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Commentary

George H. Quester

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COMMENTARY

THE LAST TIME WE WERE AT “GLOBAL ZERO”

George H. Quester

Skeptics of a total elimination of nuclear weapons often point to a “prisoner’s dilemma” situation that might emerge, where everyone suspects everyone else of cheating by secretly retaining or manufacturing atomic bombs. Advocates of “global zero” sometimes then respond that this is all too theoretical and hypothetical, as we have no way of knowing whether such suspicions would be so all-powerful in a disarmed world.

Yet one can point out a real-life example of such a global-zero situation, in the last decades before Hiroshima, where the world’s knowledge of the possibilities of a nuclear chain reaction was emerging and where the result was a “race” to build the bomb, with the United States “winning” this race in the Manhattan Project, Nazi Germany having done very little to produce such weapons.

An attempt will be made here to sort out the similarities and differences between the world from 1900 to 1945 and a future world where an attempt would be made to get us back to a total absence of nuclear weapons. If the similarities are too strong, the outlook for total, or even substantial, nuclear disarmament

might be quite bleak. If the differences are more important, the pessimistic lessons here of preemption and distrust might not be so compelling.

COMPARATIVE UNCERTAINTIES ON CAPABILITY

In the years after 1939, the last theoretical uncertainties about whether nuclear weapons were even possible had basically been eliminated, but there was great doubt on all sides as to whether the sheer task of

George Quester is a professor emeritus of government and politics at the University of Maryland, and is now serving as the Shapiro Visiting Professor at the Elliott School of International Affairs of George Washington University. He has taught at Harvard, Cornell, and Stanford Universities, as well as at the National War College and the U.S. Naval Academy. His most recent book is Preemption: Preventive War and Proliferation (Transaction, 2009).

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generating fissionable uranium-235, or plutonium, was industrially feasible. As the German, British, American, and Soviet (as well as Japanese) leaderships were briefed on the possibilities, the questions were always whether their respective countries could produce such bombs in a reasonable time at a manageable allocation of resources and whether opposing countries could do so.

In a future world, the analogous problems would instead be whether one's own country could successfully cheat on the system of international controls and inspections and whether other countries might be able to do so.

At various stages of the 1939–45 process, the industrial task of producing such fissionable materials seemed so huge that some British strategists actually suggested leaking rumors that Britain was entering this race, in order to trick Nazi Germany into wasting its resources on similar projects.¹ (Winston Churchill apparently rejected this option but worried that rumors of a Nazi bomb project might similarly be a trick to get Britain to waste *its* resources.)² A bit later, after Britain and the United States had concluded that the bomb was indeed worth pursuing, the Soviet secret police chief, Lavrenty Beria, apparently feared that espionage reports of British and American activities were also intended simply to mislead the Soviet Union.³

We live now unavoidably in a world where it is well established that nuclear weapons can be made and where fissionable materials are indeed plentiful as by-products of the generation of electrical power in nuclear reactors. The barrier now would be not the projected industrial difficulty of separating uranium or reprocessing plutonium but the difficulty of evading inspection.

The Presence or Absence of Conventional War

At a first look we might conclude that the Manhattan Project (and nuclear weapons) would not have emerged except for World War II. It is indeed a historical fact that the British MAUD project (otherwise code-named TUBE ALLOYS) and the American Manhattan Project (into which the British project was to be merged) did not emerge until Nazi Germany had invaded Poland. (Admittedly, something of a go-ahead on the Manhattan Project was given *before* 7 December 1941, when the United States entered the war.)

Will there be conventional wars in the future that exacerbate international hatreds and spur resumed pursuit of nuclear weapons? Some advocates of global nuclear disarmament indeed are assuming that ordinary conventional wars will now be rare, while others would advocate nuclear zero even if ordinary wars periodically occurred.

Yet there are some interesting paradoxes to be noted in the 1939–45 experience. One reason that the British were willing to merge their own nuclear weapons work into that of the Manhattan Project was that the sheer burden of

continuing the conventional war against Hitler, amid the risks of German bomber and missile attacks, made it unlikely that Britain could produce atomic bombs before World War II had ended.⁴

On the Nazi side, decisions again and again to avoid a major nuclear effort were based on estimates that no bomb could be produced in time for use in the current war, given the industrial burdens of all the other weapons projects under way and the intensity of Allied aerial attack.⁵ Similar decisions, based on the existence of the ongoing war, played a role in Japan and the Soviet Union. It was only in the United States, endowed with major industrial capabilities and a basic immunity to enemy aerial attack, that the bomb was seen as relevant and feasible.

