

Chrome Dome

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Eric Schlosser: Command and Control: Nuclear Weapons, the Damascus Accident and the Illusion of Safety, Penguin Allen Lane, 2013, 656 pages, 9781846141485, £25

Eric Schlosser has given us a very important and much needed look at the history of US nuclear weapons safety. The book is well researched and, despite its subtitle, is more than a history of nuclear weapons safety. In the course of developing his thesis that nuclear weapons have been – and continue to be – a shockingly dangerous part of the post-World War Two world, we get not only a tutorial on nuclear weapons and delivery systems, but a fascinating and eye-opening account of the dynamic of the nuclear arms race, replete with inter-service rivalries, ideological fanaticism, and the struggle for civilian control. It was this dynamic which gave us obscenely bloated nuclear arsenals and a military leadership that too often favoured weapons reliability over safety.

The story is cogently covered in the course of recounting in considerable detail what has to be one of the most frightening of US nuclear weapons accidents (and there were hundreds¹) – viz. the 18 September 1980 accident in Damascus, Arkansas involving a Titan II inter-continental ballistic missile with a nine-megaton warhead.² During a check for a possible fuel system leak, a mechanic near the top of the missile (in a hardened silo beneath ground) dropped a nine-pound wrench socket which fell 70 feet and punctured the fuel tank; eight hours later, despite efforts to contain highly flammable fuel vapours, the missile exploded, covering the complex in a huge fireball and toxic gases. The warhead, the largest in the US arsenal at the time, was catapulted 1,000 feet into the air and landed a quarter mile away, largely intact. By good luck (and the grace of God?)³, there was no thermonuclear detonation – especially

fortuitous since the warhead had long been identified by its designer (Sandia Laboratory) as one of the least safe in the US arsenal, i.e. one of the most likely to detonate in 'abnormal environments' (such as intense heat). Sandia had petitioned the Pentagon for more than a decade to retire or retrofit the warhead (p.334).

The Damascus incident concerns, directly or indirectly, most of the book. But the story is told rivetingly with many detours into weapons history, technical information, and a cast of interviewees connected with the nuclear military-industrial complex at various levels. One of Schlosser's most important characters, and from whom he gets much of his information, is Bob Peurifoy, a longtime nuclear weapons engineer and vice-president at Sandia who waged an heroic thirty-year campaign against Pentagon resistance to nuclear weapons safety. With the help of the Freedom of Information Act and recently declassified material, Schlosser provides the reader with literally scores of examples of terrifying nuclear accidents, including events that could easily have led to nuclear war. In the interests of time and space I'll briefly describe only a few.⁴

- 1961 (Jan. 23) near Goldsboro, North Carolina. A B-52 on airborne alert⁵ carrying two four-megaton bombs collided with a refuelling tanker causing the B-52 to break apart and lose both bombs. One fell freely into a swamp burying itself in 70 feet of mud. Its uranium core was never found. The other descended by parachute, but electrical crystals in its nose were crushed on impact, sending a signal to detonate. All but one of three safety mechanisms failed. (pp.245–7.)
- 1965 (Aug. 9) near Searcy, Arkansas. A flash fire in a Titan II missile silo burned for ten hours, killing 53 workers and narrowly avoiding ignition of the missile fuel. (pp.23–7.)
- 1966 (Jan. 17) near Palomares, Spain. A B-52 on a Chrome Dome⁶ mission carrying four one-megaton bombs collided with a refuelling tanker and crashed. Three bombs were found the next day, one largely intact, but the conventional explosives⁷ of the other two had detonated, scattering plutonium and bomb fragments over large sections of Palomares. The fourth H-bomb was found two months later a mile off the coast and recovered in 2,000 feet of water. (pp.315–19.)
- 1968 (Jan. 21) near Thule, Greenland. A B-52 on a Chrome Dome mission (carrying four one-megaton bombs) to monitor the ballistic missile early warning system at Thule caught fire (a co-pilot's seating cushion blocked a hot air vent) and crashed. The H-bombs' conventional explosives, as well as 100 tons of jet fuel, exploded on impact scattering bits of plutonium over three square miles. The airborne alert programme

was finally cancelled.⁸ (pp.319–25.)

