



A woman has cancer radiotherapy at Oak Ridge Institute of Nuclear Studies, Tennessee, in the 1950s.

#### CANCER THERAPY

# Up close and personalized

Gerard Evan reviews an inspiring, at times frustrating, chronicle of the war on cancer by one of its generals.

The 1971 US National Cancer Act, which effectively declared a ‘war on cancer’, was the product of a confused era. During the cold war, extreme pessimism and extreme optimism were constant, if unlikely, bedfellows. As long as we didn’t blow ourselves up, anything was possible — even curing cancer. In the years since, Vincent DeVita has been both a key participant in and a witness to this war, as director of the US National Cancer Institute (NCI), physician-in-chief at Memorial Sloan Kettering Cancer

Center in New York City and director of the Yale Cancer Center in New Haven, Connecticut. In *The Death Of Cancer*, he and his daughter, the accomplished science journalist Elizabeth DeVita-Raeburn, write of this period with passion and insight. It is a deeply personal account, often inspiring, sometimes confusing and occasionally unedifying.

DeVita opens with the story of his friend Lee. Lee’s protracted encounter with aggressive prostate cancer encapsulates the book’s principal thesis: that the treatment of cancer

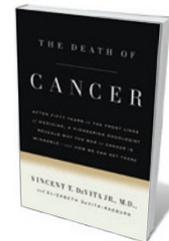
is frequently ill-informed, too conservative and mired in the timidity of local and national bureaucracies. DeVita makes an unassailable case that advances come from people with courage, vision and tenacity, rare virtues too often confused with risk-taking and stubbornness in today’s blame-addicted society.

Lee’s cancer follows a well-trodden course, initially responding to therapy, but over time, and under the selective pressure of drugs, evolving into a refractory, terminal disease. DeVita uses his abundant connections to see that Lee receives exceptional personalized care — radiotherapy in the best cancer hospitals and unprecedented access to experimental drugs. Through this heroic effort, Lee survives for 12 years. Yet with this narrative, DeVita also opens a can of worms. He shows that the standard of care can be improved. But a uniquely well-connected ex-head of the NCI personally stewarding someone’s treatment is personalized medicine for the super-elite (and the cost be damned).

It is also irritating to see DeVita fall into the teleological trap of endowing cancer with baleful purpose. He describes cancer cells as “canny” and “smart” — they “learn to outwit” therapy and “figure out” ways of surviving. Poppycock. Cancer progression and the emergence of resistance are the results of goal-less evolutionary processes, not calculated intent. Imbuing cancers with malign purpose terrifies patients and is shoddy biology.

After Lee, we enter the barbaric world of post-First World War cancer treatment, when crude surgery and even cruder radiotherapy ruled. We then meet JD, a Polish immigrant with lymphoma and the first person to get chemotherapy for cancer. In 1942, he was admitted to what is now Yale–New Haven Hospital, where, having previously failed radiotherapy, he was pumped with nitrogen mustard (also known as mustine). His cancer shrank to nothing, but the chemotherapy killed him. From such an unprepossessing start, it took guts to bear the chemotherapy torch and, given the toxicity of the agents, even more guts to use them in combination.

DeVita tells an engaging tale of how combination chemotherapy was developed at the NCI, and of his pivotal role. The NCI, a quasi-independent juggernaut of the National Institutes of Health, was tasked with overseeing prosecution of the National Cancer Act. We meet the remarkable Emil ‘Tom’ Frei, NCI chief of medicine, and Emil ‘Jay’ Freireich, who ran the children’s leukaemia ward. They developed the first cure for childhood leukaemia,



**The Death of Cancer**  
VINCENT T. DEVITA  
AND ELIZABETH  
DEVITA-RAEBURN  
Sarah Crichton: 2015.

and coined the first of the snazzy acronyms: VAMP, a brew of vincristine, amethopterin, 6-mercaptopurine and prednisone. In 1972, DeVita, Frei and Freireich were among the recipients of the Albert Lasker Clinical Medical Research Award for their work.

They did not have an easy time of it. DeVita paints a depressing picture of internecine strife in oncology, fuelled by a preoccupation with status and status quo at the expense of innovation. Be warned: this is a very personal tale of political manoeuvring, with a large cast of heroes and anti-heroes. I recommend noting down the names as you go.

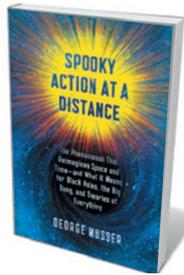
DeVita became director of the NCI in 1980. He had the thankless task of replacing a grace-and-favour establishment with something approaching a meritocracy — guaranteed to elicit some lifelong enmity. He also presided over the maturation of combination chemotherapy from an empirical mix of poisons into a modern, evidence-based process, undoubtedly saving millions of lives.

