but preserved the shoes. The replicas, made by Gresak, were like little baskets for the feet: tightly woven out of twisted strands of wormwood bark, with arched toe coverings and open heels. Hlavacek walked over to a wooden bench to put them on, then handed me the second pair.

Before I came, Hlavacek had sent me an e-mail with travel arrangements, then added, in a matter-of-fact way, as if it were a standard formality between new acquaintances, "What is size of your feet?" These shoes were the reason. Gresak had made eight pairs of Otzi replicas. The first three were historically exact, built around the plaster casts of the twelve-year-old boy's feet; the others were custom-made for different wearers. This pair was made for Hlavacek, who, as it turned out, had the same size feet as I do. They were much bulkier and more ungainly than the sandals, with open netting at the heels and bulbous leather toes. They didn't look like the sort of thing a big-game hunter would wear into enemy territory. They looked like prehistoric clown shoes.

"Science demands sacrifice!" Hlavacek exclaimed, grinning, as I sat down beside him to put them on. We would take a five-kilometre hike and then compare notes on the replicas, he said, but he already knew I had the better pair. He and Gresak had tried out the Oregon sandals that winter, on snow-covered roads in these mountains, and had found them less than orthopedic. "First ten minutes, no problem," he said. "One hour, no problem. But after four hours . . . " The sandals were made to be worn without socks or other insulation, so his feet got cold, and blades of cut grass kept sliding up through the weave to spear his soles. Not so with Otzi's shoes. "You will feel a little bit discomfort, but it is only a question of one hundred metres," Hlavacek assured me. "Then you will feel the best level of comfort, the warm comfort."

As Hlavacek talked, Gresak knelt down beside me with sacks of hay and moss and began stuffing fistfuls into the netting that lined the shoes. The hay would pad my feet and insulate them, he said; the moss would keep them comfortable. "In the Czech language we have expression for a man who is very poor," Gresak said. "We say you can see the hay sticking out of his shoes. With Otzi it is the opposite: you have to see the hay for comfort." Once my feet were bundled up, with thick tufts sprouting around the ankles, we set off across the field in single file, Gresak in the lead. "Don't hurry," Hlavacek said, bringing up the rear. "We are in the Stone Age."

The path wound through pastures and orchards and through stands of lofty, gray-barked beeches to a ridge that overlooked the Podrevnicko Valley. Here and there in the distance, church spires and grain silos rose above clusters of red tile roofs and turnip fields. It was a balmy Indian-summer day, and as we walked our feet stirred up the scent of wild rosemary and oregano. Gresak sauntered over to a tree along the path, plucked something from it, and handed it to me: a tiny purple plum. "It's symbolical," Hlavacek said. "Otzi had dried plums when they found him." These meadows, he added, were a lot like those Otzi must have passed through on his long trek to the high country.

I felt a little sorry for the Ice Man then, and not just because he was fated to die on that trip. The "little bit discomfort" that Hlavacek had warned me about was persisting well past a hundred metres, and the moss was proving no substitute for a good pair of socks. My feet itched; they itched a lot. If not for Hlavacek, I would have taken the clown shoes off immediately and gone barefoot. But the sight of him shambling along behind me was oddly inspiring. His face was flushed; his shoulders hunched forward; his fanny-pack was pulled toward the front and bulging with supplies. He had a heart valve replaced eight years ago, and was taking blood thinners to prevent clots from forming. Yet here he was. The woven soles of his
sandals were smooth on the bottom, so he had to use a walking stick to keep from slipping on the wet grass. Once or twice, his feet flew out from under him completely, sending him into midair and onto his seat.

To be a shoe historian, it seems, is to stumble continually over a basic question: Why do people wear shoes at all? The foot is one of nature’s most splendid creations. Paleontologists say that it was the first body part to achieve its modern shape, and no wonder: as bipedal creatures, our evolutionary success depended on getting this one appendage exactly right. The foot’s segmented, elegantly arched design is wonderfully flexible and strong. It can tolerate temperatures as low as forty degrees and, given time to develop calluses, negotiate most terrains in relative comfort. It’s a supreme example of form following function—so of course people have spent a million years trying to redesign it. “Society, apparently, agrees that the human foot as formed by nature is coarse, vulgar and unsightly, and that its width, especially at the toes, is entirely too great,” an orthopedist by the name of Philip Hoffmann wrote in 1905, in the American Journal of Orthopedic Surgery. “What it so commonly does admire is the dainty little shoe that hides its own handiwork—the distorted, cramped, calloused and repulsive foot.”

