



# Hudson Institute

## Herman Kahn: Public Nuclear Strategy 50 Years Later

*A Compendium of Highlights  
from Herman Kahn's Works on  
Nuclear Strategy*

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by John Wohlstetter  
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Public Nuclear Strategy 50 Years Later**

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Works on Nuclear Strategy*

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John Wohlstetter**

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## *On Thermonuclear War (1960)*

In 1960 Hudson Institute co-founder Herman Kahn published *On Thermonuclear War*, a compendium of material from 12 hours of lectures delivered at Princeton University in 1959. The book sold 30,000 copies, reaching a public audience with in-depth analysis of nuclear strategy. The book caused a sensation, exposing the general public to topics familiar hitherto only to members of the strategic community and self-selected activists.

Kahn dedicated his volume “to the goal of anticipating, alleviating and avoiding crises.” He feared that without clearer thinking of nuclear matters that there would be a “cataclysm” by 2000, perhaps as early as 1965.<sup>1</sup> Kahn wrote of the value of making things more understandable for public consumption, making it a major goal of his book:

One of the most important things that could be done to facilitate discussion of defense problems would be to create a vocabulary that is both small enough and simple enough to be learned, precise enough to communicate, and large enough so that all of the important ideas that are contending can be comfortable and easily described.<sup>2</sup>

Kahn called total disarmament utopian:

It has probably always been impractical to imagine a completely disarmed world, and the introduction of the thermonuclear bomb has added a special dimension to this impracticality. Given the large nuclear stockpiles in the Soviet Union, the United States, and the British Isles, it would be child’s play for one of these nations to hide completely hundreds of these bombs....The violator would then have an incredible advantage if the agreement ever broke down and the arms race started again .... Even if the problem of what we may call the “clandestine cache” were solvable ... one could not disarm the world totally and expect it to remain disarmed. But the problem of the clandestine nuclear cache itself makes total disarmament especially infeasible.<sup>3</sup>

Kahn listed six *desirable characteristics* of a deterrent: (1) frightening; (2) inexorable; (3) persuasive; (4) cheap; (5) non-accident prone; (6) controllable.<sup>4</sup>

He defined three types of deterrence:

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<sup>1</sup> *On Thermonuclear War*, p. xviii (preface).

<sup>2</sup> OTW, p. 5.

<sup>3</sup> OTW, pp. 5-6.

<sup>4</sup> OTW, p. 146.

*Type I deterrence* is the deterrence of a direct attack....*Type II deterrence* is defined as using strategic threats to deter an enemy from engaging in very provocative acts, other than a direct attack on the United States itself .... *Type III deterrence* might be called tit-for-tat, graduated or controlled deterrence.<sup>5</sup>

Regarding types of deterrence, Kahn offered three “conceptualized devices”: (1) *Doomsday Machine*—automatic world destruction response to *Type II* or *Type III* provocations by an adversary; (2) *Doomsday in a Hurry Machine*—alerting prospective attackers that an attack will trigger Doomsday in response to specified *Type II* or *Type III* provocations; (3) *Homicide Pact Machine*—automatic world destruction response to direct *Type I* nuclear attack.<sup>6</sup>

He warned of the trap of making convenient assumptions about what adversaries might do:

We should not always assume what Albert Wohlstetter has called “U.S.-preferred attacks” in estimating the performance of our system. We should also look at “S.U.-preferred attacks”—a sensible Soviet planner may prefer them.<sup>7</sup>

He defended the technique of using quantitative calculations in strategic analysis, provided those are qualified so as to concede endemic uncertainty:

Some people appear to be very suspicious of calculations—and correctly so .... [B]ut that does not mean that nonquantitative [*sic*] analyses are any less misleading. There is another reason for using numbers. The only way in which we can communicate even intuitive notions with any accuracy is to use quantitative measures. This may have the unfortunate effect of giving an appearance of great certainty, but I have taken care to use such words as “could,” “may,” “might,” “about,” “neighborhood of,” and so on, with some frequency....<sup>8</sup>

Kahn noted first strike carries huge advantages in nuclear war:

In most postures that do not involve automatic mutual annihilation there will be an advantage in striking first.<sup>9</sup>

He warned of the dangers of appearing “trigger-happy”:

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<sup>5</sup> OTW, p. 126. (Boldface added, italics in original.)

