

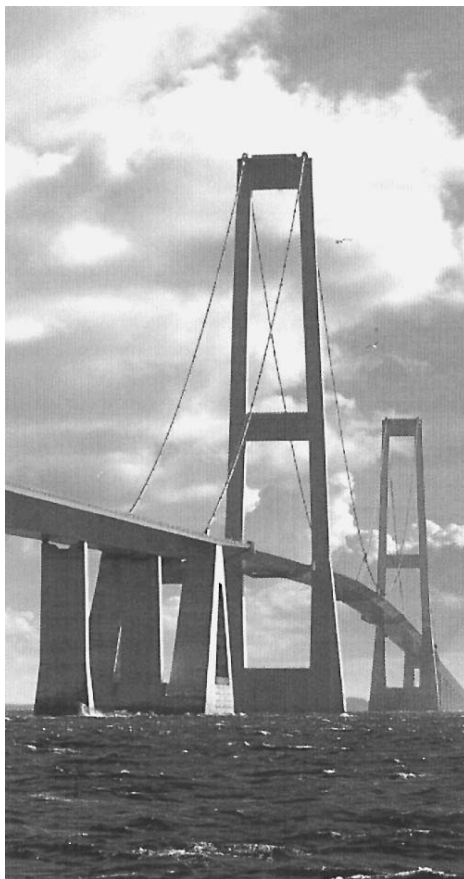
# Denmark's Great Belt Bridge opens

*Poul Rasmussen reports on the optimism generated by the inauguration of the first phase of Denmark's contribution to a Eurasian Land-Bridge.*

Great infrastructure projects and new technology are normally the fruits of cultural optimism. But it also works the other way around: Perseverance in implementing great projects can spark cultural optimism. That was proven on June 14, when one of the most impressive European infrastructure projects of this century, came to a conclusion in Denmark. With the opening of the Eastern Bridge, which consists of 6,790 meters of a combined high bridge and suspension bridge, the entire 17.5 km length of the Great Belt Fixed Link, connecting mainland Denmark with the island of Zealand, was finally completed, after ten years of construction. Now, the eastern and western parts of Denmark are united.

One week before the Great Belt Fixed Link was officially opened to traffic, the Danish Red Cross was granted permission to arrange three days of public festivities on the bridge. There was music and food, a bicycle race, and a roller skating race; since no traffic had yet gone on the bridge, many people enjoyed simply walking across it.

More than 275,000 Danes participated, out of a total population of just 5.5 million. All of them wanted to be among the first to walk, run, skate, or bicycle across the new Great Belt Bridge, and to admire this breathtaking view. One man, from Hamburg, Germany—which hopefully will one day be similarly linked to Denmark across the Fehmarn Belt—had left home at 4 a.m. to attend this historic event. Visitors also came from Sweden, where a link to Denmark across the Øresund is under construction. The Copenhagen chapter of the Schiller Institute set up a booktable, promoting



*The new bridge in the Great Belt project, connecting mainland Denmark with the island of Zealand, opened to traffic on June 14, 1998.*

the LaRouche proposal for a Eurasian Land-Bridge, and displaying a large poster of the Eurasian Land-Bridge, extending from Denmark's Great Belt to the Pacific coast of China.

## **'Keep things as they are'**

One would assume that, in a small country with the peculiar geography of Denmark—one peninsula and 405 small and large islands—the public sentiment naturally would be in favor of bridges, tunnels, and anything else to facilitate travel around the country.

