

Eating Grass: The Making of the Pakistani Bomb, by
Feroz Hassan Khan, New Delhi: Cambridge University Press, 2013,
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Brigadier Feroz Hassan Khan (Retd) brings to bear the right credentials to this six year effort under review. The career Pakistan Army officer and Johns Hopkins University graduate (1989–91), currently a faculty member of the Naval Postgraduate School, Monterey, California, spent the last decade of his 32 year service (he retired in 2001) dealing with nuclear issues in key positions. These included as the head of the ‘C’ Division in the Combat Development Directorate (CD Directorate), which later became the Arms Control and Disarmament Affairs (ACDA) division in the Strategic Plans Division (SPD) when it was established in 1998. The author follows in the academic footsteps of his immediate successor at ACDA, Brigadier Naem Salik (Retd), whose book, *The Genesis of South Asian Nuclear Deterrence: Pakistan’s Perspective* (Oxford University Press), came out in 2009.

The author’s claim to fame includes helping General Pervez Musharraf draft his first public speech on 17 October 1999. He proudly notes that Musharraf referred to him as the ‘nuclear guy’ when he suggested that ‘the international community was anxious to hear the perspective of a new leader of a new nuclear power’ (p. 321). Khan was actively involved in hammering out Pakistani positions on the Comprehensive Test Ban

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Treaty (CTBT) negotiations and in formulating proposals relating to a Strategic Restraint Regime (SRR) in the aftermath of overt nuclearization of the subcontinent. The author notes that Indian diplomats, Rakesh Sood (the then Joint Secretary, Disarmament and International Security Affairs division in the Ministry of External Affairs and currently the Prime Minister's Special Envoy on nuclear issues) and Jassal Singh (most probably the late Raminder Singh Jassal, who was serving as Joint Secretary in the Ministry of Defence at that time), advised him against blindly following Western concepts when elements of the regime were presented to an Indian delegation headed by Foreign Secretary, P. Raghunath, in October 1998 (pp. 304, 466). Khan also headed the 5 Northern Light Infantry (NLI) from 1991–93, which has the dubious distinction of being involved in the 1999 Kargil incursions.

The unique selling point of the book is no doubt the wide array of interviews that the author was allowed to conduct with retired diplomats, scientists and army officers, including with Musharraf. Most of these interviews were conducted in the 2005–06 period, with some of them dating to June 2010. The author was also privileged to get special background briefings by the SPD, including by its Chief, Lieutenant General Khalid Kidwai (Retd). The briefings are cited, among others, to rebut concerns over possible Pakistani use of battlefield nuclear weapons like the *Nasr*. Khan asserts that Pakistan's 'strategic command authorities' understand the 'strategic impact' of *Nasr* and that its use would warrant authorization from the National Command Authority (NCA). Instead, its introduction is termed a 'purely defensive measure' meant to restore the 'strategic balance by closing in the gap at the operational and tactical level' that had opened up as a result of India affecting doctrinal changes to allegedly pursue a limited war under the nuclear overhang (p. 396).

The briefings are also cited to rebut the contentions that the bomb design that was given to the Libyans by the A.Q. Khan network was not a design in the Pakistani arsenal but an alternate design provided by the Khan Research Laboratories (KRL). The SPD also informed the author that the United States (US) never formally asked for personal access to A.Q. Khan after he was placed in detention. Musharraf informed the author in June 2006 that the exposure of the A.Q. Khan network in February 2004 was the most 'dangerous' crisis of his seven years in power, more severe than the 1999 coup, 9/11 and the 2001–02 standoff with India. In a short chapter that deals with the network, the author

notes how the screws were turned on A.Q. Khan after the formation of the NCA in February 2000 and the SPD began to execute institutional oversight over all strategic organizations. Even after his removal from KRL in March 2001 on account of his activities, the author astonishingly notes that A.Q. Khan was allowed to keep an office at KRL, 'as well as in the prime minister's secretariat'. The demise of the network occurred, according to the author, on account of the network's transformation from 'procurement to proliferation' (its involvement in nuclear material and technology transfers to Iran, North Korea and Libya); its 'failure to adapt to increased national and international suspicion'; and the 'tremendous greed, hubris and sheer audacity of A.Q. Khan and his associates'. He notes that Pakistan has suffered an 'irreparable loss', is viewed as 'grossly irresponsible' and that one of the 'real consequences' of the network was the denial of similar treatment to Pakistan akin to the Indo-US nuclear deal.

