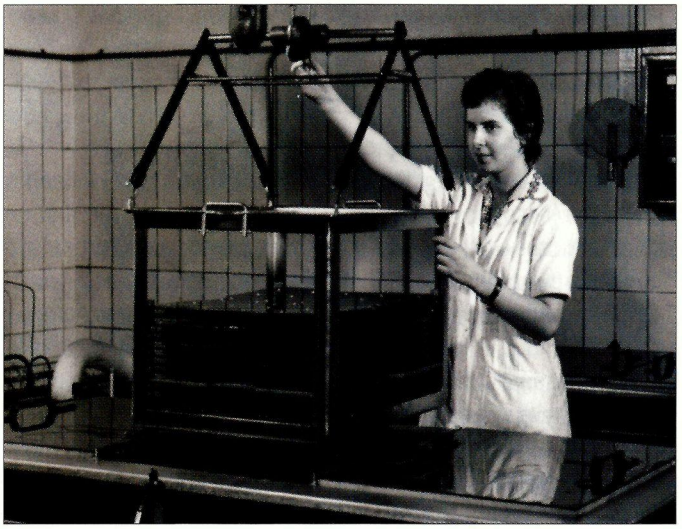
How European physics reached across the Wall

In the early 1960s, East German physicists collaborated with CERN, despite the restrictions that existed as a result of the Berlin Wall. **Thomas Stange**, author of a book on the history of the Zeuthen laboratory near East Berlin, tells the tale.

When Victor Weisskopf became director-general of CERN in July 1961, the laboratory had just about concluded a time of transition. With the commissioning of the Proton Synchrotron (PS) the year before, the European particle-physics community had turned to CERN, hoping to participate in the most advanced experimental possibilities available in Europe at the time. This had made it necessary to devise a procedure to decide which experiments to run and, hence, which groups to admit.

In setting up the Emulsion Experiments Committee, Track Chamber Committee, Electronic Experiments Committee and, coordinating their propositions, the Nuclear Physics Research Committee, the organization tried to channel the ideas of the groups that requested access to precious machine time. Among the groups that declared their interest were some from Eastern Europe; thus one of the political issues Weisskopf had to face during his term was how to deal with requests from institutes on the other side of the Iron Curtain. In his autobiography, *The Joy of Insight*, Weisskopf commented that he found it deplorable that CERN did not have any Eastern European members, and he tried to secure the participation of these countries by other means, despite difficulties on both sides.



In the 1950s photographic emulsion was, beside the cloud chamber, the dominant method for the detection of highly energetic cosmic-ray particles. Following a 1955 initiative of Cecil Powell, a developing bath for emulsions was installed in the Zeuthen laboratory.

The role of cosmic-ray physics

One assumes that the question of East German access to CERN must have been particularly delicate. In August 1961, the Berlin Wall was erected, and the West German government continued to threaten diplomatic sanctions to every country or international organization that dared to recognize East Germany as a veritable state (the so-called Hallstein doctrine). Yet in 1963, Karl Lanius, the head of the Research Laboratory for High Energy Physics in Zeuthen near the southern outskirts of East Berlin, was already preparing for the first one-year stay of one of his scientists at CERN. How did this come about?

To answer this question we need to go back to the days before the big accelerators took over and high-energy physics was primarily the study of cosmic rays. These studies lived through a golden age after the end of the Second World War and played, in the shadow of nuclear energy (the physics topic of the time), an important political role. First, a number of sensational discoveries were made by two English groups; the identification of the pion (by Powell) and the so-called V particles or kaons (by Rochester and Butler) led many nuclear physicists to turn to the study of cosmic rays. Second, the equipment needed to work on the topic was such that many groups all over Europe could afford it, no matter how strongly their science and economy had been affected by the war. Finally, this type of physics was so basic that politics interfered far less than in so many other, more applied fields of research. The particle physicists, building up old and new personal networks throughout the 1950s, therefore became forerunners in the establishment of multinational collaborations, and helped to bridge the gap between Eastern and Western European science in the first post-war years.

A major figure at the time was Cecil Powell, the discoverer of the pion and Nobel laureate for physics in 1950. Powell, who later became a prominent figure in the Pugwash movement, believed ▷

that science should endeavour to overcome political tensions. In those days his laboratory in Bristol became a meeting place for many young scientists from various Western European countries. Klaus Gottstein, a student of Heisenberg, later remembered his stay in Bristol: "Young people from a dozen nations or more worked together, discussed together, fought together, celebrated their parties together long before CERN existed. I could not help thinking that the world would be better off if a similar spirit of co-operation would be prevailing in the field of politics also..."