Hoffmann’s anti-footwear feelings had been stirred by a visit to the 1904 World’s Fair, in St. Louis. A group of African Pygmies and Philippine tribesmen, barefoot all their lives, had been put on display for the edification of shoe-wearing peoples. Hoffmann took a look at their feet. In a hundred and eighty-six pairs, he reported, he didn’t find a single deformity or ailment. There were no broken arches, no hyperextended joints—none of the weaknesses “so characteristic and common in adult shoe-wearing feet.” In the pictures published with the article, the tribesmen’s feet look almost alarmingly healthy. They’re leathery, thick-knuckled, full of character. Their toes are so widely splayed they look prehensile, like a gecko’s. With the right training, you imagine, they could play Jelly Roll Morton. By comparison, our own feet are pale, spindly, useless things. They’ve devolved, as Hoffmann put it, into “mere pedestals.”

Shoes serve some practical purpose, of course. The Bata Shoe Museum, in Toronto, built several decades after the family’s exile from Zlin, is full of ingenious footwear for unpleasant environments: Yup’ik boots from the Alaskan coast, made out of waterproof salmon skin; Swedish shoes made out of birch bark, with antibacterial properties to prevent foot odor; Dutch smuggling shoes that leave footprints headed in the opposite direction. But until the nineteenth century most people in the world went barefoot much of the time. Even in Europe and the United States, shoes were largely a status symbol, all the more impressive for their impracticality. “If you can prove that you don’t have to walk, it’s one of the best ways of proving all the other things you don’t have to do,” Elizabeth Semmelhack, the curator of the Bata Shoe Museum, told me.

Urbanites were the first people to wear shoes year-round, and generations of them have gradually turned cities into a new sort of extreme environment. Yielding footpaths have given way to abrasive sidewalks, grassy fields to blistering parking lots, until few feet can stand to go unshod. “Maybe it is a mistake in human development,” Hlavacek said. “But I think to stop using the shoes is impossible.”

Otzi’s shoes fascinated him, in part, because they were designed to handle the rocky slopes of the high Alps—the Stone Age equivalent of New York’s streets. The Ice Man probably went barefoot at lower elevations, Hlavacek said, or stuck his feet into a stream, as I eventually did, to moisten the hay. But, once he reached the glacier, he put on his shoes.

Flimsy as they looked, the shoes were ideally suited to the mountains, Hlavacek found. He and Gresak measured the tensile strength of the leather and the thermal conductivity of the hay. They took the shoes to a hockey rink and pushed each other around in them, to measure the sole’s adhesion to the ice. They taped pressure sensors to the bottom of their feet, put on the shoes, and walked on a treadmill. The results surprised even Hlavacek. Aside from their tensile strength, which couldn’t equal that of today’s leathers, the replicas outperformed their modern counterparts in every category. The hay had more loft and was better insulating than standard synthetics; the bearskin gripped as well as the best rubber. The shoes were so well cushioned that the body’s weight was evenly distributed across the soles: the peak pressure points were half as high as in hiking boots, seventy-five-per-cent lower than in sneakers, and eighty-five-per-cent lower than in high heels. “It is miracle,” Hlavacek said. “In these shoes you can practically not obtain the blisters.”

