

Polish science stands at the crossroads

Warsaw and Kraków. Seated round a large centuries-old table in Kraków's Jagiellonian University, a group of faculty members nod vigorously. The main dilemma facing modern Poland, they agree, is to decide what type of industrialized economy it aims to be. Meanwhile, attempts to create a modern science policy are arguments in a vacuum.

Five years after the fall of Communism, the dilemma is as sharp as ever. Much of the initial euphoria has long evaporated, as rapid inflation and stringent economies have combined to cut ever more deeply into research and teaching budgets.

So, too, has confidence in the effectiveness of 'quick fix' solutions, such as removing responsibility from the Polish Academy of Sciences (PAN) for the budgets of its 70 research institutes, transferring it to a new State Committee for Scientific Research (KBN).

Furthermore, the opportunities for exploitation opened up by the slackening of state control, combined with decades of experience in pitting wits against a widely despised political system, have given rise to new forms of corruption in science, just as in the rest of the economy. "I spend 40 per cent of my time teaching, 20 per cent of my time doing research, and 40 per cent of my time earning money," says one lecturer at the University of Warsaw, who says that he and his colleagues all take second jobs to earn a decent wage.

Optimism among the reformers, many of whom developed their ideas during the dark days of military rule in the 1980s,

nevertheless remains high. They hope that if the economy continues to grow at its present rate, removed threats of a counter-revolution will gradually recede.

Witold Karczewski, chairman of KBN and thus de facto minister of science, for example, admits that next year's science budget will remain the same relatively low proportion of total government spending (0.56 per cent) as this year. But he points out that this is based on an assumption that the economy will continue to grow, and that the government's pledge to raise spending by 5.5 per cent over the forecast rate of inflation therefore promises "some improvement in real money".

Polish science — like much of that elsewhere in Eastern Europe — has had a chequered history since, under Soviet direction, it was formally adopted as a state priority with the creation of the Polish Academy of Sciences in 1953. Academy researchers enjoyed a measure of intellectual freedom and many branches of basic science flourished, chemistry and mathematics in particular.

This success is reflected in citation figures collated by the Institute for Scientific Information in Philadelphia. According to a study commissioned by KBN and published in June, during the 1980s Poland was consistently ahead of comparable east European economies in the number of cited publications, as well as in the overall proportion of publications that were subsequently cited.

Indeed, taken globally, Poland came 11th in the world in terms of total publica-

tions in chemistry in the period 1981–92, 12th in physics and 14th in engineering, material science and mathematics. Many are proud of this record. "We feel that the old system gave good results," says Adam Bielański, vice-president of the Polish Academy of Sciences.

But the figures are deceptive. They fail to reveal a basic flaw in the Polish research system — the ineffectiveness, despite the exhortations of Stalin and his successors, of links between the activities of scientists and the application of their work to industrial and social needs.



Bielański: defends achievement record.

Many believe that, for the communist system, the flaw was fatal. "It was always promised to the state that support for research would result in the growth of the national economy through new inventions; usually it was not fulfilled, and it all broke down in confrontation with Western technology," says Zbigniew Grabowski, at the academy's Institute of Physical Chemistry in Warsaw, president of the Society for the Advancement of Arts and Sciences.

But five years after the fall of communism, the gap remains as wide — though now for different reasons. "Western industry is not interested in research carried out in Poland, while Polish industry has no long-term plans, and is therefore reluctant to invest in research," says Piotr Petelencz, professor of chemistry at the Jagiellonian University in Krakow. "In such a situation, there is little prospect of a substantial influx of research money for five or ten years to come."

Inevitably, government moves to reduce state spending and, at the same time, to enforce accountability for the spending of limited funds, have generated resentment. The critics' targets are the government's calls for greater selectivity in funding, and for the increased use of quantitative indicators — such as citation analyses — to assess effectiveness.

But many support these developments. "The scientific community in Poland has to be prepared to restructure itself and to change its values," says Andrzej Ziabicki, a prominent polymer scientist who is vice-president of the Stefan Batory Foundation, which has recently been using funds provided by the Hungarian-born financier George Soros to stimulate interest in the assessment of research. "There is no concept of science policy in this country; peo-

Historical figure hits the high notes

The face of Nicolaus Copernicus, the sixteenth-century astronomer educated in Kraków, looks out enigmatically from Poland's 1,000 złoty note. In former times, this would have had a significant value. Today, after several years of rampant inflation, the exchange rate stands at 22,000 złoty to the dollar — which values the note bearing Copernicus's portrait at about five US cents.



The difficulties faced by tourists and locals alike in counting the zeros, whether on bus tickets or hotel bills (the latter now measured in millions), will disappear next year, when four zeros are knocked off the currency. This will bring the value of the złoty roughly in line with that of its Western neighbour, the German Deutsche mark.

In turn, the złoty will be divided into 100 'groszy' — as in Austria (which used to occupy the southern part of the country as part of the Austrian-Hungarian empire). Copernicus's fate is uncertain, but he is unlikely to vanish completely from the currency.

Less fortunate is likely to be the Communist general Karol Swierczewski, who helped to rid the country of the Nazis at the end of the Second World War. His face still appears on the 50-złoty note. But with a value of less than a quarter of a US cent, that has already virtually disappeared from circulation. □