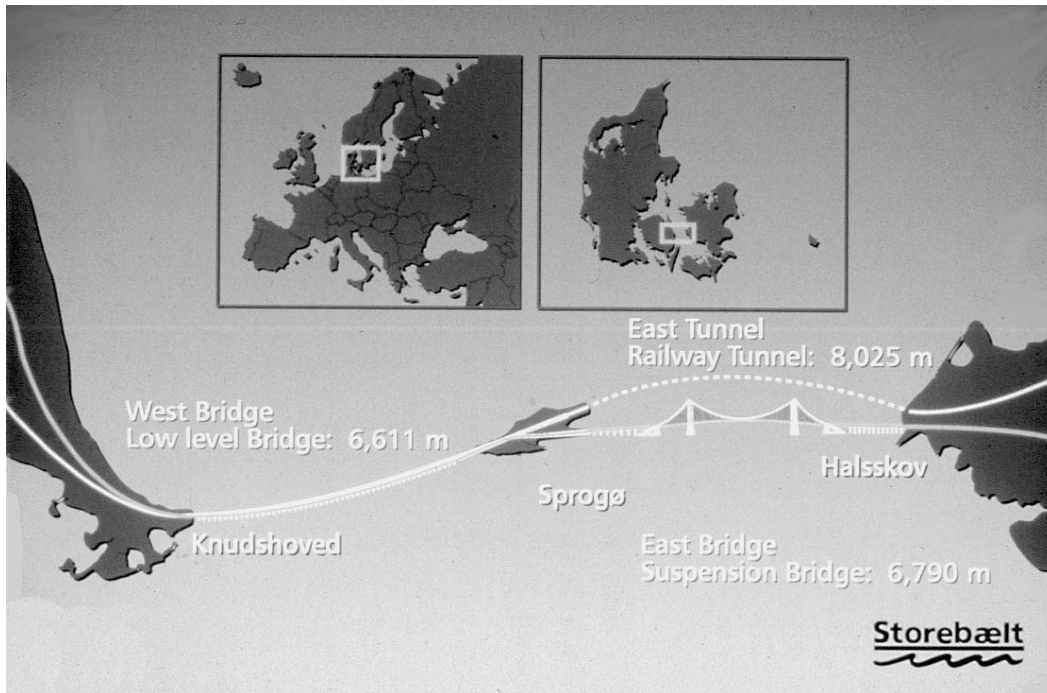
Not so, unfortunately: When the Danish Parliament passed the final appropriation for the Great Belt Fixed Link in June 1986, a majority of Danes were solidly against the whole idea. Despite decades of increasing complaints about the annoying bottleneck of using ferries to get from one place to another, Danes apparently preferred to keep things the way they'd always been. In August 1989, when the construction of the Fixed Link was well under way, an opinion poll published by the newspaper *Politiken*, showed that 57% of all Danes were stolidly against the project, 34% were for it, and the rest didn't care. Nine years later, an opinion poll taken a few

weeks before the bridge opened, showed that 76% of Danes were very much in favor of the bridge; only 9% were still against it.

What changed?

## **The power of beauty**

One major factor in changing the public mood was watching the project come into being. People crossing the Great



*The Great Belt project, the first phase of Denmark's ambitious infrastructure program to 1) connect peninsular Denmark with its islands; 2) connect Copenhagen to Malmö, Sweden; 3) bridge the Baltic crossing between Denmark and northern Germany.*

Belt by ferry could see the two bridges materialize in front of their eyes. In the early years, they watched the Western Bridge being built—8 kilometers for rail and road traffic connecting the island of Funen with the tiny island of Sprogø in the middle of the Great Belt.

And, in the past five years, it has been the Eastern Bridge connecting the island of Sprogø, with the island of Zealand, where Copenhagen is located. The Eastern Bridge is a high bridge, 6.7 km long, with its central suspension spanning 1,624 meters. The two central pylons are 254 meters high, making them the highest points in the country.

The suspension section by itself is the second longest suspension bridge in the world. It is only surpassed by the newly constructed Akashi-Kaikyo Bridge in Japan, which has a center span of 1,990 meters. But the entire Akashi-Kaido Bridge is only 3,910 meters long, as compared to the 6,790 meters for the Eastern Bridge. Then came the rail tunnel. Seventy-five meters beneath the waters of the Great Belt, two tunnels were drilled. The rail tunnel and the road bridge meet at the island of Sprogø, and thence, from Sprogø to Funen, the Western Bridge carries both rail and road traffic. Because of soil conditions, the rail tunnel was built in the form of a large curve across the Belt, making it 8 km long, while the Eastern Bridge, which crosses over the same body of water, is only 6.7 kilometers in length.

In June 1997, the rail tunnel was opened for traffic, and for the first time since end of the Ice Age, 12,000 years ago, the Eastern and Western parts of Denmark were connected. In one stroke, travel time between the major cities of Denmark

was shortened by at least one hour. In the old days, crossing the Great Belt by the ferry-train would take up to one-and-a-half hours: Now, it takes seven minutes.