The true test came later, though, in the Alps. Botanists had by then identified the wood and plant fibres in the Ice Man’s weapons and clothing, and the pollen grains in his colon and lungs. They had concluded that he’d died sometime in the late spring or early summer, after hiking into the mountains from the Vinschgau Valley, some thirty kilometres to the south. (One theory held that he was a shepherd on the lam, pursued by men who had massacred his village.) Hlavacek hoped, at first, to recruit some hikers of roughly Otzi’s stature and foot size to make a similar trip. But “to prepare an expedition of twelve-year-old boys was rejected as too dangerous,” he later wrote in a paper. Gresak was sick with an intestinal...
parasite that he had contracted while on vacation in India. So Hlavacek asked three other colleagues to join him. Among them was Vaclav Patek, a well-known Czech climber and designer of mountain-climbing shoes.

They set off on September 17, 2001, each stuffed into a pair of Gresak’s replicas. Over the next three days, they climbed more than fifteen hundred metres, across snow-covered glaciers and granite scree. They trudged through streams of meltwater barely above freezing, yet their feet felt only a momentary chill. When, periodically, Hlavacek stuck a thermometer inside the hikers’ shoes, the readings hovered comfortably around seventy degrees Fahrenheit. More surprising, to a climber like Patek, was how well the shoes performed on difficult terrain. Their soles were so light and flexible, their leather so adhesive, that they could easily scale granite boulders. By the time the expedition reached Otzi’s grave site, on the tenth anniversary of his discovery, Patek had declared the boots more comfortable and capable than any he’d worn. “There is no mountain in Europe that couldn’t be conquered in these shoes,” he told Hlavacek.

In the years since, as Hlavacek has made the rounds of shoe conferences with his findings, he has often been asked the same question. As he puts it, "Can we applicate it?" His immediate answer is “Yes! There don’t exist other hiking shoes where you cannot obtain the blisters!” But, on further reflection, he admits that hay and bear hide are not obvious materials for mass production. “There is a little problem, I must say, with the hygiene,” he told me. "It is not possible to change the hay every day." Some aspects of the shoes— their light, flexible construction and the loft of their padding, for instance—could be put to use in modern designs, but only in the most abstract form. "Practically nobody wants to wear shoes like this," Hlavacek said.

Unfortunately, the alternatives are often worse. Making his way down the aisle of a shoe store in a mall one evening, Hlavacek picked up a tiny sandal made out of a translucent red synthetic. He held it up to the light and peered at the cartoon bug glued on top. "Very dangerous are these full plastic shoes," he said, frowning. "They are good only for a short time, in the sea." He set the shoe down and moved on, taking in each new horror in turn. Over here were some tennis shoes with Velcro straps that would cut off the foot’s circulation. Over there a pair so airtight that they would turn into steam baths (“very, very perilous”). Some shoes were made of vinyl or faux leather with no "shape memory"—in time, they would mold the foot to their own twisted form. Others seemed almost deliberately cruel.

“What to say?” Hlavacek told me, stopping in front of a display of stiletto-heeled boots. “They are not made for walking on the feet.” The high heels would shift eighty-five per cent of the body’s weight to the toes—the part of the foot least equipped to handle it—while the heel bone, one of the sturdiest in the body, would be left hovering in the air. Shoemakers divide feet into three broad categories, Hlavacek said: Egyptian feet, in which the big toe is the longest; Greek feet, which have a long second toe; and cubic feet, with toes of equal length. But no foot in the world was shaped like these boots: needle-toed and impossibly slender. Whoever bought them, he added, would probably unknowingly add to her misery: half of all women buy shoes that are too small for them.

For a time, after the 1989 revolution, Hlavacek had a more optimistic view. He dreamed of rekindling the old Bata spirit—of creating shoes that would combine new technologies with ancient innovations. He imagined a shoe store like a high-tech cobbler’s shop: patrons would get three-dimensional scans of their feet, choose a style and material, and have their shoes custom-made by machine. Parents would enter their shoe sizes into a store computer, along with their children’s sex, foot size, and date of birth. Then a program that Hlavacek developed, based on a statistical study of two thousand families, would predict the children’s foot growth in coming months and tell them what size shoes to buy.