<sup>6</sup> OTW, pp. 144-153

<sup>7</sup> OTW, pp. 128-129.

<sup>8</sup> OTW, p, xvii (preface).

<sup>9</sup> OTW, pp. 144.

The easiest way in which one can put unintentional strains on the enemy is to have a force which looks “trigger-happy.” *The one circumstance under which almost-all Soviet experts agree the Russians might strike is the one in which they feel they are anticipating a strike by us. . . .* This is an important reason for not relying solely on quick-reaction as a protection and for not having forces so vulnerable that we could lose most of them from a Russian first strike. Under some circumstances our vulnerability to a Russian first strike would *both tempt* the Russians to initiate a war and at the same time *compel them*, because they might feel that we would be tempted to pre-empt for their own protection.<sup>10</sup>

He addressed the converse case to “trigger-happy”:

If *we* feel confident that *he* will not be tempted by our vulnerability to solve his problems by quick action, we can afford to hold back. The enemy will know this and be reassured that *he* has no need to be trigger-happy.” If both sides are vulnerable to a first strike, then we have a very unstable situation in which even a minor crisis or accident may touch off the “reciprocal fear of surprise attack” which in turn may touch off a war.<sup>11</sup>

He assessed fear of accident as part of the strategic calculus:

Equally important to not appearing “trigger-happy” is *not to appear prone to either accidents or miscalculations*. Who wants to live in the 1960’s and the 1970’s in the same world with a *hostile* strategic force that might *inadvertently* start a war. Most people are not even willing to live with a *friendly* strategic force that may not be reliably controlled.<sup>12</sup>

He called on his readers to engage in “an unpleasant feat of imagination”—hard to most Westerners to do—and consider thermonuclear war seriously:

*Why and how might a thermonuclear war be initiated? Is it really true that only an insane man would initiate a thermonuclear war, or are there circumstances in which the leaders of a country might rationally decide that thermonuclear war is the least undesirable of the available alternatives? What are some of the different ways in which a war might be fought and terminated?*<sup>13</sup>

Kahn saw the new century, though thinking it could be only a decade or two away in 1960, with the rise of nations ready to take grave risks:

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<sup>10</sup> OTW, p. 158. (Italics in original.)

<sup>11</sup> OTW, p. 159. (Italics in original.)

<sup>12</sup> OTW, p. 159. (Italics in original.)

<sup>13</sup> OTW, pp. 162 – 163. (Italics in original.)

In addition, a number of powers which, unlike the United States and the Soviet Union, may not be so cautious in outlook, will be getting both richer and technically more competent and yet retain their non-status quo outlook. For example, a nation may be wealthy and technically competent enough to have an advanced military technology and yet desperate or ambitious enough to gamble all. Or some of the underdeveloped nations may become rich in the sense of gross national product but have such a low per capita income or, other social anomaly that they retain attitudes more appropriate to a desperate claimant on the world's resources than a responsible "bourgeois" member of international society.<sup>14</sup>

Kahn had China in mind, but China turned out better, albeit it may well be willing to run bigger risks in the coming decades. However, Iran and Pakistan and North Korea fit the bill perfectly.

As to accidents, Kahn noted that there would be a huge difference between atomic and thermonuclear bomb accidents, because an atomic weapon's collateral damage would be minimal if it went off in a sparsely populated area, whereas even a remote area detonation of a thermonuclear weapon could have catastrophic consequences.<sup>15</sup> Another nuclear risk is if a chemical explosive detonates and scatters highly toxic nuclear material, such as plutonium.<sup>16</sup>

On behalf of allies, Kahn stressed credible deterrence:

In addition to not looking too dangerous to ourselves, *we must not look too dangerous to our allies*. The problem has many similarities with the problem of not looking too dangerous to ourselves, with one important addition—*our allies must believe that they could survive a general war—even one fought without the use of Doomsday Machines*. Therefore, to the extent that we try to use the threat of a general war to deter the minor provocations that are almost bound to occur anyway, then no matter how credible we try to make this threat, our allies will find the protection unreliable or disadvantageous to them. If credible, the threat is too dangerous to be lived with. If incredible, the lack of credibility itself will make the defense seem unreliable. *Therefore, in the long run the West will need "safe-looking" limited war forces to handle minor and moderate provocations.*<sup>17</sup>

He warned about dealing with neutrals:

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<sup>14</sup> OTW, p. 151.