Yet here, as with the section on Lee (and for much the same reason), DeVita's narrative occasionally raised my hackles. The 1960s and 1970s were complex and difficult: a dearth of cancer drugs, mechanisms and vision was seasoned with vested interests and institutional insecurity. But DeVita describes a world where influential doctors used their power to demand favours of each other and their underlings — a system in which he participated. This is not a reassuring depiction of medical practice. Of course, it is impossible not to admire the passion, optimism and dedication that course through this book, and I applaud every success among patients for whom DeVita cared personally. But we must never forget that the best cancer therapies need to be made available to everyone, at a cost that patients and society can afford.

The war on cancer is often compared unfavourably to another great US science initiative, the Apollo lunar programme. This is unfair. Both required almost superhuman ingenuity and effort, but landing a man on the Moon was principally a problem of engineering and organization. By contrast, despite 45 years of insight into the molecular processes of cancers, we still do not really know how therapies exploit cancers' vulnerabilities, or even why such vulnerabilities exist. Every day, we use targeted drugs to block mutations that drive cancer cells but, remarkably, we still fail to understand why that kills them. It is ironic, then, that former US president John F. Kennedy's prophetic words about the Moon mission best describe our enduring struggle against cancer: "The greater our knowledge increases, the greater our ignorance unfolds." ■

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## Books in brief



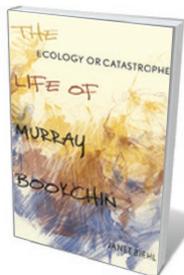
### Spooky Action at a Distance

*George Musser* SCIENTIFIC AMERICAN/FARRAR, STRAUS AND GIROUX (2015)  
Does space exist? The quantum phenomenon of non-locality, in which two particles can be correlated even when far apart, begs that question. In this polished study of the concept that Albert Einstein dubbed "spooky action at a distance", science writer George Musser tours the entangled research, history and philosophical speculation surrounding it. He examines the heated debates (such as the recent wrangle between the string and twistor communities), the theories of physicists such as laser pioneer Enrique Galvez and more, proving that this is one of the most engrossing disputes in science.



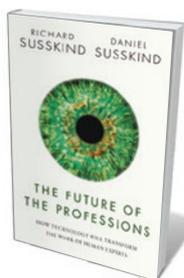
### Concrete Revolution: Large Dams, Cold War Geopolitics, and the US Bureau of Reclamation

*Christopher Sneddon* UNIVERSITY OF CHICAGO PRESS (2015)  
In this stellar history, geographer Christopher Sneddon traces the twentieth-century boom that saw 50,000 big dams built worldwide. The US Bureau of Reclamation presided, from the Great Depression megaproject Hoover Dam to the cold-war export of bureau engineers to more than 100 countries. Yet by 1969, assistant commissioner Gilbert Stamm saw that doing "marvellous things with materials" does not necessarily meet human needs. Societies and rivers, Sneddon shows, make for a complex confluence.



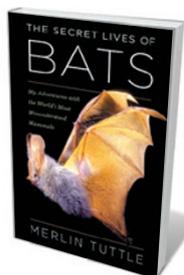
### Ecology or Catastrophe: The Life of Murray Bookchin

*Janet Biehl* OXFORD UNIVERSITY PRESS (2015)  
Just before the explosive advent of Rachel Carson's book *Silent Spring* in 1962, radical ecologist Murray Bookchin published *Our Synthetic Environment*, warning of impacts from pesticides, industrial farming and deforestation. He went on to pen *Crisis in Our Cities* (1965), which predicted global warming from fossil-fuel use, and to teach solar-power technology and urban farming. The prescient Bookchin emerges in Janet Biehl's politics-heavy biography as incisive, inventive and pragmatic — a refreshing contrast to today's environmental doom-mongers and techno-utopians alike.



### The Future of the Professions: How Technology Will Transform the Work of Human Experts

*Richard Susskind and Daniel Susskind* OXFORD UNIVERSITY PRESS (2015)  
Advances in digitization will soon obviate the need for doctors, teachers and lawyers. So write 'legal futurist' Richard Susskind and economist Daniel Susskind, arguing that the professions are unaffordable, antiquated and opaque. Analysing how the algorithmic juggernaut is forcing the decomposition of traditional careers, the authors propose six new professional models — such as "knowledge engineers" — that together form a non-alarmist vision of how "increasingly capable" machines could help to redistribute expertise.



### The Secret Lives of Bats: My Adventures with the World's Most Misunderstood Mammals

*Merlin Tuttle* HOUGHTON MIFFLIN HARCOURT (2015)  
Anyone who has ever thrilled to bats' aerial feats, pollinating prowess or outright charisma will delight in ecologist Merlin Tuttle's scientific memoir. Drawing on 55 years of research, Tuttle relates exhilarating moments galore, from his teenage sighting of a "mother lode" of 100,000 gray myotis deep in a Tennessee cave, to dangling from a hot-air balloon to spot free-tail bats and dodging spears in Kenya while hot on the trail of chiropteran carnivores. **Barbara Kiser**