- 1980 (June 3) at NORAD (North American Air Defense Command) headquarters in Cheyenne Mountain, Colorado. Computers showed a Soviet missile attack. This was a time of considerable international tension (recent Soviet invasion of Afghanistan, US hostages in Iran, US boycott of Moscow Olympics). President Carter’s foreign policy advisor (Z. Brzezinski) was awakened at 2:30 a.m. and informed by his military assistant (General Odom) that 2,200 Soviet sub-launched missiles were on their way. Strategic Air Command bases nationwide – bomber and missile crews – were put on high alert. The airborne command post of the Pacific Command took off. About the time the president was being contacted, a false alarm was declared due to computer error; a defective 46-cent computer chip was later identified as the cause. (pp.367–8.)

Schlusser reveals many such disturbingly close calls to nuclear war. Since the end of the Cold War it’s become fairly well known that the US and USSR came very close to war during the Cuban Missile Crisis. President Kennedy’s top military advisers – including chair of the Joint Chiefs, Maxwell Taylor – urged Kennedy to attack Cuba and destroy the missiles. Even Secretary of Defense McNamara urged a limited strike. But unknown to them, the Soviets had – apart from their medium/intermediate range missiles – about 100 tactical nuclear weapons on the island, some with the force yield of the Hiroshima bomb, and with pre-delegated authority for use in case of attack. Almost certainly a US invasion would have triggered a nuclear war (pp.290–4).

Less well known is the close call the year before – the 1961 Berlin Crisis which was critical for at least two months (mid-September to late November). President Kennedy said the West will ‘defend ... their access to West Berlin ... by whatever means ...’; and McNamara made clear that NATO would use nuclear weapons ‘whenever we feel it necessary to protect our vital interests’ (p.284). In fact, given the Warsaw Pact’s conventional force superiority, there seems to have been a NATO consensus that nukes would be required should fighting break out. A main question was whether their use should follow the official plan (SIOP)⁹ whereby at least 100 million Soviets would be killed in a counter-value (counter-city) attack, or a more ‘moral’ surprise attack (counterforce decapitation) taking ‘only’ a million lives. Kennedy apparently favoured the latter, but was informed that a Soviet retaliation killing five to thirteen million Americans couldn’t be ruled out. There were several exacerbating events at this time: American and Soviet tanks were face to face at Checkpoint Charlie; NATO commanders had received pre-delegated emer-

gency nuclear authority; NATO troops had ‘Davy Crockett’ nuclear rifles; the Soviets ended the nuclear test moratorium by exploding a 50-megaton bomb; and, at the height of the crisis in November, a faulty AT&T switch at NORAD headquarters in Colorado caused Strategic Air Command in Omaha to lose communication with the early warning system at Thule, resulting in a world-wide SAC alert and orders to hundreds of aircraft to prepare for takeoff. Luckily, the order was soon rescinded when B-52s on airborne alert around Thule reported no sign of a Soviet surprise attack (p.286).

While reading Schlosser’s account of the Cold War nuclear madness – many of the particulars being unknown until recently – it occurred to me how remarkably insightful Bertrand Russell’s nuclear warnings were in the late 1950s and early 1960s. Russell was, as we know, highly suspicious of official propaganda, and was a careful reader of the Western press. He was also well enough connected with experts in the field (e.g., through the Pugwash Movement) to have gained a clear picture of the nature and gravity of the nuclear peril. Moreover, he had the moral courage to publicly challenge the status quo, often in the face of hostile criticism, especially in the US media.¹⁰ Schlosser’s book is a vindication of much of Russell’s anti-nuclear message, often unfairly characterised as alarmist. We now know, thanks in part to Schlosser’s research, that Russell’s nuclear fears and warnings were wholly justified at the time.¹¹