<sup>15</sup> OTW, p. 153.

<sup>16</sup> OTW, p. 154.

<sup>17</sup> OTW, p. 155. (Italics in original.)

*We must not look too dangerous to neutrals.* While this is probably less important than not looking too dangerous to friends and allies, it is still too important to be ignored. It may be alright to promise the Soviets that if they attack us we will destroy every Soviet citizen in retaliation \*though personally I think this far too destructive a proposal), but we should not threaten nonbelligerents [*sic*] with near annihilation because of our quarrel with the Russians. Many of the world's inhabitants—perhaps two-thirds of them—do not feel it is their quarrel but feel it is their world.<sup>18</sup>

And of threats to enemies, Kahn wrote:

*We must not look too dangerous to our enemies.* This does not mean that we cannot do anything that threatens him. After all, our mere possession of a Type I deterrence capability implies that we can harm him if we desire. But it does mean, to the extent that it is consistent with our other objectives, we should not make him feel any more insecure than is necessary. We do not want to make him so unhappy and distraught that he is tempted to end his anxieties by the use of drastic alternatives. We do not wish him to conclude, “better a fearful end than an endless fear.” We must not appear to be excessively aggressive, irresponsible, trigger-happy, or accident-prone, today or in the future.<sup>19</sup>

Yet we must not make our enemies too comfortable, either:

Still, we cannot afford to make our enemies feel too safe. As already mentioned, our Type I deterrence depends upon our ability to hurt the enemy. Even if he is reasonably certain we would not rationally use it, the mere existence of this power must give the enemy some qualms. He cannot be certain we might not use it accidentally, irresponsibly, or in desperation.<sup>20</sup>

In thermonuclear war, the strategic goal of an attacker is a negative: “The first and most important of the attacker's objectives is *to limit damage to himself*.”<sup>21</sup> He saw prospects for Soviet blackmail if the “missile gap” proved to be reality. He noted that if an attacker used air-bursts” (as would be true in targeting bomber bases) collateral damage would be far less than with ground-bursts (needed to destroy missile silos. Thus until a large ICBM force could be deployed the Soviets might be tempted to exploit the vulnerability of our bomber bases, should they deploy a large ICBM force first.<sup>22</sup> He opined that in the early 1950s the public found it difficult to distinguish between 2 and 100 million

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<sup>18</sup> OTW, p. 156. (Italics in original.)

<sup>19</sup> OTW, p. 157. (Italics in original.)

<sup>20</sup> OTW, p. 157.

<sup>21</sup> OTW, p.165. (Italics in original.)

<sup>22</sup> OTW, p. 169. With an airburst, the nuclear fireball does not touch the ground.

deaths due to a war, but that by the end of the decade the public could do so do.<sup>23</sup> He noted that the Soviets endured in World War II destruction by the Germans of most of their military, occupation of an area with 40 percent both of their population and of their industrial base, and a loss of one-third of their wealth; yet they rebuilt in six years, and (in some nuclear war scenarios) might lose “only a fraction” of the population than they lost in World War II.<sup>24</sup>

He correlated the mega-lethality of nuclear war with leadership decisions:

It is the nation that is at risk, and the nation does not destroy itself in cold blood. Neither does it frivolously or uselessly generate problems for the entire world and for unborn generations. It seems to be difficult for many Americans to understand the point that if the President’s anger abates long enough for him to consider the situation, he will realize that there is no way to undo the damage that is done and that *revenge may appear to make less sense than trying to make the best of a bad situation.*<sup>25</sup>

He saw that many leaders might shrink even from nuclear victory:

Even if military advantages were not to be had by deliberately limiting attack to counterforce targets, I suspect that most governments would still prefer to observe such limits. Almost nobody wants to go down in history as the first man to kill 100,000 people.<sup>26</sup>

He stressed the importance of nuclear powers safeguarding against accidental war:

*It is important that all possessors of nuclear capability be fearful of starting an accidental war, so fearful that they will be willing to accept large peacetime, operating costs and substantial degradations of capability in order to decrease the possibility of accidents and to increase the likelihood of error-free behavior.*<sup>27</sup>

He emphasized that command and control problems must be the focus of major efforts to see that proper attention is paid to how these are applied to nuclear forces.<sup>28</sup>

Regarding ability to predict the probable consequences of large-scale attacks:

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<sup>23</sup> OTW, pp. 169 – 170.