The 20 chapters of the book are organized under five sections and provide the reader with noteworthy insights regarding the Pakistani nuclear programme. One such aspect that is of interest is the role of the army in the nuclear programme. It is pertinent to note that Zulfikar Ali Bhutto, as Foreign Minister, was in favour of Pakistan embarking on the nuclear weapons path as early as in 1965. He was actively supported by Pakistani nuclear scientists like Munir Ahmad Khan, who was working in a senior technical position with the International Atomic Energy Agency (IAEA). Khan later headed the Pakistan Atomic Energy Commission (PAEC) from 1972–1991. Khan's concerns on the issue got accentuated after he visited CIRUS in 1964. Pakistan's military ruler, General Ayub Khan, was however opposed to such an endeavour on account of the country's poor economic health (p. 62).

The author notes that the army got involved only after 1977, five years after the 20 January 1972 Multan meeting, which set the ball rolling on Pakistan's nuclear quest. Khan notes that the Multan meeting was not 'secret' as it was held under a tent on a huge lawn in the house of the chief minister of the Punjab province. More specifically, Khan highlights the significance of the year 1993 in Pakistan's nuclear history. This was when President Ghulam Ishaq Khan handed over the nuclear files to the then Army Chief, General Abdul Waheed, on account of the prevalent political instability. The author notes that this was the first time that the formal control of the nuclear issue passed on to the army.

The army, however, always had a close watch on the programme even earlier, as exemplified by the then Army Chief, General Aslam Beg's 'five-point formula' in the aftermath of the election of Benazir Bhutto in 1988. One of the essential conditions that Bhutto had to agree to before she was allowed to assume power was that she would 'not alter the nuclear policy, and to let veteran President Ghulam Ishaq Khan guide and control the secret nuclear programme' (p. 228). Later, when General Beg suggested to President Khan that a 'troika' made up of himself, the prime minister and the president be constituted to decide on nuclear issues, the author notes that Bhutto was, for all purposes, 'only a co-opted member', while the real shots were called by Beg and Ghulam Khan.

The book clarifies that Pakistan did not have an operational deterrent till about 1995, even though the PAEC had cold-tested a nuclear device in 1983 in the Kirana Hills, near Sargodha, Punjab province (an year ahead of the KRL). The Ras Koh Hills near Chagai in Baluchistan were selected in 1974 as the appropriate site to conduct nuclear tests if the need arose and work on the site began in 1978. The PAEC conducted 24 cold tests between 1983 and 1995, with different bomb designs (p. 185).

Significant space is devoted to the inter-laboratory rivalry between PAEC (established in 1956) and KRL (established in 1976 as Engineering Research Laboratories; name changed to KRL in honour of A.Q. Khan by Zia ul-Haq who was impressed with the centrifuges), with both organizations vying to outdo the other in developing a nuclear deterrent and other strategic technologies. The author notes that President Zia also encouraged this rivalry before finally deciding that the PAEC would be the lead agency. The PAEC followed the plutonium route, while the KRL followed the uranium enrichment route to develop the nuclear deterrent.

It is equally pertinent to note that both organizations followed opposite routes on missile acquisitions. While solid-fuel missiles were put together by PAEC (with PAEC scientist, Samar Mubarakmand, being tasked to lead the missile effort in 1995; he later headed the National Engineering and Scientific Commission [NESCOM] from 2001–07) with active Chinese assistance (the solid-fuel production facility at Fatehjung was their contribution), KRL put together liquid-fuel missiles with active North Korean help.

The book also highlights the personality clashes that plagued the programme (with A.Q. Khan being at the centre of most such controversies), as indeed religious and ethnic phobias that negatively

affected the programme. The Zia era antipathy and paranoia towards the presence of Ahmadi scientists or those trained by Nobel laureate, Dr Abdus Salam (an Ahmadi), in the nuclear programme exemplified the latter.

Pakistan got wilful or convenient help in its nuclear and missile quest from European countries and from entities in countries like South Africa. A combination of factors ranging from economic considerations (with Belgian firms eager to supply reprocessing technologies when the French backed out on account of American pressure) to the drive and innovativeness of the Pakistani procurement effort (assisted to a large measure by A.Q. Khan's 'rolodex of contacts') assisted in the process.