Most of the book’s horror stories took place during the Cold War when tensions ran high and both sides feared an ‘out of the blue’ first strike.¹² Since then stockpiles have been significantly reduced (by 80%) and long-needed safety improvements finally made. But, as Schlosser makes clear, we are not yet out of the nuclear woods. Currently the US and Russia (with 90% of the world’s nuclear weapons) each have about 1,700 deployed nuclear weapons in their strategic triads (land-based missiles, sea-based missiles, and long-range bombers). Schlosser reminds us that on 25 January 1995 – several years after the end of the Cold War – a Norwegian four-stage weather rocket appeared on Russian radar to be a US Trident sub-launched missile headed for Moscow as the first of a possible surprise attack. Russian nuclear forces were put on high alert, Yeltsin was notified, and his nuclear briefcase authorising nuclear launch was activated. Fortunately, after eight minutes (of a twelve-minute limit for decision on launch), the missile was determined to be moving away from Russia, and was not a threat.¹³ More than twenty years after the end of the Cold War, both sides’ ICBMs (about 1,500 total) are still kept on hair-trigger alert and are ready to fire within minutes of attack warning. And both sides’ ICBMs

are apparently still in a ‘launch on warning’ posture.¹⁴

And, as we know, there are other nuclear problems today as well: nuclear terrorism, horizontal proliferation, and the volatility of the Pakistan-India rivalry with both nations armed with nuclear weapons and already having come close to nuclear war on a half-dozen occasions (p. 479; and see note 18).

This is a valuable book, and it should be read by all who value Bertrand Russell’s vision of a world without nuclear weapons or war. But although *Command and Control* will be useful to that end, Schlosser sees himself as a ‘realist’ of a ‘middle road’ who eschews the ‘idealism’ of the nuclear abolitionists no less than the dangers of the counterforce advocates who favour weapons for thousands of targets. In short, he’s resigned to a ‘nukes forever’ world in which the only acceptable nuclear strategy is the ‘realistic’ one of ‘minimum deterrence’ requiring ‘only’ several hundred weapons for perhaps a half dozen nations. Maybe. But there are at least two points which should give us pause.

Minimum deterrence needn’t be the final step in the on-going nuclear disarmament process that began only several decades ago. It could be a penultimate step in one of several necessary steps on a road to zero – a goal that many world leaders, including the US President, have recently endorsed as both desirable and doable.¹⁵ As Russell pointed out many years ago, *any* agreements in the arena of international security tend to diminish tensions and build confidence in the negotiation process, which in turn lead to even bolder, better agreements.¹⁶ (We witnessed this phenomenon towards the end of the Cold War when, once the superpowers’ common nuclear danger was publicly acknowledged and tensions eased, one side’s arms-control proposal of unilateral cuts was met with a counter-proposal for even deeper cuts in a kind of arms race in reverse.¹⁷ The point is, the very process of getting to minimum deterrence might well create the international machinery and climate conducive to a ‘no nukes’ world. I think Schlosser needs to take seriously these hopeful possibilities and developments.

Finally, the acceptance of minimum deterrence, even at the level of a few nations and a few hundred weapons, carries with it a near-certain risk of eventual nuclear disaster. But even if it didn’t, minimum deterrence still comes at an unacceptably high *moral* cost: it accepts – even *requires* – the preparation for, and the willingness to commit, the killing of large numbers of innocent human beings.¹⁸ This inherent willingness to murder – which Bertrand Russell once (at least) described as ‘genocide’¹⁹ – is a powerful component in the case against nuclear deterrence and one which Schlosser

seems to dismiss as simply unworthy of the 'realist'. I think this an unfortunate shortcoming in an otherwise good book.

