

## OBITUARY

# Wolfgang K. H. Panofsky (1919–2007)

Physicist, and passionate and influential advocate of arms control.

Wolfgang Panofsky — ‘Pief’ to his friends and colleagues — died of a heart attack on 24 September at his home in Los Altos, California. He was admired worldwide as a great physicist and the founding director of the Stanford Linear Accelerator Center. But beyond that, he earned universal respect for his humanity and integrity, and for the perseverance with which he fought to achieve the goals that he greatly valued.

Panofsky was born in Berlin in 1919, and was raised in Hamburg until 1934, when his father, the eminent art historian Erwin Panofsky, was dismissed from his professorship at the university because he was Jewish. Realizing that their lives were at risk as well as their careers, the Panofsky family sailed to the United States, settling in Princeton, New Jersey. The young Panofsky entered Princeton University at the age of 15, graduating in 1938 with a major in physics, and moved on to the California Institute of Technology in Pasadena for his graduate studies. He received his PhD in 1942 after completing his dissertation based on research in the laboratory of Jesse W. DuMond, whose daughter, Adele, he married the same year.

Although officially an enemy alien, Panofsky was granted clearance to work on the atom bomb and other military projects during the Second World War. In 1945 he was recruited by Luis Alvarez to the Radiation Laboratory at the University of California, Berkeley, where he remained for the next six years. These were fruitful years of research in elementary particle physics for Panofsky. Working with several colleagues at the accelerators at the Radiation Lab, he made important measurements of the properties of  $\pi$  mesons (pions, mediators of the strong nuclear force). Most notably, in collaboration with Jack Steinberger, he confirmed the existence of the elusive neutral pion and discovered its decay into two  $\gamma$ -rays.

The early 1950s were a time of security witch-hunts and congressional investigations into communist subversion in the United States. Panofsky objected on principle when a loyalty oath was imposed on the faculty at the University of California. Although willing to sign this oath, which was later invalidated by the courts and thrown out, he felt that it made the situation there intolerable and moved to Stanford University in 1951 as a professor of physics. He also assumed directorship of Stanford's High Energy Physics Laboratory, which had an electron linear accelerator that he developed into a powerful research tool.

The outstanding productivity of that facility stimulated a proposal to build a

two-mile linear accelerator. The result was the Stanford Linear Accelerator Center (SLAC), with Panofsky serving as director from its authorization in 1961 until 1984. A measure of his leadership and SLAC's success are the three Nobel prizes for discoveries that were made there — the quark structure of protons and neutrons; the  $J/\psi$  meson whose constituents are the charmed quarks; and the heavy  $\tau$  lepton. Panofsky also supported major advances in accelerator technology, including the development and exploitation of electron–positron storage rings and colliders.

As a teacher, Panofsky was renowned for his excellent lectures, his patience and his accessibility. He created the same open, collegial relationship with students that he nurtured at SLAC for the entire staff, top to bottom. On the wider stage, he was committed to supporting international collaboration in science, and to advancing the cause of arms control and peace in a world in which nuclear weapons of enormously devastating potential were proliferating.

He pursued those efforts with great vigour, whether at Pugwash disarmament meetings, participating in official government or National Academy of Sciences conferences and working panels, or through his wide network of personal contacts. He fostered bonds of cooperation in the belief that they were of great importance even beyond their value to science. He saw improving the mutual understanding and trust between otherwise estranged communities in countries with confrontational relationships, particularly in the Soviet Union and China, as steps towards reducing the misunderstandings that could trigger a nuclear holocaust.

Panofsky's commitment to international cooperation in high-energy physics started as far back as the 1950s, including serving on the high-energy physics subcommittee of the International Union of Pure and Applied Physics. It continued to the end of his life, with his work as an adviser for the scientific programme at China's Institute of High Energy Physics in Beijing. He took special interest in the Beijing Electron/Positron Collider, which SLAC strongly supported.

As a White House science adviser during the administrations of presidents Dwight D. Eisenhower and John F. Kennedy, Panofsky's technical contributions were instrumental in the negotiation between the United States and the Soviet Union that led, in 1963, to



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the Limited Test Ban Treaty that prohibited all except underground nuclear explosive tests. Throughout his life, he fought for a Comprehensive Test Ban Treaty, and against the decision to deploy ballistic-missile defences, on the grounds of their technical limitations and ineffectiveness against massive attacks.

In 1977, his prominence in arms control drew the attention of *Playboy* magazine. The article pointed out that “He is 5-feet, 2-inches tall, weighs 150 pounds, neither smokes nor drinks, and is manifestly, painfully indifferent to clothes” — but that, as a “key figure in the Strangelove business”, he had helped the US government avoid pitfalls it might otherwise have stumbled into.

Panofsky received just about every honour that science, academia and a national government can bestow. His awards included the National Medal of Science and the Enrico Fermi Award from the US government. His many contributions to scientific collaborations were recognized by his election as an honorary member of the leading scientific societies in the United Kingdom, France, Russia and China.

Pief spent the last day of his life in his office at SLAC, writing and arguing for arms control, and looking forward to the publication of his informal autobiography, *Panofsky on Physics, Politics, and Peace: Pief Remembers*, which appeared the following week. He is survived by his wife Adele DuMond Panofsky, 5 children and 11 grandchildren.

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