<sup>24</sup> OTW, p. 132.

<sup>25</sup> OTW, pp. 170 - 171. (Italics in original.)

<sup>26</sup> OTW, p. 171. In strategic parlance, “counterforce” means striking military targets; “countervalue” means striking at the civilian population.

<sup>27</sup> OTW, p. 183. (Italics in original.)

<sup>28</sup> OTW, p. 189.

Actually, even with tested missiles, results of attacks are not really mathematically predictable. The probability of extreme variations in performance, the upper and lower limits, cannot be calculated accurately. But laymen or narrow professionals persist in regarding the matter as a simple problem in engineering and physics.<sup>29</sup>

Kahn cited problems confronting a military planner in planning an attack: unreliable data, field degradation, intelligence leak, unreliable discipline.<sup>30</sup> As to accidental war, Kahn discussed the “fail-safe” issue by noting an April 7, 1958 UPI report, in which it is explained that the Air Force believed that in event of war the first phase of nuclear bombing would be over in *four hours*; orders to proceed to target from the fail-safe holding point must, the government made clear, come in the form of “additional, unequivocal orders” which can come only from the President of the United States.<sup>31</sup> In 1958 the US tried to raise risk of misunderstandings with the Soviets at the Geneva Conference on Safeguards Against Surprise Attack, but was summarily rebuffed.<sup>32</sup> Asked which they prefer, an invulnerable system with a one percent risk of accidental war versus a system vulnerable to a clever attack but secure against accident, most people chose the latter.<sup>33</sup>

Kahn thought little of officials re their nuclear thinking. Most officials do not know how to threaten credibly in a nuclear situation and are in pathological denial as to their lack of knowledge; rash threats can spur pre-emptive strikes by the other side, if believed.<sup>34</sup> He added:

The capacity of Western governments to indulge in wishful thinking in the military and foreign policy fields whenever it is possible to do so is almost without limit.<sup>35</sup>

Arms control can diminish risks associated with war in three ways: (1) reduce probability of war-causing events; (2) reduce the probability that a war-causing event would actually cause a war; (3) reduce the damage done if war occurs. “*The major objective of arms*

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<sup>29</sup> OTW, p. 195.

<sup>30</sup> OTW, p. 196.

<sup>31</sup> OTW, pp. 205 – 207. (Italics added.)

<sup>32</sup> OTW, p. 209.

<sup>33</sup> OTW, p. 209.

<sup>34</sup> OTW, p. 211 & fn. 8.

<sup>35</sup> OTW, p. 223.

*control should be to reduce the risk of damage by war without jeopardizing unduly other aspects of national security.”*<sup>36</sup>

Of Western values and nuclear war by aggressors:

It is very difficult for us in the West, with our abhorrence of force and the widely prevalent view of automatic mutual homicide, to believe that a situation could occur in which a perfectly sane but calculating, decisive or ruthless decision maker could rationally decide that he is better off going to war than not going to war. In particular, we do not believe that any such calculation could make full allowance for uncertainties and still be correct. Yet sober studies indicate that this widely prevalent belief could be wrong.<sup>37</sup>

He returns to the problem of breakout:

*For nuclear weapons, the problem of the clandestine cache is overriding. While nuclear weapons do have some maintenance problems, they are relatively storable and would be simple to hide in large numbers. It is also relatively simple to get most designs back in working order. We can therefore assume that a total ban on nuclear weapons would not be enforceable, since preparations to counter the effect of a violation imply the existence of counter nuclear weapons to use either as a deterrent or for waging war.*<sup>38</sup>

As to use of nuclear weapons by major powers against small ones:

There is one wartime control measure that already exists; a ban on the use of atomic weapons in minor conflicts. Official statements to the contrary, *it would be almost unthinkable for the United States or the Soviet Union to use atomic weapons against a small country that did not possess atomic weapons.* Of course, we might use atomic weapons in reprisal for a large attack by the Russians or Chinese, even if this attack were restricted to conventional weapons. However, even in this case we are likely to be deterred from using atomic weapons. Thus it is quite possible that there could be a large, mostly conventional war in which the use of nuclear weapons would be limited at most to air defense and naval actions.<sup>39</sup>

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<sup>36</sup> OTW, p. 226. (Italics in original.)