What if World War II had not begun? What if Hitler had been once again appeased when he attacked Poland or had been content for the time being with occupying Czechoslovakia? In a continuation of the 1938 theme of “peace in our time,” would there have been too little enmity and hatred to stimulate the pursuit of nuclear weapons? Or would the very absence of bombing and a lowered drain on resources instead have energized German nuclear physicists, and their British and American opposite numbers, to seek this “wonder weapon”?

The Role of Dictatorial Regimes

The preemptive fear that drove the Manhattan Project was that Nazi Germany was seeking the bomb. Dictatorships are more capable of secrecy than are democracies (although the difference here is not absolute and should not be overstated) and are less sympathetic to other peoples, less committed to peace.

Will all the nuclear-capable powers of the future be democracies, or will some be relatively opaque and internationally unreliable dictatorships? The current examples of North Korea and Iran would seem to answer the question.

Nazi Germany came into being as a totalitarian dictatorship in part on a platform of anti-Semitism and intolerance of liberal academic standards. The ironic price was that a significant number of highly competent nuclear scientists were thus driven out of Germany because they were too liberal or too Jewish to be tolerated, and many of these people were to become key players in the Manhattan Project.⁶

It is thus interesting to speculate about a Germany where the Nazis did not come to power (the Nazi takeover in 1933 was indeed far from inevitable) and the Weimar Republic survived. The majority of physicists around the world who could have been involved in the design of nuclear weapons had studied or otherwise spent time at German universities in the 1920s, particularly at Göttingen. Some of the Hungarian physicists who, like Edward Teller, later worked in the Manhattan Project had been the victims of anti-Semitism in Hungary and came to Weimar Germany to escape this. Would not the loyalties of such people have

leaned toward Germany in such a world, as in fact they later leaned toward the United States?

If there had ever been a “race” to build atomic bombs between a democratic Weimar Republic and democratic Britain or the United States, Germany might have had a clear advantage. But we might all assume today that no such race would have been run among democracies. Would the advantage in a secret race for the atomic bomb then have passed to fascist Italy or Soviet Russia? Or would the enormous industrial investment required and the destructive enormity of the bombs that could be produced have held everyone back, in the absence of as frightening a totalitarian state as Nazi Germany and of the war that Hitler launched?

Or given the secrecy that Joseph Stalin’s USSR and Benito Mussolini’s Italy could impose, might not some of the same fears and preemptive drives have driven Britain, the United States, and a still democratic Germany to set up a MAUD or Manhattan Project?

The Presence of Genocidal Motives

Aside from being secretive and militarily aggressive, Hitler’s Germany was particularly threatening because it proved to be spectacularly homicidal, killing millions of people not simply in the process of trying to win a war and conquer territory but because it *wanted* to kill them, simply because of their ethnicities. While the full extent of this was not clear until the German defeat in 1945, there were many reasons to guess before then that the Nazis were bent on genocide; rumors and reports emerged after 1933, especially after the Nazi conquest of Poland in 1939. It was thus widely assumed that Hitler might use the destructive power of nuclear weapons if he were ever to acquire them, perhaps to destroy London, perhaps Paris (after local German commanders ignored his orders that the French capital be destroyed by conventional means), perhaps Tel Aviv.

Are we truly free of all such genocidal motives in today’s world? One might note some of the sermons and statements issued by Iranian clergymen declaring that nuclear weapons might be used to “kill” Israel, statements of motivation that have no parallel in the strategic pronouncements since 1945 of the other nuclear-weapons states. If we were thus asked to explain why it was “of course” necessary to beat Nazi Germany in a race to the atomic bomb, this willingness of the Nazis to kill people might loom up as an obvious factor, with or without parallels to the present.

Well short of Hitler’s penchant for genocide, one also might have feared that Hitler would use the bomb to dictate an Allied surrender to his demands. There is also speculation that the Nazi bomb would have been used to head off surrender to Allied occupation and, thereafter, regime change. Stalin is reported to

have commented immediately after Hiroshima to the American ambassador, Averell Harriman, that if Hitler had gotten the bomb he would never have had to surrender.⁷ In such a case, even had the advancing Soviet forces been successful in conventional combat and the British and American forces approaching from the west equally so, would a Nazi nuclear threat directed at Moscow and London have been sufficient to force the Allies to stop short of Germany?

Yet we might not have had to encounter so deliberately homicidal a regime as Nazi Germany to see bombs used to destroy cities—certainly if some state came uniquely to possess them. The United States used nuclear weapons on Hiroshima and Nagasaki not because it wished to kill Japanese city dwellers but because it wanted to end the war by forcing a surrender by the new threat to Japanese cities. German physicists who knew of the possibility of nuclear fission and (quite correctly) suspected the United States had a nuclear weapons project under way feared that such bombs would be used on German cities for just such a reason.⁸ If there was no other reason for this assumption, one had the level of destruction that had been inflicted in the *conventional* air raids on Hamburg and Dresden.

