

"Russia In Space" by Brian Harvey, Springer-Verlag, pounds 19, ISBN 1852332034
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Decline and free fall

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Russia has clung onto its space programme. Now it needs allies to stay in orbit, says James Oberg

"IF you think education is expensive," goes the bumper sticker, "consider the alternative". A similar comparison is often applied to Russia's leading role in the International Space Station project. Having the Russians among the 18 nations involved in building the ISS has been enormously challenging, excruciatingly frustrating and surprisingly expensive. But without them many say that the project would have been denied critical information and capabilities, and might have led to its outright cancellation.

Judging these clashing priorities in the baffling universe of rocket science is a tough assignment for any observer. Space writer Brian Harvey's "Russia in Space" offers a comprehensive guide to the nuts and bolts of today's Russian space programme, plus an assessment of where the Russians now are in space, how they got there, and where they might go next.

Harvey begins with the progression of cosmonaut missions aboard the Mir space station, and the development of its successor, the ISS. This detailed but readable chronicle provides a matrix in which readers can place events made famous by newspaper headlines and television news specials. But when Harvey comes to dealing with Russia's military, scientific and commercial-applications satellite programmes, completeness wrestles with readability - and wins. This makes these sections - with their "Baedeker" of ground bases and cosmოდromes - reference material rather than light reading for all except true space flight fanatics.

More importantly, I would have liked a more profound discussion of the real issues. It wasn't just "vociferous politicians" or unreconstructed cold warriors who raised objections to Mir's safety in 1997. Many sceptics (I was one of them) felt that NASA had violated its own traditional and time-tested safety techniques.

Instead of assuming the existence of danger and requiring analysts to show how the danger could be made safe, NASA managers assumed Mir would be safe unless analysts could prove the existence of danger. Because the Russians regularly withheld or even falsified safety-related information, this was an impossible task; the game was rigged. It is a question that has profound implications for the future of the International Space Station.

"It is possible that 1998 marked the low point of the extreme financial and organisational pressure inflicted on the Russian space program," Harvey writes. The turning point, he suggests, was the struggle on 25 June 1997 to save Mir after the collision that began depressurising it. "Had Mir been abandoned there and then," he continues, "it would have been a very steep mountain indeed for the demoralised Russia ever to put cosmonauts back into space."

Harvey's view is as sharp as it could be, so soon after the events he describes. But he doesn't explore the commercial benefits accruing to Russia from its contribution to ISS. Its space industries receive \$ 600 to \$ 800 million per year in Western orders, of which probably at least a third is profit. If this really is its motivation, then for ISS, funded by their government, the Russians can be

expected to promise as much as possible and deliver the minimum required. For their commercial customers, they will deliver all they promise.

Nor does he directly address promotional propaganda such as the threat that unemployed Russian rocket scientists would all be working on Iranian and other "rogue state" missile programmes if it weren't for the ISS. But of the hundreds of thousands of missile engineers put out of work by the collapse of the Soviet Union, only a few were ever hired by cooperative projects. "Rogue states" have always been able to lease as many skilled space scientists as they needed.

Such themes underscore the importance of this subject in fields far beyond mere technology. And although mixing space science and notions of Russian secrecy may seem a recipe for hopeless complexity, Harvey has produced a useful and timely guide for evaluating Russia as a partner in Western space activities.

Additional comments deleted for space:

Such fanatics will also mark up their copies of the book with minor technical errors they can find, and I found a reasonable collection of them. None seemed to affect the significance of the themes and summaries that Harvey writes down, however. Getting mellow about such hiccups is advanced by seeing your own books in print (I've done ten so far), and I've grown more and more forgiving as I've needed such forgiveness myself over the years.

Harvey, for example, describes a manual remote-control docking system as a full replacement for an old system no longer affordable when its manufacturer turned out to be located in a different country. But the 'old' system -- code-named 'Kurs', or 'course' -- has remained the mainstay of the Russian space rendezvous system, while the manual system -- identified by the Russian acronym 'TORU' -- is still only a supplement. Nor was the flown Russian space shuttle 'Buran' sold to Australia as an exhibit for the Sydney Olympics. They got an earlier model which had made only short atmospheric hops, while the actual Buran still sits in a corner of a massive hangar at the Baikonur Cosmodrome in Kazakhstan.

As a Texan I also cannot let Harvey get away with misspelling "bar-B-Q" (OK, I would have accepted "barbecue") as bar-b-queue, although if that's a common britishism, all is forgiven and I'll just invite y'all down for a real one.

Among the roster of Russian names and places worthy of 'War and Peace', I found only two misspellings of any significance, and neither were ambiguous ("Kyubyshev" for "Kuybyshev", and "Strekhalov" for "Strekalov"). I draw attention to these only to prove, first, that I read the names, and second, that Harvey and his editorial support did a remarkably good proofreading job.