

optical information by the conventional approaches of converting it to and from electronic signals is simply out of the question. Although neither the preservation of quantum coherence nor the shape of an input pulse is demonstrated by Xu *et al.*, on-chip phase-coherent light storage is in principle possible using such dynamic approaches<sup>2,3</sup>. But in the near-term, the

greatest contribution of the present work will probably be towards realization of practical on-chip optical memory elements.

## References

1. Xu, Q. F., Dong, P. & Lipson, M. *Nature Phys.* **3**, 406–410 (2007).
2. Yanik, M. F. & Fan, S. *Phys. Rev. Lett.* **92**, 083901 (2004).
3. Yanik, M. F., Suh, W., Wang, Z. & Fan, S. *Phys. Rev. Lett.* **93**, 233903 (2004).
4. Liu, C., Dutton, Z., Behroozi, C. H. & Hau, L. V. *Nature* **409**, 490–493 (2001).
5. Phillips, D. F., Fleischhauer, A., Mair, A., Walsworth, R. L. & Lukin, M. D. *Phys. Rev. Lett.* **86**, 783–786 (2001).
6. Bigelow, M. S., Lepeshkin, N. N. & Boyd, R. W. *Science* **301**, 200–202 (2003).
7. Camacho, R. M., Pack, M. V. & Howell, J. C. *Phys. Rev. A* **73**, 063812 (2006).
8. Xu, Q. *et al. Phys. Rev. Lett.* **96**, 123901 (2006).
9. Vahala, K. J. *Nature* **424**, 839–846 (2003).
10. Altug, H., Englund, D. & Vuckovic, J. *Nature Phys.* **2**, 484–488 (2006).

## CARL VON WEIZSÄCKER

## A man for all seasons



GETTY

In his native Germany, Carl Friedrich von Weizsäcker was feted as the last of a breed long considered extinct in the Anglo-Saxon world: that of the *Universalgelehrter*, the polymath who roams freely across disparate fields of thought. Certainly, no *curriculum vitae* encapsulates better the intimate, fluid and often troubled relations between science, philosophy and politics in twentieth-century Germany than his. A protégé of Werner Heisenberg, he counted the Dalai Lama among his own students. He was asked to run as German president in 1979 — that office was later held by his younger brother Richard. A committed pacifist after the war, he had worked on Hitler's atom bomb.

Von Weizsäcker was born in the northern port city of Kiel in 1912. His luck, or fate, was to come of age in the Germany of the late 1920s, just as Heisenberg, Niels Bohr and others were fleshing out the bones of quantum mechanics. This was revolutionary physics that also challenged the fundament of classical philosophy. In

von Weizsäcker's own words, "I studied physics out of philosophical interest, and I pursued philosophy as a consequence of my reflections on physics; my interest in politics, on the other hand, stems from a sense of duty".

His early contributions to nuclear physics and astrophysics, as yet uninfluenced by politics, were unimpeachable. The semi-empirical formula for nuclear binding energy, still familiar in undergraduate physics courses, bears his name and that of Hans Bethe; in 1937, he and Bethe sketched out the series of nuclear reactions catalysed by carbon, oxygen and nitrogen by which the Sun fuses hydrogen to helium. In 1944, he was the first to propose that the planets formed in a disk of gas and dust around the Sun.

But a physicist of von Weizsäcker's stamp could not long remain divorced from politics. Unlike Bethe and others, whom the gathering storm forced onto the path of emigration from 1930s Germany, von Weizsäcker stayed put, moving, in 1942, from Berlin to the University of Strasbourg in occupied Alsace. His wartime involvement in the Nazi bomb project remains controversial. He accompanied Heisenberg, then head of the bomb effort, on his visit to Niels Bohr in Copenhagen in 1941, shortly before Bohr was spirited away to Los Alamos to work on the US bomb. The true purpose of that visit remains hotly debated, not least since Michael Frayn's 1998 stage-play *Copenhagen*.

Von Weizsäcker's claim that the German bomb never materialized not because he and his collaborators could not — which was undoubtedly true, given the limited resources at their disposal — but rather because they would not, remained the accepted version of events for almost half a century. Only with the publication in 1993 of conversations between the German scientists, taped secretly in the British internment camp at Farm Hall near Cambridge towards the

end of the war, was the whitewash of this self-absolution exposed.

Whatever his wartime role, von Weizsäcker's commitment to the pacifist cause in the years following the war is indubitable. He was the initiator of the 1957 Göttingen declaration, in which 18 prominent physicists spoke out against West Germany developing an independent nuclear deterrent, and called for the production of nuclear weapons worldwide to be halted. In the following decades, he remained one of Germany's most prominent and authoritative pacifist voices, constantly formulating alternatives to the cold-war world-order and, when that era had ended, leading the scientific outcry against France's renewed nuclear testing in the mid 1990s.

Always a committed Christian, von Weizsäcker's own work tended ever more towards the attempt to unify scientific and religious philosophy in one overarching structure. But the attempt to find an all-embracing *Weltformel* defeated him, as it had Heisenberg and Albert Einstein before him. In 1970, he founded an institute in Starnberg near Munich, later the Max Planck Institute for Social Sciences, to study sources of conflict in a world dominated by science and technology. From there, he wrote prolifically on an unparalleled range of topics in physics and philosophy, on the relationship of the developed and the developing worlds, on environmental destruction, and on the marriage of eastern mysticism and western science.

One of the last surviving protagonists of a turbulent period of scientific and political history, Carl Friedrich von Weizsäcker died near Starnberg on 29 April 2007, aged 94.

Richard Webb

Richard Webb is a News & Views editor for Nature.