A nuclear monopoly in Hitler's hands would thus have been particularly worrisome in the years after 1939. But such a monopoly in *anyone's* hands would also have been worrisome, and it would be so again in the future.

The Role of Opacity

In the world of nuclear physics of the 1930s and 1940s, all the major players knew each other quite well. Werner Heisenberg, the likely head of any German nuclear weapons program, had been a sort of academic mentor to Hans Bethe, a major figure in the Manhattan Project, and this was typical of relationships around the globe. Heisenberg's mentor, in turn, had been Niels Bohr, who escaped from Denmark in 1943 to come to Britain and America to give advice on the Manhattan Project and to brief the Allies on what he knew of German nuclear efforts.

By comparison, the global population of physicists and nuclear engineers who would be relevant to nuclear weapons projects today is very much larger, so the links of personal trust or distrust are generally weaker.

As noted above, dictatorships can keep secrets, but democracies can do so too. In 1941, at the urging of Leo Szilard, American scientific journals had ceased publishing articles about nuclear fission, lest this alert and help the Germans. Some German physicists, noting the absence of new articles, came to the worrisome conclusion that the Americans might be embarked on bomb projects; this was in fact only *about to be* the case—people like Szilard were still alarmed that the United States had not yet decided to commit enough resources to the project.

Slightly later, Soviet nuclear physicists similarly became alarmed about the absence of new articles on nuclear fission in American journals, thus urging Stalin to initiate a bomb project.⁹

In the atmosphere of less-than-total openness here, even in democracies, the world saw a situation of fears and preemptive motives emerging *no matter what one did*. If American journals had continued publishing the relevant articles, fears would have been instilled. When the journals stopped publishing such articles, fears were instilled all the same.

One sees a similar inevitable opacity and fear in the much-discussed meeting between Werner Heisenberg and Niels Bohr in 1941 in which Heisenberg's mention of the generic possibility of bomb projects alarmed and angered Bohr.¹⁰ In retrospect, it is difficult to see how Heisenberg could have reassured Bohr (and the Allies with whom Bohr was able to communicate) that Nazi Germany would not, could not, make the atomic bomb, because the mere raising of the possibility aroused suspicion. Was Heisenberg simply pumping Bohr on what the Americans and British might be doing? Was he trying to trick the outside world into missing that the Nazis were out to get the bomb? Or was he saber-rattling to intimidate Bohr and his friends?

One sees the same "damned if you do, damned if you don't" in postwar debates about whether Heisenberg and his colleagues deliberately slowed their work toward a bomb. The lack of German progress is typically dismissed as German incompetence, as the "Aryan" physicists sorely missed the expertise of the Jewish and other liberal physicists who had been driven out. Heisenberg and his remaining partners are accused of being intent on producing bombs but not knowing how to do it.

When it is pointed out that Heisenberg and other Germans indeed understood a fair amount about how atomic bombs could be made (as illustrated in a brilliant lecture that Heisenberg gave for his fellow internees at Farm Hall immediately after the news of Hiroshima outlining exactly how the Americans had done it, a lecture recorded by British listening devices), this is seized on as proof that the Germans were intent on making such bombs themselves.¹¹

Looking ahead to any future world without nuclear weapons, all concerned will agree that verification, safeguards, and general transparency would be crucial to avoiding the worst-case interpretations of adversary motives illustrated by the above examples. To repeat, one quick comparison of the cases might give a very pessimistic impression: the opposing camps of nuclear physicists in 1940 knew each other so extremely well, in the still-small world of people who understood nuclear fission, whereas today there may be thousands of similarly aware and competent nuclear physicists around the world, hardly enjoying first-name, student-to-mentor relationships.

The Role of Assumptions about Military Impact

For a host of very good reasons, we are inclined today to think of nuclear weapons not as military instruments relevant to battlefields but as weapons of mass destruction, relevant to intimidation and deterrence. The Cold War saw periods of enthusiasm for “tactical” and other more clearly military uses of nuclear weapons, but this may to some extent have been a device to make American nuclear escalation more credible, as extended nuclear deterrence required that ways be found to counter the supposed Soviet advantage in conventional forces. Military professionals perhaps are always inclined to look for more traditional “battlefield” uses for any new weapon. Also, Western morality disapproves of deliberate attacks on civilian targets, while it approves of attempts by navies to sink opposing navies, or air forces to destroy opposing air forces, etc.