Notes

- 1 A Sandia Laboratory study found at least 1,200 'serious' accidents involving nuclear weapons between 1950 and 1968. The most serious are called 'broken arrows' in Defense Department parlance. These include unauthorized launch, release of a weapon, fire, explosion, release of radioactivity or full-scale detonation. The Department of Defence reported only a small percentage of accidents until 1959, after which they reported about 130 per year (p.327). Most of Schlosser's data on nuclear accidents – and he cites dozens of examples throughout his book – come from the declassification of DoD material since the end of the Cold War and skilful use of the Freedom of Information Act. There has long been some information regarding nuclear mishaps accessible to careful readers of the US press – to be sure only a tiny percentage, but enough to justify public concern. Bertrand Russell's was a voice that sounded early warnings based upon information that was publicly available in the late 1950s and early 60s. See note 10.
- 2 A nine-megaton warhead is one with a force yield the equivalent of nine million tons of TNT or approximately 600 Hiroshima bombs.
- 3 One reviewer of Schlosser's book (with some tongue in cheek, no doubt) takes the absence of nuclear detonation at Damascus – or in any of the hundreds of other accidents over the last 50 years – as strong evidence for the existence of a quasi-benevolent deity. See <http://www.dailykos.com/user/ATexican>. Cf. General Lee Butler's remark after taking charge of the Strategic Air Command in 1991 and having opportunity to study the US official nuclear war plans (i.e. the SIOP, see note 9): 'I came to fully appreciate the truth ... we escaped the Cold War without a nuclear holocaust by some combination of skill, luck, and divine intervention, and I suspect the latter in greatest proportion' (p.457).
- 4 Several of these accidents came to public attention at the time, although always with partial cover-up, deception and serious understatement of the public danger. But Schlosser also makes clear that there were literally hundreds that were kept secret for the duration of the Cold War, even from high-level people in the weapons factories (see p.465).
- 5 Airborne alert was a Strategic Air Command (SAC) practice begun in 1958 whereby a number of B-52s with thermonuclear weapons (H-bombs) would be continuously aloft and near the Soviet Union to assure retaliatory capability in the event of surprise attack. This dangerous practice lasted ten years despite a 1958 Rand study suggesting that a B-52 crashed about every 20,000 flight hours and that SAC should expect roughly twelve crashes per year (p.191).
- 6 Chrome Dome was an airborne alert programme which included continuous B-52 monitoring of the Mediterranean region.
- 7 A hydrogen bomb depends on fusion as well as fission – actually a

fission–fusion–fission sequence – to yield a nuclear explosion potentially hundreds of times greater than that of an atomic (non-thermonuclear) bomb. But the mechanism that initiates the sequence typically involves conventional high explosives.

- 8 Although Denmark had imposed a ban on nuclear weapons on (and over) their territory in the mid-1950s, the US had routinely violated it since 1961 with B-52 flights over Thule, and for several years before that by secretly storing nuclear weapons there for pick-up *en route* to bomb the Soviet Union (p.191).
- 9 The Single Integrated Operation Plan (SIOP) was the official US nuclear war plan replete with targeting details. For virtually all of the Cold War it was mechanistic, inflexible and required the use of thousands of warheads for counter-city targets assuring total destruction.
- 10 See Russell’s debate with Edward Teller where Teller accuses Russell of ‘very greatly exaggerating’ the dangers of nuclear war (Edward R. Murrow’s ‘Small World’, 28 Feb. 1960).

Cf. Russell’s lengthy exchange with editor John Fischer in *Harper’s Magazine*, ‘Bertrand Russell on the Sinful Americans’ (June 1963); reprinted in *Yours Faithfully, Bertrand Russell* (ed. Ray Perkins, Jr.), pp.341–7. Fischer accuses him of lack of intellectual rigour and misinformation, especially on the danger of accidental nuclear war due to fallible radar and short warning time. The exchange leaves little doubt of Russell’s grasp of the peril of war by miscalculation and accident. He cites a 1960 report by the Mershon Center for International Security Studies at Ohio State University, later published (1962) as *Accidental War: Some Dangers in the 1960s*, which cites many examples, and for which Russell wrote the Introduction. Perhaps the earliest example publicly mentioned by Russell (and not found in Schlosser) is a letter to *The Guardian* (30 Dec. 1960), ‘Mistaken Identity at Thule’, concerning an error regarding the Early Warning Ballistic Missile System at Thule, which reported that the US was under nuclear attack – the moon had been mistaken for Soviet missiles. See *Yours Faithfully*, pp.236–7.

- 11 Schlosser mentions Russell in several places, but fails to acknowledge his campaign to educate the public on the dangers of accidental war and his considerable influence in slowing the nuclear arms race and hastening the end of the Cold War.