<sup>37</sup> OTW, p. 230.

<sup>38</sup> OTW, p. 236. (Italics in original.)

<sup>39</sup> OTW, p. 241, (Italics in original.)

On deterring nations versus deterring criminals: “Whereas a criminal might be better deterred by the certainty of a small punishment, nations may be better deterred by a small risk of utter destruction, in preference to certitude of lesser damage.”<sup>40</sup>

On arms treaties and cheating:

The would-be controllers, on the other hands, are attempting to set limits on the ingenuity and cleverness of man for years in advance. They are trying to protect against all possible ways of cheating. The methods they can use are rigidly limited to those the contracting parties can agree on . . . . the evader not only knows everything the enforcer knew when the agreement was set up, he also has the benefits of later research and development. He has the lifetime of the agreement to work out his countermeasures.<sup>41</sup>

On what can be done after detection:

Even if it is picked up by the official inspection system there is likely to be some ambiguity involved. An ambiguity which the violator will exploit. If the evidence has been picked up by clandestine intelligence or by an unfriendly monitoring power, then of course the violator will accuse the accuser [*sic*] of fabricating the evidence for some nefarious purpose. Or the violator who is caught can always accuse the other side for having violated first . . . . Finally, and not all improbably, the violator can argue the absolute historical necessity for doing whatever he did.<sup>42</sup>

On nuclear bomb yields:

The difference between megaton and kiloton is very large, in some ways larger than the difference between kiloton and ton. Megaton weapons are comparable to gross forces of nature, such as earthquakes and hurricanes.<sup>43</sup>

On the difference for nations struck by nuclear weapons:

For kiloton bombs, one asks how much is destroyed—but, banning an extreme course of military events, no one doubts that the nation will continue in some form. With multi-megaton weapons, the question of the continuation of the nation (to some, of civilization) is raised even in the shortest of wars.<sup>44</sup>

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<sup>40</sup> OTW, p. 246.

<sup>41</sup> OTW, p. 247.

<sup>42</sup> OTW, p. 249.

<sup>43</sup> OTW, p. 313.

<sup>44</sup> OTW, pp. 428-429.

On Neville Chamberlain:

He was supremely confident of his ability to deal in a reasonable way with people in general and Hitler in particular. He chose this moment to begin an exploration of the basis on which he might build up a general scheme of appeasement.<sup>45</sup>

On Hitler & H-bomb threat:

The technique he used is such an obvious prototype for a future aggressor armed with H-bombs that it is of extreme value to all who are concerned with the problem of maintaining a peaceful and secure world to go over the story in some detail.<sup>46</sup>

It “seems improbable” that BMD will work well against a massive Soviet attack.<sup>47</sup>

On the need for arms control:

*The uncertainties and risks of the future are increased by the mounting race of technological progress....*

All these factors indicate that we must take seriously the problem of alleviating mutual danger by international agreement and arms control. We must be willing to do this even though we may thereby run great risks, since the alternative, an uncontrolled situation, probably involves greater risks.<sup>48</sup>

On alternatives in nuclear confrontations:

Even some experts insist on talking as if the only choices available were immediate surrender, immediate preventive war, or eventual world annihilation. *This is certainly not the case now and, with luck and skill, never will be the case.*<sup>49</sup>

On Type I deterrence:

*Reliable deterrence of a war is much more difficult than has been supposed in the past .... the quality of our deterrence can make a great deal of difference in our position and policy.*<sup>50</sup>

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<sup>45</sup> OTW, p. 396.

<sup>46</sup> OTW, p. 403.

<sup>47</sup> OTW, p. 519.

<sup>48</sup> OTW, p. 537. (Italics in original.)

<sup>49</sup> OTW, pp. 551-552. (Italics in original.)

<sup>50</sup> OTW, p. 556. (Italics in original.)