On December 13, 1989, three days after Vaclav Havel announced the appointment of a new cabinet, Thomas Bata, Jr., who is now ninety, returned to Prague from a fifty-year exile in Canada. At the airport and along the road to the city, thousands of people gathered with flags and handmade signs to welcome him home. Bata and his wife, Sonja, drove to Wenceslas Square that day, where he was to speak to a crowd of a hundred thousand. First, though, they met with Havel, "officiating among bits and pieces of furniture, half-empty pop bottles, and unfinished sandwiches," as Bata later recalled. Havel’s grandfather had been a Bata executive before the war, and Thomas Bata, Jr., had dated Havel’s mother as a young man, but the two never mentioned these connections. Instead, as the cameras rolled around them, Havel pointed to his shoes. “The quality is terrible,” he said. “I am sure you could do much better.”

After the Batas fled to Canada, in 1939, they tried to spread the company’s philosophy around the world, building little Zlins in Canada, India, Madagascar, and other countries. But, as the industry shifted to Asia and profit margins crept down, Bata’s free clinics and schools began to seem like so much excess overhead. By the late nineteen-eighties, the company was shutting down many of its foreign factories, and gradually shifting from manufacturing to retail. “My son is a Harvard M.B.A.,” Sonja Bata told me. “He says, ‘Mauritius has never made
SOLE SURVIVOR.(Petr Hlavacek)

us a dime. Why are we in Mauritius?" There was no room for utopias in the modern shoe business.

The day after their meeting with Havel, in Prague, the Batas drove back to the city that Tomas Bata had built, the city of shoes. On the outskirts of town, someone had papered over its Communist name, Gottwaldov, with a sign that said "Zlin." Once again, Thomas Bata, Jr., spoke to cheering crowds in the town square, and once again there were intimations of a new golden age. "They thought the whole town would come back, including the jobs and the shoes for nine crowns ninety-nine," Sonja Bata told me. "But, frankly, it would have killed us to take over." The Batas had long since become Canadians, and Zlin was in no condition to be revived. "There were these huge factories built to export shoes to Russia. The machines were antiquated, and the people . . . They are the major assets, and if they have acquired funny habits . . ." She sighed. "My husband would have said it was a real omelette. And you can’t make eggs out of an omelette."

Zlin’s sleek modernist factories are mostly empty now. Only one, on the outskirts of town, is still used to make Bata shoes. At the university, the shoe-technology program shrinks a bit every year. During the week of my visit, Hlavacek was moving his office to a smaller room, with lower ceilings, on a floor that Tomas Bata, legend had it, once reserved for architects who screwed up designs for his buildings. "My only error is that I do not bring in enough students," Hlavacek said. In his shoe laboratory, industrial sewing machines stood beside hulking leather-processing devices. Most were painted a pale institutional green and were chipped from decades of use. "Here was concentrated all the knowledge of what needed the feet," Hlavacek said. Then he shook his head. "The shoes are leaving Zlin."

To attract new students and to spread his shoemaking knowledge to where it’s needed most, Hlavacek has lately been recruiting in China and Vietnam. The time of eighth-generation Czech cobblers has passed. His son Pavel, who is twenty-four, is getting a master’s degree in political science; his daughter Jana, who is twenty-six, is an artist who works with stained glass. (She won a shoe-design competition in high school, but decided there was no future in it.) Still, Hlavacek didn’t seem dispirited. "I am naturally optimist," he said. "I think we are really at the bottom of the situation--the decreasing knowledge, the feeling of disillusion. Something must happen. Some butterfly must be quickly moved by the winds. Some pacemaker must start running with a flag, saying, ‘Care is coming!’ And I believe that it will be better."

One day several years ago, he said, his father broke down in tears. He blamed himself for his son’s career. He said that if he hadn’t spoken to the principal of the shoe academy forty years before, Petr might have been forced to find a more promising profession. "He said, ‘I am guilty you are a shoemaker!’ " Petr remembered. "And I said, ‘You are not guilty! I am proud!’ " Perhaps shoes weren’t the most exalted subject in the world (he lifted his hands above his head as if reaching for a book), but he had studied history and medicine, he had become a respected specialist, and he had helped people with their foot problems. "Can you imagine if I was not a shoemaker?" he told his father. "I can’t imagine it. I can’t imagine my life without shoes."