

PHYSICS TODAY, understand what the equations are supposed to achieve, even if their explicit terms become increasingly arcane as the story unfolds. To such an audience, the book delivers what it implicitly promises: an instructive and thoughtful tour of 20th-century physics, with special emphasis on the theory of the fundamental constituents of matter and the forces among them, led by a friendly guide who knows the territory and its inhabitants from personal experience.

Unfortunately, the book has many typos and other slips, such as a statement of the right-hand rule that has no mention of the thumb and has a botched drawing of the magnetic field around a current-carrying coil. Perhaps the silliest mistake is the graph of Murray Gell-Mann's famous decuplet (incorrectly called "decaplet") featuring five charge states instead of four for the delta resonance (page 159). Both Huang and his readers deserve more careful editing.

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The Atomic Bazaar

The Rise of the Nuclear Poor

William Langewiesche
Farrar, Straus and Giroux, New York, 2007. \$22.00 (179 pp.). ISBN 978-0-374-10678-2

Deception

Pakistan, the United States, and the Secret Trade in Nuclear Weapons

Adrian Levy and Catherine Scott-Clark
Walker, New York, 2007. \$26.95 (543 pp.). ISBN 978-0-8027-1554-8

At first glance William Langewiesche's *The Atomic Bazaar: The Rise of the Nuclear Poor* and Adrian Levy and Catherine Scott-Clark's *Deception: Pakistan, the United States, and the Secret Trade in Nuclear Weapons* appear to cover the same issues: the spread in recent decades of nuclear weapons materials and technologies and Pakistan's special role in those events. Both certainly target that country as the world's greatest proliferator of nuclear weapons materials and technologies. In both cases the authors draw some fine journalistic portraits, especially of Abdul Qadeer Khan, the "father" of Pakistan's nuclear program and chief proliferator of nuclear knowl-

edge and technology to Iran, North Korea, and Libya. Both books also provide convincing explanations of Khan's motivations and actions and of his downfall: He became a victim of his own hubris and his government's need for a scapegoat. The texts are also captivatingly written, as one would expect from first-class journalists. But here their similarities end.

The Atomic Bazaar is transparently an amalgam of updated, disparate articles on nuclear proliferation that Langewiesche wrote for *The Atlantic Monthly*, and it exhibits both the advantages and pitfalls of such work. The book is without references or a bibliography; we have to take Langewiesche's word for much of what he recounts. Levy and Scott-Clark's *Deception* is a much longer, academically oriented work that is extensively footnoted and exhaustively researched.

Langewiesche, currently the international correspondent for *Vanity Fair*, starts with the bombing of Hiroshima. He then systematically explains two different paths to nuclear weapons proliferation, both allegedly facilitated by the global atomic bazaar that he intimates is out of control. The first route is that terrorists seize or buy fissionable material and fashion it into a crude nuclear device. The second is that a non-nuclear weapons state produces its own weapons-grade uranium or plutonium to create a militarily useful arsenal as Pakistan has.

Levy and Scott-Clark have a more searing focus on Pakistan as both an acquirer of nuclear weapons and as a proliferator of nuclear weapons technology to other states and potentially to Islamic terrorists. Their principal concern, as their title suggests, is the part that deception has played in the Pakistani saga. They find it everywhere: in Khan's betrayal of his Dutch hosts in purloining their enrichment technology while he was conducting research in the Netherlands; in the successive Pakistani governments' lies to the international community about their nuclear aspirations and activities; and in several US administrations' alleged suppression of warnings from their own officials about Pakistan's nuclear transgressions because the administrations viewed as paramount Islamabad's value as a beachhead for fighting the Soviets, the Taliban, and Al Qaeda in Afghanistan.

For all the joys of Langewiesche's essays, his book is meandering and ulti-

mately unpersuasive. The biggest surprise is that despite the anticipated revelations about how easy it might be for terrorists to acquire a nuclear weapon, he is forced (and one gets the feeling, reluctantly so) to reach a contrary conclusion. The highlight of Langewiesche's work is his pursuit of how weapons-grade, highly enriched uranium might be pilfered from a Russian bunker and spirited out through apparently lawless central Asia or the Caucasus. His investigation, a combination of interviews with experts and locals and pure speculation, convinces him that local communities and power brokers are likely to make the mission problematic, if not impossible. He concludes that

"in the final analysis, if a would-be nuclear terrorist calculated the odds, he would have to admit that they are stacked against him" (page 69). That hardly sounds like an atomic bazaar.

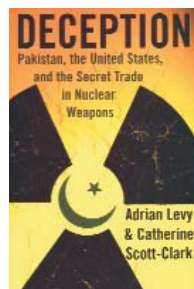
Most important, the premise of the book that the poor will inevitably inherit the bomb is questionable, even

based on Langewiesche's own evidence. Although he disparages Pakistan as a poor "rump" state, it is by no means the poorest of countries. Since the 1960s it has always been high on the list of likely proliferator nations, in part because of its scientific capabilities and strategic situation, which draws in resources—notably the massive

US assistance that is so well documented by Levy and Scott-Clark. Moreover, despite Langewiesche's dismissal of the significance of the states that have rejected the nuclear weapons option, they now number in the dozens, including South Africa, Ukraine, Kazakhstan, and Belarus, which have actually disarmed

themselves, and Argentina, Brazil, Libya, and even Sweden, which have ended their programs at various stages. The truth is that after the cold war, the vast majority of states, whether rich or poor, thankfully see no utility in nuclear weapons, and they are too preoccupied with economic advancement or the threat of climate change to care.

Levy and Scott-Clark's *Deception* is more consistent and thorough; it offers a painstaking description of Pakistan's nuclear journey and the tortured part that the US has played in various ways in facilitating, obscuring, ignoring, and obstructing that journey—sometimes all at once. However, the book wanders off the track toward the end, covering at



breakneck speed, and unnecessarily, the war in Iraq and the rise of jihadism before and after September 11, 2001. One almost imagines that a few of the authors' previously published news articles wandered unbidden into the manuscript.

Their most sensational revelation concerns the case of Central Intelligence Agency employee Richard Barlow, who was discredited and drummed out of government service after blowing the whistle, beginning in 1987, on officials' attempts to downplay Pakistan's progress in acquiring nuclear weapons. Among other allegations, Barlow charged senior US State Department officials with tipping off the Pakistani government about US customs sting operations that were designed to stop Pakistan from smuggling out of the US items that might be useful for nuclear weapons. Although he received awards for his troubles, Barlow was allegedly shunned by his former colleagues. Monetary compensation authorized by the US Congress never materialized, and he reportedly languishes in a trailer park, still seeking redress.

Levy and Scott-Clark leave too many loose ends for their account of this case to be entirely convincing. They offer no plausible explanation for why senior State Department officials would commit treason to assist Pakistan or why legal charges were not pursued against them. Unlike Langewiesche, who ends his tome with some useful cogitation about the implications of what he has uncovered, Levy and Scott-Clark career to a stop when their chronological account runs out in 2007. Perhaps they, too, were exhausted by a depressing tale that has no heroes—with the possible exception of Barlow—and countless deceivers.

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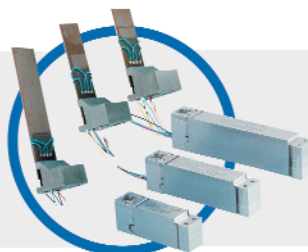
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