

A guiding light

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It is sometimes said of someone that he or she was the right person in the right place at the right time. Never have I seen this more clearly than with Viki Weisskopf's role as director-general at CERN. He was just the person needed, with his knowledge, his enthusiasm and his international network. With this and more, he had so much to give to CERN, but he probably also had in mind that this young, international institution that needed him might reward him with a very positive response to his special leadership.

The timing was important. In summer 1961, when Viki took over, CERN was perhaps not in a crisis but was nevertheless going through some very important transitions – a kind of puberty – with its uncertainties of direction.

Our founding fathers had done a wonderful job in creating this laboratory. They had selected a daring but very successful programme of accelerator construction. They had given us an unusually sound convention and had established a solid trust within the member states. CERN was considered, therefore, as a very successful organization in 1961, with one of the two best performing accelerators in the world. There were, however, a few aspects that the founding fathers had not foreseen or analysed in depth. Let us look at some issues that had surfaced by 1961.

One was the cost of operating such a laboratory. It became clear that the costs would be much higher than the member-state governments had anticipated, and a considerable amount of convincing was urgently needed. Viki and his collaborators succeeded in this.

Integration

Another aspect was how to integrate the high-energy physics groups in the universities and other laboratories in the member states into the experimental programme of CERN. Viki's predecessors had arranged the formal framework for this, but the practice had to be established and much suspicion had to be overcome. Viki was superbly suited for this, being liked and trusted on all sides. In this connection I like to quote Viki's own opening words in his last report to the Council in December 1965: "I would like to talk about the work of CERN. In fact, I will have to talk about the work of Europe. You cannot distinguish between the work in high-energy physics at CERN and in Europe. The work in Europe depends on CERN and the work of CERN depends on Europe." This was Viki's conviction and I feel that he must take much credit for the relative smoothness with which this integration process proceeded.

Let us then dwell for a while on, perhaps, the most important aspect of the situation that Viki faced at CERN in 1961, which occupied him during his whole reign, and which, in my subjective view, led to his greatest success, namely the long-term programme of CERN. First, I'll give you a very short summary of the history of how the programme had developed.

A suitable starting point is the International Accelerator Conference in 1956, at which a number of new ideas on accelera-



Fig. 1. Weisskopf speaks at the ISR's closing ceremony in 1984.

tors were presented, mainly from the US and the USSR. Soon afterwards, CERN set up an Accelerator Research Group within the proton synchrotron (PS) division to study (and catch up on) some of these ideas. After a few years of study, this group discarded most of the ideas, judging them to be unrealistic, at least within a reasonable timescale. From 1959 almost all of CERN's accelerator research effort went into colliding proton beams. The study was first oriented towards a two-way fixed-field alternating gradient approach (an idea that was first developed by the Midwestern Universities Research Association). However, when the PS came into operation with the promise of much more intense beams than we had dared to hope for, attention moved to storage rings with beams injected from the PS. The feasibility study gave very promising results and at the end of 1960 four senior members of the Accelerator Research (AR) Division, as it was now called, wrote a report demonstrating the performance that one might expect from such a project, which was later named the Intersecting Storage Rings (ISR).

By early 1961, however, things started to go wrong. The enthusiasm of the AR Division became contagious and spread to the directorate, which issued a document (with much the same content as the report referred to above) to the Scientific Policy Committee ▷



Fig. 2. Weisskopf speaking at the inauguration of the ISR in 1971.

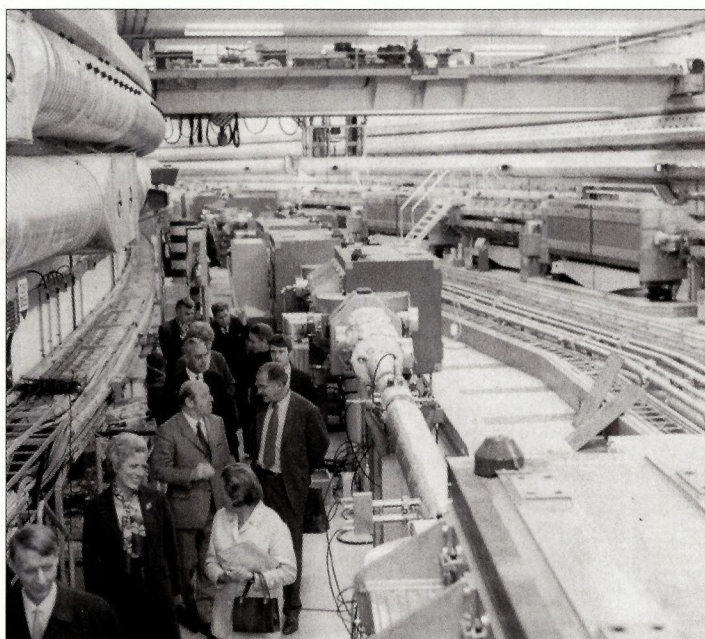


Fig. 3. Visiting the ISR after its inauguration.

(SPC) in the spring. This caused, more or less, an explosion among the particle physicists at CERN, who claimed that they had not been properly consulted and (rightly) insisted that their view should have been taken into account before such important matters went to the SPC. This criticism reached the ears of the SPC, which consequently gave the report a cold reception. The directorate had to make a temporary retreat.