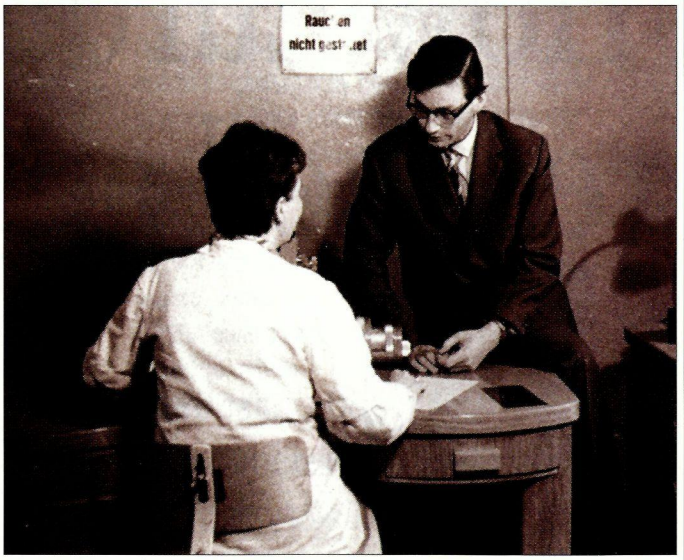
Powell's is the most prominent example for the establishment of a principle that rules high-energy physics to this day – the international distribution of labour. The principle also worked in Eastern Europe, but for a number of years contact between the East and West remained scarce. However, all this was to change.

JINR and CERN

In October 1955, Powell, in collaboration with several Italian institutes, exposed emulsions in the Po Valley. To this end he and his team launched balloons that carried the photosensitive material to heights of about 30 km above sea level. Developing and studying the emulsions was tedious, and any help and financial support, however modest, was welcome. To secure such assistance Powell had proposed involving East European institutes and had travelled, with the silent consent of the British Foreign Office, to Moscow for consultations in September. As a result universities in Moscow (Dobrotin and Vernov) and Warsaw (Danysz) were to receive two of the five emulsion packages to be exposed, of which they eventually passed on plates to groups in Budapest, Prague, Krakow and Zeuthen.

Powell's initiative had followed the first International Conference on the Peaceful Uses of Atomic Energy held in Geneva in August 1955, an event that facilitated a first wave of visits and collaborations across the Iron Curtain. Already during the conference, a number of East European and Soviet scientists took the opportunity to visit the CERN site. Yet the underlying political motive of the Soviet Union and the US was not so much to allow free collaboration, but rather to draw third countries onto their respective sides. Therefore, when the Soviet Union noticed that CERN had started to attract the interest and attention of some of its satellite states, it hastened to propose the foundation of an "Eastern Institute for Nuclear Research". The proposal could not be refused by countries such as Poland, Hungary, Czechoslovakia or East Germany, but it must be noted that the Soviet Union added considerable weight to its initiative by offering to include the 10 GeV Synchrophasotron in the new institute, which became the most powerful accelerator in the world between 1957 and the advent of the PS. Eventually, in March 1956, 11 East European and Asian countries gathered in Moscow to found the Joint Institute for Nuclear Research (JINR), situated in Dubna.

After this political act, scientific interests regained ground, and in 1957, JINR proposed an exchange of scientists between CERN and Dubna. For several reasons it took two years before the administrative and political questions connected to such a collaboration were answered. All CERN member states agreed that from a scientific point of view such an exchange would be highly desirable; only the German delegation to CERN voiced the concern that the "Soviet-occupied zone" (i.e. East Germany) could attempt to send physicists to Geneva via Dubna in order to bring itself closer to international recognition. The first exchange started in the latter half of 1960. As the group that arrived at CERN consisted of three Russian theorists, the German reservation did not come to bear. However, a second group, which came to CERN in autumn 1961, included an East German by the name of Walter Zöllner. Had the position of the West German government changed?



Karl Lanius (right), here seen talking to a laboratory assistant, became head of the Zeuthen institute in 1962, not least thanks to his success in the international collaborations at JINR and CERN.

The East German case

The friendly relations between JINR and CERN, but also shortcomings in the political and scientific situation in Dubna, encouraged groups in Eastern Europe to seek direct admission to CERN. One of the first to do so was Marian Danysz of Poland. Lanius, in turn, received word from West Germany, where he had established various valuable contacts in previous years. In December 1960, Gottstein in Munich advised him to send a letter of interest to the newly formed Emulsion Experiments Committee if he wanted to participate in the exposure of emulsions at the PS. Lanius did this, and was immediately invited to the next meeting of the committee in February 1961.