He also mis-states Russell’s preventive war position. Russell did *not* ‘urge the Western democracies to attack the Soviet Union before it got the bomb’ (p.82). And worse, he cites my 1994 *Russell* article as evidence that he did! I’m flattered. But I wish he had actually read it. See Perkins, ‘Bertrand Russell’s Preventive War Phase’.

- 12 With the advent of ICBMs, both sides secretly (and rightly) feared a surprise attack decapitating their vulnerable command and control systems, leaving them unable to respond. This was especially so with the development in the 1970s of the MIRV technology – multiple and independently targeted warheads (p.255).
- 13 The nuclear brief case, also called the ‘nuclear football’ or ‘black bag’,

contains the ‘go codes’ for launching a nuclear attack. In the US it is typically carried by an Army lieutenant colonel who accompanies the President at all times. This was apparently the first and only time the brief case has been opened and the codes retrieved in readiness for launch (p.478). See also Forrow *et al.*, ‘Accidental Nuclear War – a Post-Cold War Assessment’.

14 Schlosser mentions a little-known detail about Soviet command and control. In the mid-1980s – when US officials at the highest levels were publicly proclaiming that a nuclear war could be fought and won – the Soviets, fearing command and control decapitation, implemented a version of the *Dr. Strangelove* ‘doomsday machine’ which they called ‘Perimeter’ (also ‘dead hand’). In the event of attack (a confirmed impact), it would guarantee inter-continental ballistic missile retaliation without need of presidential authority, thus avoiding the need for a launch-on-warning decision with its disastrous risk of error. Schlosser misleadingly describes it as ‘automatic’ and ‘without any human oversight’. Not quite; there were a few invulnerable technicians hidden deep underground who could, after confirmed attack, disobey the pre-set order for retaliation. This is made clear in a work that he himself cites. See Hoffman, *Dead Hand*, pp.421–3. Astonishingly (and ironically), as in *Strangelove*, it was kept secret from the US. The system was dismantled at the end of the Cold War (Schlosser, p.468).

15 One such plan, not mentioned by Schlosser, has recently been proposed by Global Zero, an international group founded in 2008, of some 300 world leaders to eliminate all nuclear weapons globally by 2030. Their 2009 plan – endorsed by more than twenty former heads of state including Vaclav Havel, Jimmy Carter, Mikhail Gorbachev and Helmut Schmidt – proposes a four-stage abolition process over 30 years. Former US senator Chuck Hagel signed the plan in 2012, the year before he became Secretary of Defense.

16 See the ‘Russell-Einstein Manifesto’ (1955), reprinted in *Has Man a Future?*, p.57, and *Collected Papers* 28: 57d; also *cf.* *Common Sense and Nuclear Warfare*, pp.38, 47, 50.

17 Between 1987 and 1991 agreements were reached on the abolition of all intermediate-range missiles (nearly 3,000) in Europe (1987) and on an equalization of NATO-Warsaw Pact conventional forces, eliminating more than 30,000 Warsaw Pact tanks (and the nearly 2:1 tank advantage over NATO) and virtually all the 500,000 Soviet forces in Europe (1991). And, remarkably, in Reykjavik (1986) the superpowers came very close to an agreement on abolition of *all* nuclear weapons. The rub was disagreement over strategic defences (Reagan’s Star Wars) – US yes; USSR no. Still, we did get a treaty (START I) on strategic *reductions* (nearly 50%! – an achievement unthinkable before Reykjavik. (See Perkins, *The ABCs of the Soviet-American Nuclear Arms Race*, Chs. 6, 11.)

18 A recent report estimates that a limited nuclear war between Pakistan and India (involving no more than 100 Hiroshima-size weapons) would kill two billion people; most of the deaths would result from starvation due to nuclear winter.

See Helfand, *Nuclear Famine*, International Physicians for the Prevention of Nuclear War.

19 See Russell's letter to the editor of *Maariv*, 26 Jan. 1963, where he characterizes nuclear deterrence as involving a 'willingness to commit genocide'.

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