On adequate US deterrent:

*At the minimum, an adequate deterrent for the United States must provide an objective basis for a Soviet calculation that would persuade them that, no matter how skillful or ingenious they were, an attack on the United States would lead to a very high risk if not certainty of large-scale destruction to Soviet civil society and military forces.*<sup>51</sup>

On thermonuclear war and people's imaginations as to the impact of nuclear weapons on the chances of war:

People have a belief, conscious or unconscious, that an all-out war is impossible—*inconceivable* would be a more accurate word. Peace-loving people believe, in effect, that the invention of fission and fusion bombs has abolished war. (One only wishes he could agree.) They believe this because they desperately want to believe it.<sup>52</sup>

On muddling through: "It is difficult to believe that muddling through will work indefinitely."<sup>53</sup>

## ***Thinking About the Unthinkable (1962)***

In 1962 Kahn published *Thinking about the Unthinkable*, a more compact effort to educate readers as to how to think about nuclear war in terms more readily accessible to the lay reader than his mammoth first volume.

On why we must think about thermonuclear war:

In our times, thermonuclear war may seem unthinkable, immoral, insane, hideous, or highly unlikely, but it is not impossible. To act intelligently, we must learn as much as we can about the risks. We may thereby be able better to avoid nuclear war. We may even be able to avoid the crises that bring us to the brink of nuclear war. But despite our efforts we may some day come face to face with a blunt choice between surrender or war. We may even have a war thrust upon us without being given any kind of a choice. We must appreciate these possibilities. We cannot wish them away. Nor should we overestimate and assume the worst is inevitable. This leads only to defeatism, inadequate preparations (because they

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<sup>51</sup> OTW, p. 557.

<sup>52</sup> OTW, p. 558. (Italics in original.)

<sup>53</sup> OTW, p. 575.

seem useless), and pressures toward either preventive war or undue accommodation.<sup>54</sup>

On the analyst's emotions in assessing the unthinkable:

It should be possible for the analyst to have a disciplined empathy. In fact, the mind recoils from simultaneously probing deeply and creatively into these problems and being conscious at all times of the human tragedy involved.<sup>55</sup>

Of the widespread view that annihilation inevitably would result from nuclear war:

Many people believe that the current system must inevitably end in total annihilation. They reject, sometimes very emotionally, any attempts to analyze this notion. Either they are afraid of where the thinking will lead them or they are afraid of thinking at all. They want to make the choice one between a risk and the certainty of disaster, between sanity and insanity, between good and evil; therefore, as moral and sane men they need no longer hesitate. I hold that an intelligent and responsible person cannot pose the problem so simply.<sup>56</sup>

On the difference between how politicians and scientists approach problems:

I am reminded of a remark by Leo Szilard on the differences between politicians and scientists. He made the point that politicians always ask, "Why did he say it?" whereas scientists ask, "Is it true?" Of course a man's motives are important. But in a discussion of national security they are probably less important than, "Is he right?"<sup>57</sup>

On obstacles to public debate on national security issues:

There are in any case at least two obstacles to full public debate of [*sic*] national security matters. The first, of course, is the constantly increasing problem of communication between the technologist and the layman, because of the specialization (one might almost say fragmentation) of knowledge. The other lies in the serious and paramount need to maintain security.<sup>58</sup>

On the tendency to underestimate the risks of an outbreak of war, HK noted that in December 1938 Lloyds of London offered 32:1 odds against war in 1939, and that 10 of

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<sup>54</sup> *Thinking About the Unthinkable* (1962), p. 21.

<sup>55</sup> TATU, p. 26.

<sup>56</sup> TATU, p. 30.

<sup>57</sup> TATU, p. 37.

<sup>58</sup> TATU, p. 39.

12 European reporters polled August 7, 1939 predicted there would be no war.<sup>59</sup> (Hitler launched World War II by invading Poland on September 1, 1939.)

