

Physics Institute in Moscow and later headed its theoretical-physics department. His wide range of interests over some 60 years of research have included nuclear fusion, cosmic rays, radio astronomy, plasma physics, electrodynamics, superconductivity, ferroelectricity and other topics in solid-state research.

He is probably best known for the Ginzburg–Landau theory of superconductivity, which has found applications in other areas of physics. And he worked under Tamm on thermonuclear weapons research. However, because Ginzburg’s wife had been jailed for alleged counter-revolutionary activity in 1944 and was subsequently exiled to Gorky (where they met), he was regarded as a security risk and did not accompany Tamm and Andrei Sakharov to the KB-11 laboratory in Sarov, Russia’s nuclear weapons design centre, in 1950.

Despite his awareness of Landau’s problems in 1938 — he was imprisoned for writing a genuine counter-revolutionary pamphlet — and the fate of other less fortunate colleagues, disillusionment set in only later and is honestly expressed: “I am fully aware of my past grievous delusions (for instance, I realised that Stalin was a foul criminal and murderer only after the Communist Party had revealed that in 1956).”

The middle part of the book contains scientific autobiographical notes and essays on the philosophy of science. And Ginzburg gives his views on questions such as age and productivity, priority in the attribution of discoveries — a topic he returns to several times — and Nobel prizes. He points out that Russian physicists were at a distinct disadvantage in the 1920s and 1930s in being less frequently nominated by their colleagues for the Nobel prize than were their counterparts in the West. For instance, G. S. Landsberg and L. I. Mandelstam discovered the Raman effect just days before the great Indian scientist after which it is named. And although their results were published in the same year, the 1930 Nobel prize went to C. V. Raman alone. (The German physicist A. Smekal, who predicted the effect, was similarly ignored.)

Ginzburg assiduously refers in the book to Vavilov–Cerenkov radiation to emphasize that it had two discoverers. Vavilov, a director of the Lebedev Institute, died before the Nobel prize was awarded to Cerenkov, Tamm and Frank, the latter two having described the effect theoretically. Do we need Nobel prizes in science? On balance, Ginzburg thinks we still do.

The most interesting part of the book, for me at least, is the third part. This consists of short biographies and reminiscences of great Russian contemporaries, or near contemporaries, such as Landau, Tamm, Landsberg, M. V. Keldysh and, above all, Sakharov. The essay on “The Sakharov phenomenon” post-dates most of the other biographical contributions and concentrates on the years of

## Science in culture

### A platform of humankind

The Venice Biennale, the 49th International Exhibition of Contemporary Art.

Megan Williams

As science becomes ever more present in popular culture and the media, so the way it is depicted in the arts is also changing. In previous decades, science has often been portrayed in art as an ideological weapon turned against itself. But it is now increasingly viewed by artists as a politically neutral realm for exploration.

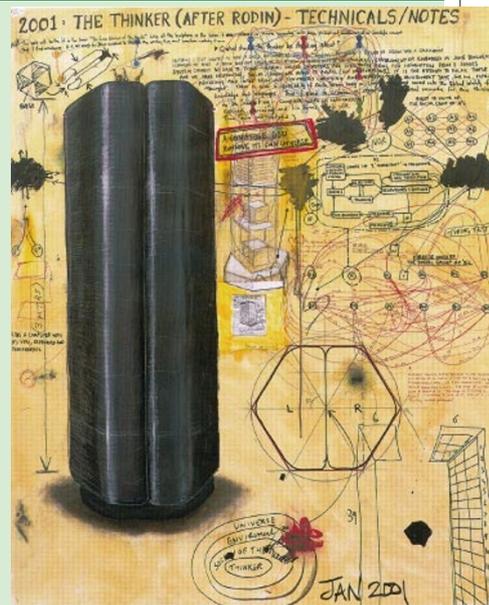
This year’s Venice Biennale, the 49th international exhibition of some of the most electrifying modern art in the world, is proof in point. Science seems to permeate the exhibition’s pavilions — perceptions of the human body and mind, questions about social behaviour, our environment, the rhythms of everyday life, and new technologies are probed in a significant proportion of the works on display.

The scientific and psychological exploration ranges from British sculptor Ron Mueck’s hauntingly lifelike silicon sculptures of the human body to Hungarian artist Tamás Komoróczy’s depiction of obsessive–compulsive disorder. In Komoróczy’s installation, the walls of the Hungarian pavilion are covered with a mural composition reflecting the psychological disorder. It consists of computer-generated, rhythmically alternating stripes based on the principle of the ‘sampling mix’ used in synthesized music, but in this case it is reproducing and manipulating samples of images. Komoróczy also uses video animation and sound corridors, which involve the repetition of and alterations to images and sounds. The result is an artistic experience that replicates obsessive–compulsive disorder in content and form, with its characteristic coinciding and conflicting patterning.

Processes of the mind are also explored in British artist Keith Tyson’s installation, *Drawing and Thinking*, which expresses a sense of awe at the mystery of thought. A principal work in this installation, entitled *The Thinker (After Rodin)*, is a mural depiction of a hexagonal tower housing an artificial-life programme that drives its own artificial universe and yet is unable to communicate with the outside world. Tyson’s

opposition and Sakharov’s exile to Gorky in 1980. Sakharov’s complex personality — characterized by what Ginzburg describes as “apartness” — led to conflicts with his colleagues, although they remained totally loyal to him during his years of petty and humiliating persecution.

What some readers may miss in this book is an account of Sakharov’s and, indeed, Ginzburg’s contribution to the Soviet thermonuclear-weapons programme. Tantalizingly, Ginzburg writes (actually in 1991) that this information is still classified, but that there had been two key ideas, one from



painting is a commentary on the human thought process — what he calls “the complex process of cognition, or consciousness or self-awareness” originating from, and held within, the human brain. It reflects his amazement at the ineffable quality of human thought — the fact that science is on the threshold of inventing silicon-based machines able to replicate the human cognitive process and yet we are still unable to know exactly what someone else is thinking, nor communicate fully what we ourselves are thinking.

This year’s Biennale, whose theme is the ‘Platform of Humankind’, clearly reflects how the content of contemporary art as well as its mode of expression are now heavily influenced by scientific inquiry. Sound patterning, video imaging, even the use of the olfactory sense as a means of expression, have all become part of the artistic tool-box. As is so evident here, the traditional boundaries between art and science have never been less apparent — to the enrichment of both.

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The Biennale runs until 4 November 2001.

Sakharov and the other from himself. In a footnote we learn obliquely that Ginzburg’s was the use of lithium-6 deuteride as the fusion fuel in the bomb; we now know that Sakharov’s contribution was the ‘layer cake’ configuration. But Ginzburg was not really an insider and he has decided — perhaps wisely — not to update these chapters. What we do learn is that — just as in the United States — some of the finest minds in physics worked on the nuclear-weapons programme.

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