China, on its part, supplied 15 tonnes of uranium hexafluoride (UF₆) in 1978 (p. 152) as well as 50 kg of highly enriched uranium (HEU) and 'even a crude bomb design purported to be a copy of China's fourth nuclear test of 1966' (CHIC-4) in 1981 (p. 157). It is pertinent to note that this was in the aftermath of the Israeli raid on Osiraq in June 1981 and Pakistani fears of a similar attack by Israel and/or India on Kahuta. The book also cites key scientist like Mubarakmand to dismiss the contentions of a former director of the Los Alamos Technical Intelligence Division that 'Event No. 35', on 26 May 1990, at the Lop Nur test site was a Pakistani design based on a 'CHIC-4 derivative' (p. 277).

The author's take on India–Pakistan military crises and nuclear signalling makes for interesting reading. He states that unlike Western accounts (which primarily look at the issue through the prism of nuclear weapons) and some Indian commentators (who focus on the Pakistani military leadership's proclivity to derail peace initiatives), Kargil resulted because of 'the limited understanding of the meaning of the nuclear revolution' of the 'Kargil planners' who were 'mainly concerned with operational imperatives and restoring honour' (p. 317).

The author highlights the role of the 2001–02 military standoff between India and Pakistan in the evolution of the Pakistani thinking on nuclear weapons. He notes that the crisis 'accelerated the pace of force planning and integration', reinforced Pakistan's lack of resources to counter mobilize 'whenever terrorist's attacked India' and further concretized the importance of its nuclear deterrent in its security posture (p. 353).

Pakistan's achievements as the first Muslim country to possess the bomb and nuclear technology are an important theme in the book, despite the very real help that it got from countries like China and illegal

procurement networks through which it sourced both fissile material and technology. The author points out that the Karachi Nuclear Power Plant (KANUPP), inaugurated on 28 November 1972, was the first nuclear power plant in the Muslim world. Pakistan's political leadership, especially Zulfikar Ali Bhutto, astutely leveraged its Islamic identity in pursuit of its strategic capabilities. The financial support Pakistan got from Saudi Arabia and other Muslim countries was indeed an essential part of its nuclear quest, given its weak economic profile through the 25 years of this quest.

It is pertinent to note that Saudi Defence Minister, Sultan Bin Abdul Aziz, was the only foreign dignitary to have visited KRL, twice in May 1999 and August 2002. The author, however, emphatically asserts that 'such visits are opportunities for Pakistan to boast of technical capabilities and do not constitute Saudi Arabian interest in acquiring nuclear technology from Pakistan' (p. 489). F.H. Khan however does not feel obliged to explain why Pakistan does not advertise its technical capabilities in uranium enrichment used for the exclusive purpose of making nuclear bombs to other foreign dignitaries. Libya's Qaddafi was another prominent backer, with a huge stadium in Lahore named after him a reminder of such help. The exuberant reactions Pakistan's overt nuclearization generated from fellow 'Islamic' countries like Iran, and Musharraf insisting that the US was never comfortable with a Muslim country acquiring nuclear weapons, also feed the same thread (p. 345).

The India threat bogey is repeatedly highlighted to justify Pakistani nuclear acquisition. It is however pertinent to note that Bhutto's 'eating grass' metaphor was first put forth in 1965, in an interview to the *Manchester Guardian*, a clear nine years before India's 1974 peaceful nuclear explosion (which Bhutto first came to know via the *BBC*) (p. 7). A year later, in August 1966, Bhutto told a delegation of Pakistani students in London (when he was in political wilderness in the aftermath of his sacking by Ayub Khan in June of that year) that 'India is threatening us with the atom bomb...science and technology are everyone's right' (p. 66). Bhutto's statement clearly signifies a naked political attempt to garner public support and sympathy on an issue that the then military leadership was opposed to, especially in the aftermath of the country's 1965 military misadventure.

In the aftermath of the Pakistani tests, the author notes that he was tasked to prepare a brief for the then Army Chief, General Jehangir Karamat,

in anticipation of a visit by a US delegation led by Strobe Talbott. One of the points he highlighted as part of that brief was the need for Pakistan to impress upon Washington the need to distinguish between Pakistan's 'security-driven response' as against the 'status-oriented objective' of India (p. 290). This is indeed strange and conveniently and/or wilfully ignores the very real strategic concerns that drove the Indian decision and which India continues to face in its neighbourhood—including the Pakistani–Chinese nuclear and missile cooperation that the author highlights.

