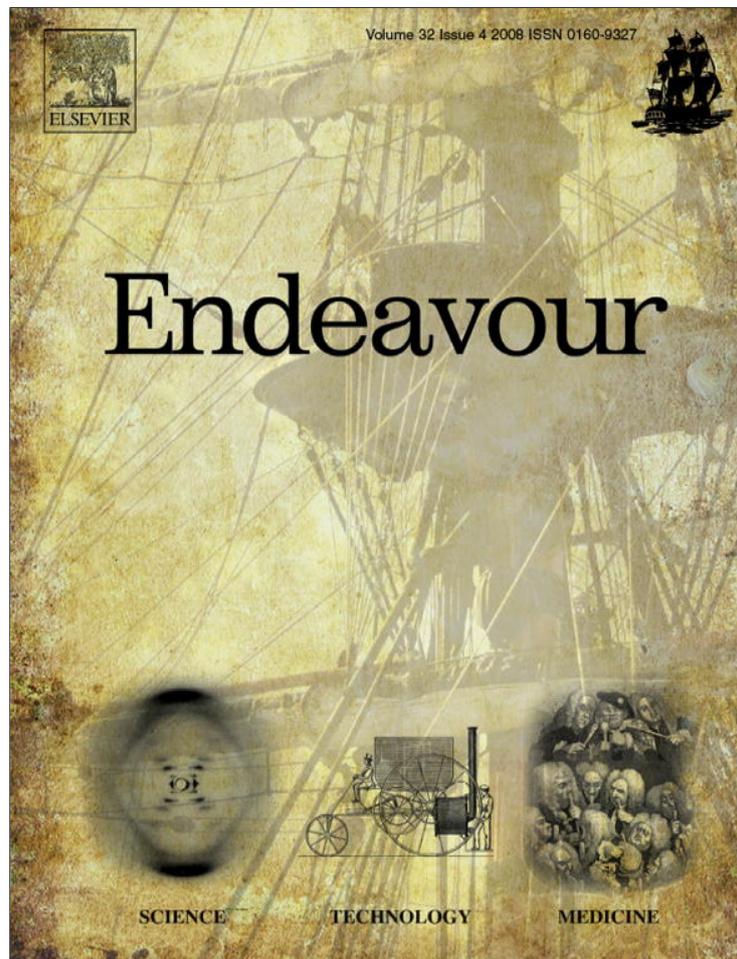


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State Secrets

Seduced by Secrets: Inside the Stasi's Spy-Tech World by Kristie Macrakis, Cambridge University Press, 2008, 370 pp., \$28, ISBN: 978-0-521-88747-2

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The Stasi do not have a good reputation. Cast as little brother to the KGB, the East German Ministry for State Security was best known as an institutional voyeur, persecutor of dissidents, and relentless recruiter of informers, thousands of them only children. With post-Berlin Wall hindsight, the damage inflicted on their own countrymen – peeping on poets while the state system rotted from within – makes

the Stasi seem both brutal and pathetic at the same time, a paranoid organization that in the end accomplished almost nothing to enhance genuine state security.

Kristie Macrakis' *Seduced by Secrets* tells a different story about the Stasi. A historian of science, Macrakis focuses on the Stasi through the lens of technology: the espionage of technology and the technology of espionage. Technology was central to the Stasi story, she argues, both because a huge amount of Stasi activity went into illicitly acquiring technologies from abroad, primarily for the benefit of the East German economy, and because of the ways that the Stasi used technology in order to create their panoptic state.

Stealing Western technology was a major preoccupation, a theft implemented through a foreign wing that was much more important, in terms of manpower and resources, than the organization's domestic arm. And it was much more effective, with Stasi spies penetrating the intelligence networks of West Germany, the United Kingdom and the United States. The secrets lost ranged from the purely economic – information or items that would save East Germany millions in research investment – to the highest echelon of military secrets – the US plans for electronic warfare against the Eastern Bloc. The Stasi's reach was wide, working closely with sympathetic intelligence agencies in Latin America, notably giving the Cubans the ability to eavesdrop on communications at the US base in Guantánamo Bay.

The Stasi especially coveted stolen Western electronics technology (largely produced by firms in West Germany) that could be reverse engineered in East Germany and reproduced under a socialist imprint. In particular, they targeted microchips, semiconductors, lasers and computers, things the West was using to produce a massive knowledge-based economy, and things the East had found difficult to produce independently.

By their own account, the Stasi were immensely successful at this: in return for an investment of 2.5 million DM in the infrastructure of espionage (which included payments to corporate moles), they claimed a return of 150 million DM worth of stolen R&D, an impressive profit for any industry, legitimate or clandestine. By the 1980s, this sort of high-tech espionage had become common enough that on one pilfered chip the East German technicians found a message for them (and their Soviet friends) written in Russian: 'When are you going to stop stealing?'

But this model of technological development meant that the Stasi would always be two steps behind the West. By the time they had stolen the items and figured out how to produce their own knock-offs, the technology itself was at least a year or two out of date. Even with the modest goal of copying others' work, they ran into difficulties. When one technician filed a complaint about the compartmentalization that prevented people like him from ever knowing what ends their work was supposed to be serving, a Stasi superior's penciled response made it clear how the security detail saw the issue: 'Thank God! Specialists are there so they won't have an overview'.