This was an unfortunate start. Whether or not it negatively influenced the further process is guesswork. Let me remark that Viki had, if I remember correctly, little direct involvement in this early process because of his unfortunate car accident. However, we in the AR Division had had the pleasure of describing to him and discussing with him our results. There was no doubt that the possibility of reaching the very high centre-of-mass energy in this, in principle, simple and relatively cheap way, had caught his imagination.

Broadening the approach

During the early part of his tenure as director-general, Viki broadened the approach to the future programme in two important ways. He first asked us, as a parallel effort, to design a PS of considerably higher energy than the actual PS. This became the 300 GeV pro-

gramme. Later, the improvement programme for the PS was also introduced, including, in particular, a higher-energy injector. All of this became an integrated programme where Viki carefully avoided giving one part precedence over another, although it was clear that he had a time priority in mind with the ISR first in line.

Meanwhile, he widened the consultations on the programme significantly. All groups of the community were pulled in. CERN physicists were encouraged to participate. To get all particle physicists in Europe involved, Viki created the European Committee for Future Accelerators, which still plays an important role. He even called in the founding fathers for consultation. And, of course, the SPC had regular and sometimes heated discussions on the subjects. One important aspect of all of these deliberations was that Viki never let the ISR get pushed off the agenda despite the active physics community pressing him to do so. I must admit that these discussions were vigorous and sometimes the hardest that I have ever participated in. Let us leave it at that and go to the well-known final outcome.

Near the end of Viki's mandate he got the CERN Council on his side with the miraculous result that it was persuaded to accept, more or less, Viki's programme as a whole. This meant that the PS improvement programme could start in 1966, ISR construction would start the same year, and the 300 GeV project was part of the programme, but time-shifted with respect to the ISR and with an undetermined schedule. In my opinion this was the greatest of Viki's achievements as director-general.

Let us look a little at the consequences of his persistent efforts to make the ISR part of the laboratory's future. First, the construction was a success and the performance went well beyond what had been foreseen, particularly in luminosity, but also in such things as clean beam conditions, operational flexibility and even energy.

Burning enthusiasm

Viki was, of course, the main speaker at the inauguration of the ISR in October 1971 (see figure 2). I take this opportunity to quote a few sentences from this speech because they are so typical of his general, visionary way of thinking. He summed up his enthusiasm for the ISR as follows: "My deep belief in the fundamental importance of our growing insight into the basic structure of matter. My deep conviction that the physicists of Europe can and should be not only on par with other scientific communities but that they should be ahead, at least in some aspects. My deep sentimental attachment to CERN. This unique social and political experiment, which brings together people from many different nations in a life full of intellectual creativity; moreover it happens to be located in one of the most beautiful spots on our planet." This is Viki in a nutshell. Figure 3 shows him after the ceremony inspecting the ISR with friends and colleagues.

The significance of the ISR for the future of particle physics is also worth dwelling on. In doing so I prefer again to quote Viki's own words rather than use my own. So we move on to the closure ceremony of the ISR in June 1984 at which again, naturally, Viki was a speaker. In figure 1, we see him on this occasion and I quote from his speech: "The really important thing about the ISR is its success as an instrument, because that fact did change the landscape of high-energy physics. First it was considered only as a window into the future. This was the historical significance of this first hadron collider. It showed the possibility of doing high-energy physics at

much higher energies in the centre-of-mass system, where we can better observe what really happens because of the wider angular spread of the secondaries. After this was done, colliders became the fashion of the day. Today we have one more hadron collider at the SPS at a much higher energy. This again was a European first. But it was nothing other than a continuation of the ISR adventure. In a few years there will be a similar device at Fermilab, the Tevatron, with an even higher energy. The future plans of which we hear – in America the SSC, in Europe the plans for hadrons in the LEP tunnel – are further extensions of the ISR idea.”

This is definitely the direction that the development has taken: only colliders are in the picture for future hadron accelerator installations, some already operating, like the Tevatron at Fermilab, HERA at DESY and Brookhaven’s RHIC, with others under construction (CERN’s LHC). One can only guess how the development would have gone if CERN had not embarked on the ISR, but at best such speculations are pretty grim, when we remember that nobody else at that time was prepared to undertake such a venture.

Let us return to Viki’s role. Imagine that Viki had disappeared sometime between 1961 and 1964. The ISR would have died and the positive development described above would not have taken place. In short, his role was essential, and not only CERN but the whole particle-physics community has much to thank him for.

I had the privilege to work for Viki during his period at CERN. He was an unusually inspiring boss. His enthusiasm was contagious. When I joined CERN about 10 years before he became director-general, I was, of course, attracted by the scientific and technological challenges. However, 50% of the attraction was the opportunity to participate in this international collaboration. Viki, more than anybody, struck a resonance on this point with me and, I am sure, with most of our colleagues. CERN and Europe can be grateful to Viki for so successfully guiding this organization and the people involved through a very crucial period of its life.

Kjell Johnsen, AR Division leader, 1962 and ISR department head 1966–1973.