While the author maintained in that brief that Pakistan 'needed to avoid being trapped in a debilitating arms race with India' (p. 290), and further admits in the book that 'matching all Indian advances is not necessary to maintain a strategic balance' (p. 384) given the stark resource constraints facing Pakistan, he himself paradoxically notes, a few pages down the line, that 'Pakistan's nuclear and conventional force modernisations would grow in tandem with India's force modernisation' (p. 389). His take on the opportunity that would be provided to Pakistan to further fine-tune its arsenal in case India resumes nuclear testing is equally mystifying. If indeed the Pakistani nuclear tests in 1998 were successful, and given the fact that Pakistan currently is in possession of one of the fastest-growing arsenals in the world, advocating that Pakistan follow an Indian decision to test puts to rest the author's own 'wise' formulations on the necessity not to copy each and every Indian strategic move. Further, the history of the Pakistani nuclear and missile quest goes against the grain of the author's own advice.

The book's otherwise excellent value is marred to an extent by some copy-editing mistakes that have crept up into the manuscript. 'Prime Bhutto' who approved several PAEC initiatives in February 1975 is one such oversight (p. 143), as indeed a footnote making mention of the Indian state of 'Rajasthan' (p. 413). A 1989 *Nuclear Fuel* report is cited, while the text dates the report to 1988 (pp. 197, 442). The former Pakistani Army Chief, General Mirza Aslam Beg, revealed to the author in an interview that President Ghulam Khan informed the American Envoy, Robert Gates, at the height of the 1990 crisis that Pakistan could target Trombay as well as 'Trimchomalee' in case India attacked Kahuta or KANUPP (pp. 231, 451). It is not clear if the above is a copy-editing mistake or lack of appreciation of Indian geography by the top echelons of the Pakistani leadership, given that the latter is a Sri Lankan coastal city! All in all, the book is a valuable addition from an 'insider' to understanding

the Pakistani nuclear quest which, in the very apt words of the author, was 'fuelled by a strategic culture filled with historic grievances, military defeats and paranoia' (p. 377).

Eating Grass book. Read 12 reviews from the world's largest community for readers. The history of Pakistan's nuclear program is the history of Pakistan. ... What Richard Rhodes accomplished in detailing the American effort to develop a nuclear weapon (The Making of the Atomic Bomb), Feroz Khan has done for the Pakistani endeavor. This tale will probably be the definitive source on this subject for years to come. This book is a very entertaining read, written by an insider. Unlike most western accounts of Pakistani nuclear program which begin and end with A.Q. Khan's network, Brig Feroz H. Khan's scholarly work "Eating Grass" offers an insider's account of the "The Making of The Pakistani Bomb". In this interview, Feroz Khan discusses the interdisciplinary nature and the inherent complexity of what it takes to develop, build and operationalize a nuclear weapons arsenal. Read more at riazhaq.com/2013/02/silicon-valley-launch-of-eating-grass.html. Upload, livestream, and create your own videos, all in HD. Join Vimeo. if India acquires nuclear status, Pakistan will have to follow suit even if it entails eating grass. A. ANG. Bhutto made a major trip to the Middle East in January 1972 – part of a repositioning of Pakistan as a premier Islamic country – and in January 1973, met with Colonel Gaddafi in Paris, where the two agreed on a deal of several hundred million dollars in Libyan assistance for the Pakistani nuclear program, Nigerien yellow cake, and (apocryphally) uranium from Chad in. -in that will transform your business from a cash eating monster into a money making machine. In Profit Fi The making of the atomic bomb. 923 Pages · 1988 · 10.91 MB · 4,934 Downloads · New! inside the atom to the dropping of the first bombs on Japan. 128 photos. The making of the atomic bomb Soap Making: 365 Days of Soap Making: 365 Soap Making Recipes for 365 Days (Soap Making, Soap Making Books, Soap Making for Beginners, Soap Making Guide Consequently, Pakistan suffered through international sanctions targeting the Pakistani bomb. Technological Setbacks: Technological difficulties also slowed progress. For example, Khan said, Pakistan spent nearly a decade developing nuclear delivery systems. Economic, Social, and Political Costs: In addition to the direct economic expense of nuclear weapons, Lavoy remarked on the indirect social and political costs accrued by Pakistan Political Problems: Imbalances in Pakistani civil-military relations is in part a consequence of military control over nuclear weapons and the nature of nuclear policy. Contemporary Challenges. Khan explained that after Pakistan tested a nuclear explosive device in 1998, the country faced a new set of problems.