Macrakis' book is full of moments like this. Many are emblematic of the decline of DDR socialism: when Erich Honecker demanded in 1986 that his state be able to produce a one-megabyte computer chip, he was ceremoniously presented with the final product a year early by the director of the Stasi's Sector for Science and Technology. But instead of being a symbol of entrance into the 'international elite' of high technology, 'it turned out the sample was just a dummy acquired from the West'. As Macrakis point out, 'although the East saved on research and development costs, it never attained the "world stature" status it craved; instead it was merely struggling to keep up'.

The second part of *Seduced by Secrets* deals with the more familiar technology of *committing* espionage: spy-tech from the Stasi equivalent of Q's laboratory: tiny cameras for surreptitiously photographing documents and people (including one that was to be precariously concealed in a female officer's cleavage); specialized machines to automate reading private mail (in the 1980s the Stasi were reading 90,000 pieces of East German mail a day, Macrakis reports); invisible writing systems; and camouflaged containers to hide all of these widgets. Some of the technology is underwhelming to read about: the tiny cameras were often poor performers; innovations in

invisible inks were just variations on a theme; and the containers were none too different from children's puzzles. Some, however, were truly innovative, like an air gun that could shoot a radioactive bullet into the tire of a target's car, whose movements could then be reconstructed after the fact with a radiation detector. Most impressive is the Stasi development of an automated fingerprint system years before the FBI had its own.

In places, Macrakis' account has the certainly unintentional effect of glorifying Stasi technical achievements. She goes to great lengths to defend their practice of routinely collecting the smells of suspects by means of a special interrogation chair. For Macrakis, this is an example of sound police work, a pre-DNA approach to proving someone had been in a given location. The attempt to rebalance existing historical narratives is understandable, but the results are sometimes odd. Macrakis is, for example, more overtly critical of the Stasi for their lax attitude towards radioactivity than she is towards the technologies that enabled them to construct their pathological informer-state. While the former no doubt posed health risks of some magnitude to a small number of people, it was the latter that distinguished the Stasi from, say, the CIA or the FBI, and had the more profoundly damaging consequences for human lives.

What the book does best is to complicate the picture of the Stasi as simply an inward-directed agency. The Stasi were far more effective in their foreign operations than the West imagined at the time, scoring numerous coups in areas of technological espionage and even military secrets. The story is abundantly supported by documents retrieved from the archives of the West and East German intelligence agencies, as well as numerous interviews with practitioners of these dark arts. Macrakis gives readers a vivid sense of the quotidian technological and human practices of DDR state security. There are times when the author herself seems a little seduced by the technical details, but it seems like this would be hard to avoid, given the nature of the material.

In the end, for all of their efforts at home and abroad, the Stasi could not preserve the state. In helping their leaders take shortcuts, they may have saved money, but, as the West learned far earlier, there is more to research than the finished product. As Macrakis puts it, 'a scientific establishment based on pirated and cloned technology can never be a leader'. The Stasi were more than mere thugs, but their efforts were still in vain as they struggled against an ever-changing technological and political world.

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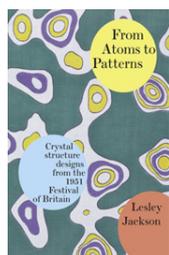
Book Review

Natural designs

From Atoms to Patterns: Crystal Structure Designs from the 1951 Festival of Britain by Lesley Jackson. Richard Dennis Publications, 2008, 124 pp., £20.00, ISBN: 978 0 9553741 1 1

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Of the many projects that have aimed to bring together science and art, the Festival Pattern Group (FPG) is one of the most productive and intriguing. In the 1951 Festival of Britain, manufacturers exhibited futuristic designs in silk, lace, wool, cotton, paper, plastics, glass and other materials closely based on cutting-edge X-ray diffraction images of molecules ranging from zinc hydroxide to haemoglobin produced by British crystallographers (three of whom – Dorothy Hodgkin, John Kendrew and Max Perutz – won Nobel prizes in the 1960s).

In 2008, the FPG was the subject of an exhibition at the Wellcome Collection, based on the collections of the Victoria & Albert Museum. *From Atoms to Patterns* is the unusual and attractive accompanying publication: a copiously illustrated reference catalogue of the patterns, manufacturers, molecules and crystallographers, and also the story of how

the project was realised and its influence on design. For Lesley Jackson, a curator and design historian specialising in twentieth-century design and the author of *From Atoms to Patterns*, the FPG 'appears something of a curiosity' but 'curiously fascinating nevertheless.'

The crystallographers, with one exception, were not personally involved with the 1951 designs; indeed their names were not credited, in order to protect their scientific reputations. But when they saw them, their responses were overwhelmingly positive. In May 1951, the pioneering Sir Lawrence Bragg, director of the Cavendish Laboratory in Cambridge, wrote to Mark Hartland Thomas, chief industrial officer of the Council of Industrial Design: 'When in 1922 I worked out the first crystal of any complexity that had been analysed, aragonite, I remember well how excited my wife was with the pattern I showed her as a motif for a piece of embroidery. Ever since then I have been urging industrial friends to use these patterns as a source of inspiration, and I was delighted when Miss Megaw told me two years ago that she had aroused your interest. The patterns she showed me yesterday are the practical realisation of what we have long wished to see.'

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