The man who answered Lanius's request was Owen Lock, one of the two secretaries of the committee. Before sending his telegram to Zeuthen he had asked his former teacher and chairman of the committee, Powell, for his consent. Powell agreed without hesitation. In an exchange of letters after the meeting, Lock also mentioned to Lanius that he had spoken with Weisskopf, the director-general designate, about "the development of good contacts between CERN and groups of non-member state countries. He was much in favour of such contacts and asked us to do everything possible to foster them." Three months later Lanius became one of three co-opted members of the committee. The two others were Cormac O'Ceallaigh of Ireland, and Danysz.

This was a considerable success for Lanius, whose new status was imperilled by the erection of the Berlin Wall, which began on 13

The first East German to come for a longer stay to CERN was Walter Zöllner. This picture, first published in CERN Courier *in October 1962, shows him between two colleagues from JINR and the two CERN scientists who later went to Dubna in exchange. Left to right: Vladimir Nikitin, Peter Kirstein, Walter Zöllner, Karl-Martin Vahlbruch and Adolf Mukhin.*

August 1961. For a few months travel to the West was almost impossible, and Lanius did not get permission to go to the meeting in October. Yet through the intercession of several government officials, he was allowed to travel to Geneva again in November 1961.

Eventually, the institute in Zeuthen did not take part in emulsion experiments; rather Lanius used his visits to CERN to ensure participation in a collaboration that carried out a bubble chamber experiment with 4 GeV pions. Again, it was his West German contacts – Gottstein in Munich and Martin Teucher in Hamburg – that helped him in this. Asked if it would be all right to pass exposed films to East Germany, Weisskopf replied that there was no objection at all on the part of CERN to give pictures to Dr Lanius in East Berlin.

The first delegations

Up to this point Weisskopf had preferred not to make this a political issue. This changed in 1962 when the "eminence grise" of East German physics, Robert Rompe, sent him a letter asking if it were possible to delegate two young scientists to CERN for a few months. This question tackled a central point of the organization's policy, and thus Weisskopf had to put it before the CERN Council. The outcome was quite diplomatic: CERN could not, Weisskopf wrote to Rompe, accept requests from governments of non-member states, but only from individual institutes. "Any political motives are to be left completely out of consideration in this." Unfortunately, the minutes of the relevant Council meeting are lost, but Weisskopf's Solomonic statement indicates that the political body of CERN followed the director-general in his will not to let politics interfere in improving relations with the Eastern European physics community.

A year later, Lanius felt it was time to prepare the first long-term delegation of one of his scientists. Weisskopf's consent was easily received; the problem was rather to "sell" the importance of the CERN collaboration to the appropriate political institutions in his country. Thus, when in June 1963 Lanius wrote to a government official that it was unknown if Weisskopf's successor would be similarly interested in fostering the ties with the socialist countries, he certainly anticipated that this argument was a good way to get visa formalities dealt with more quickly. On 4 March the second highest party committee, the secretariat of the East German communist party, agreed to the delegation of Dr Arnold Meyer to CERN for one year. Interestingly, Meyer had already left for Geneva a few days earlier.

In the following years, Lanius succeeded in sending further staff members to CERN for longer stays, and with the establishment of a separate budget for visiting scientists from non-member states, these were usually even paid for by CERN funds.

The files in the CERN archives do not reflect why the West German government loosened its formerly rigid position towards the admission of East German physicists to CERN. The most obvious explanation seems to be that the crisis in German-German relations, which followed the erection of the Berlin Wall, brought about a subtle but decisive change. Bonn kept insisting that CERN should give no pretext to the East German government to use the international laboratory to legitimize its existence. However, it obviously wished to counter the terrible act of the East German government by demonstrating the advantages of a liberal, open science community.

The decision adopted in 1962 by CERN Council referred the matter back to the merely administrative level, and to the benevolence of the director-general. The trick was simply to keep contacts and exchanges as far away from politics as possible. By leaving it at this, East German high-energy physics could participate in various CERN experiments throughout the decades until 1990, when the two German states finally reunited.

Weisskopf lived to see his dream of the 1960s fulfilled in ample measure. CERN is now a truly international laboratory with almost all of the Eastern European countries as member states, and close contacts via co-operation agreements with effectively all of the remaining nations, in addition to organizations and countries such as UNESCO, Russia, Israel, Brazil and the US.

Further reading

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The author would like to thank Owen Lock for his helpful advice and for proof-reading the manuscript.

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