Looking back to our first “race to produce nuclear weapons,” some of the urgency, as noted, was the perception that Hitler would want to use atomic bombs (if he got them first) to destroy cities and massacre civilians, or at least to threaten such destruction and massacre. But other concerns pertained to whether the Germans might use such big bombs on battlefields, perhaps making them able to cripple a Normandy invasion or the like.

One role of General Leslie Groves as head of the Manhattan Project was to designate research-related targets in Germany to be attacked with conventional bombs, and strategic bombing in general played an important role in dampening any Nazi enthusiasm for a nuclear weapons program. But the question, very relevant to the future, then emerged of whether the rest of the Manhattan Project was therefore necessary. Were American atomic bombs needed to dig out German nuclear facilities, or would conventional bombing suffice?

President Roosevelt’s response to the letter signed by Einstein warning of possible German nuclear efforts was to endorse the future Manhattan Project as a way “to keep the Germans from blowing us up.”¹² But is the *military* linkage here so clear? Several analogies emerge, in today’s discussions of how to respond to Iranian and North Korean nuclear efforts. If these facilities are to be attacked (tomorrow, or in some future world where other states have given up their nuclear weapons), will nuclear weapons be necessary and appropriate for the purpose? Many would argue that conventional attacks would be much better, to hold down collateral damage to those not guilty in the matter.

Even if a future Tehran or Pyongyang sneaks into possession of nuclear weapons and actually uses them, there is an argument even now for a “nuclear pacifism,” whereby the response of the United States and the other responsible major powers would be to impose retaliatory punishment by substantial *conventional* attacks.

Our fears in the early 1940s with regard to Nazi Germany might thus actually suggest two models for the future. How terrible would it have been if the Germans got the atomic bomb while they were still doing well on the conventional battlefield, their armies deep into Russia and occupying France, or during the post-Stalingrad and post-Normandy invasion when the conventional defeat of the Nazis was fairly certain? Would they have been able to brandish nuclear weapons to keep the Americans west of the Rhine and the Russians east of the Oder? This points to how in a future “global zero” world we would feel about a conventionally weak, but otherwise obnoxious, adversary sneaking into the possession of nuclear weapons, perhaps to reinsure itself against the regime change and internationally imposed punishment that it deserved.

The clear question posed here is thus: Will either a strong or a weak conventional adversary, suspected of reaching for nuclear weapons, drive and force the responsible states quickly to renounce a “nuclear zero” international system and to race to make nuclear weapons for themselves once again?

SOME VERY TENTATIVE CONCLUSIONS

It is surely too early to conclude that “prisoner’s dilemma” mutual fears will doom any attempt to eliminate nuclear weapons. Yet any exhaustive review of the reasoning behind the British TUBE ALLOYS venture and the American Manhattan Project encounters assumptions about strategy that might seem perfect templates for the worst-case scenarios of a future nuclear-weapons-free world.

As suggested, the political background of the first “race” to acquire such weapons may have to be examined much more closely, to sort out the analogies with the future, to sort out whether “nuclear zero” has any chance of being achieved and adhered to.

NOTES

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1. Thomas Powers, *Heisenberg’s War* (New York: Knopf, 1993), p. 69.
2. Malcolm MacPherson, *Time Bomb* (New York: E. P. Dutton, 1986), pp. 110–13.
3. David Holloway, *Stalin and the Bomb* (New Haven, Conn.: Yale Univ. Press), p. 115.
4. On the British decision, see Margaret Gowing, *Britain and Atomic Energy* (New York: St. Martin’s, 1964).
5. Richard Rhoes, *The Making of the Atomic Bomb* (New York: Simon & Schuster, 1986), pp. 404–405.
6. This pattern is outlined at length in J. S. Medawar and David Pyke, *Hitler’s Gift* (New York: Arcade, 2001).
7. The comment is noted in Holloway, *Stalin and the Bomb*, p. 128.
8. See MacPherson, *Time Bomb*, p. 191.

9. See Holloway, *Stalin and the Bomb*, p. 78.
10. This interaction is much discussed in the literature. Quite sympathetic to Heisenberg is Powers, *Heisenberg's War*, pp. 113–18. Much less sympathetic is Paul Lawrence Rose, *Heisenberg and the Nazi Atomic Bomb Project* (Berkeley: Univ. of California Press, 1998), pp. 154–58.
11. See Powers, *Heisenberg's War*, p. 451, for Hans Bethe's evaluation of the transcript of Heisenberg's lecture.
12. The Roosevelt quote can be found in MacPherson, *Time Bomb*, p. 95.