The Danish State Railroad had calculated that the opening of the rail tunnel would increase the number of passengers by 30%: The estimate was far off the mark. Within a few months, more than 1 million Danes had crossed the Great Belt by train. Today, one year later the daily passenger figures are 60-80% higher than before the tunnel was constructed.

The decisive factor in generating the massive public support for the Great Belt Project was the breathtaking beauty of the Eastern Bridge. The slim design of the two tall pylons makes the bridge appear to strive toward the heavens, rather than extend across the waters. The force-free isochronic catenary curve of the main cables, meets the upwardly bending road deck, which is shaped like an airplane wing, making the entire construction look weightless and graceful. That is quite an achievement, considering the fact that the bridge construction used 259,000 cubic meters of concrete, and 80,000 tons of steel. Shortly before opening the bridge, Danish television took one of its most outspoken adversaries, a zero-growth ideologue named Ebbe Reich Klovedal, to the top of one of the pylons. Here the reporter asked him, "So, Ebbe, how's your resistance to the bridge doing?" Klovedal (who had been a founder of Copenhagen's counterculture resort, Christiania) quietly replied: "To be honest, standing up here, it is not doing so well. This is so beautiful. I completely underestimated the skills of the Danish engineers."



*The suspension bridge under construction.*

### **The Øresund Fixed Link and the Fehmarn Belt Tunnel**

With the opening of the Great Belt Fixed Link, the first phase of Denmark's giant, three-phase infrastructure program has been completed. The second phase, a fixed link across Øresund, the sound that separates Denmark and Sweden, is well under way. Its construction is every bit as impressive as the Great Belt project. Connecting the Danish capital of Copenhagen to the southern Swedish city of Malmö, the Øresund Fixed Link will be 16.2 kilometers in length, consisting of a 7.5 km elevated bridge, a 2.2 km low bridge, a 4.5 km man-made island, and a 2 km tunnel. It is planned for completion in the year 2000. While the Øresund Fixed Link does not break as many records as the Great Belt, the accompanying land works will make the entire project much more comprehensive. In both Copenhagen and Malmö, major road and rail construction is well under way, including a whole new subway system for Copenhagen.

Prospects are not so bright for the third phase of the Danish infrastructure program: a rail and road link across the Fehmarn Belt, in the western part of the Baltic Sea, separating the island of Zealand in Denmark and mainland Germany. It was originally included in the list of central projects in the European Union Commission's work on Trans-European Networks, a part of the Delors White Paper, which was presented at the Essen Summit in December 1994. But, as with most of the projects of the White Paper, written by then-EC President Jacques Delors, and reflecting some of the same thinking as LaRouche's 1989 European Triangle proposal, nothing is moving forward.

The Fehmarn Belt Link proposal consists of a 23 km tunnel for combined rail and road traffic. The cost is estimated to be around \$4 billion. It is very important that the Fehmarn Belt Link be set into motion very soon. The three phases of the great infrastructure program were planned such that the same manpower and skilled expertise could be maintained and utilized, as needed, shifting from one project to the other. Exactly this manpower was deployed very successfully from the completion of the Great Belt to the beginning of the Øresund project. As the various working teams and construction experts completed their work on the Great Belt project, they began to set work into motion on the Øresund Fixed Link. Thus, the skilled labor force and the engineering expertise from the first project are being fully utilized in the second. On June 14, the chairman of the Danish Contractors Association, Erik Ross Pedersen, told the leading Danish newspaper *Jyllands-Posten*, that the construction of the Fehmarn Belt Link must be begun within the next four years, lest the highly skilled labor force and the expertise assembled for the other two phases in Denmark, be dissipated in other projects around the world.

Sad to say, there is no great enthusiasm for the Fehmarn project in Germany, but Pedersen suggested that Copenhagen and Stockholm could make a common plea to the German government. A delay of the Fehmarn Belt Fixed Link would make it considerably more expensive. Initiating its construction, together with the completed Great Belt Fixed Link, and the ongoing construction of the Øresund Fixed Link, would constitute a proper northern route of a Eurasian Land-Bridge.