Four categories of war: (1) *Inadvertent War*—accident; (2) War as a result of *Miscalculation*—misinterpretation; (3) *Calculated War*—first strike; (4) *Catalytic War*—started by a third party, as in World War I.<sup>60</sup>

Joseph Stalin in 1949 to Walter Bedell Smith, then US ambassador to the USSR:

We do not want war any more than the West does, but we are less interested in peace than the West, and therein, lies the strength of our position.<sup>61</sup>

Re escalation as deterrent: The USSR deterred US destruction of the Berlin Wall, in part, by instilling fear of escalation.<sup>62</sup>

Re desire for revenge versus desire to survive: “In most people’s value systems, revenge will have a lower priority than survival.”<sup>63</sup>

On restraint during war—practiced in most wars (even WW II & Korea):

A study of the history of warfare between civilized nations reveals few periods in which the strategic doctrines of these wars held sway. The more classical way has always been to fight for some definite, generally limited objective, or to prevent the enemy from attaining some such objective.<sup>64</sup>

On Americans reflexively rejecting the idea of rational war:

I suspect that the main reason why Americans find it difficult to believe that a war can be fought rationally or reasonably is that in our country, for the most part, we do not give force a rational or reasonable role. We feel that only a law violator, a criminal, a desperado, or insane person uses force. When we find somebody using force, he is not only our enemy but an enemy of humanity as well, and he should be exterminated or locked up and treated, but not negotiated with. We then go all out in our attempt to control or destroy him.

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<sup>59</sup> TATU, p. 41.

<sup>60</sup> TATU, pp. 40-61. (Italics added.)

<sup>61</sup> Quoted in TATU, p. 49.

<sup>62</sup> TATU, p 51.

<sup>63</sup> TATU, p. 72.

<sup>64</sup> TATU, p. 76.

This is, I am afraid, a somewhat naïve view. Force has been around for many years. It has been used by good, bad, and indifferent people. It has been used rationally as well as irrationally.<sup>65</sup>

Re facing a Hitler:

Today, a Hitler of the type we picture now, one who is reckless, absolutely determined, and who is crazy or realistically simulates madness, would have an important negotiating edge. If anybody says to you, “One of us has to be reasonable and it is not going to be me, so it has to be you,” he has a very effective bargaining advantage, particularly if he is armed with thermonuclear weapons. If he can convince you he is stark, staring mad, and if he has enough destructive power, you will also be persuaded that deterrence alone will not work. You must then give in or accept the possibility of being annihilated.<sup>66</sup>

On thermonuclear threats:

[O]ur use of thermonuclear threats, if it is to be consistent with our other policies, must look and be both prudent and rational. We cannot go around threatening to blow up a major portion of the world, or attempt to get our way by looking insane and dauntless. These strategies might be available to a totalitarian nation. They are not available to us, a democratic nation in a democratic alliance.<sup>67</sup>

On growing potential for blackmail, revenge, accidental wars, Munichs & more dangers, extending to “irresponsible” private parties:

A world armed with nuclear weapons would provide a fertile field for paranoiacs, megalomaniacs, and indeed all kinds of fanatics.<sup>68</sup>

More:

[F]ew will feel comfortable in a world in which Malayan guerillas, Cuban rebels, Algerian terrorists, right-wing counter-terrorists, the Puerto Rican Independence Party, or even gangsters and atomic extortionists, might obtain access to nuclear weapons or other means of mass destruction.<sup>69</sup>

More:

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<sup>65</sup> TATU, p. 77.

<sup>66</sup> TATU, p. 83.

<sup>67</sup> TATU, p. 132.

<sup>68</sup> TATU, p. 223.

<sup>69</sup> TATU, p. 226.

When the small nations have acquired nuclear weapons, however, not only does the danger of accidental incidents go up sharply but the dangers of “arranged accidents” also increase.<sup>70</sup>

On increasing proliferation risk posed by ultra-high-speed centrifuge making nuclear weapons more affordable for smaller powers.<sup>71</sup> A cobalt bomb “might be vastly more deadly than an ordinary thermonuclear weapon at no greater cost.”<sup>72</sup>

On world stability unlikely to last more than a few decades:

We may any day see a spectacular and revolutionary weapons development, which really makes all nations equal in potential for violence in much the same way that the six-gun became the great equalizer in the American West. Differences in skill, morality, nerve and recklessness might then be decisive, and physical size or wealth might then become either irrelevant or a handicap.<sup>73</sup>

More on proliferation dangers increasing over decades:

My own undocumented estimate of world equilibrium is a small number of decades. After all, it is most unlikely that all the participants in the international scene will be cautious, prosperous nations. In fact it has been prophesied that many will be conscious antagonists of a system of domestic and international order they regard as bad or immoral.” When they get weapons they will seek to change this “bad and immoral” international system into one more to their liking. We must be intellectually, physically and morally prepared for this.<sup>74</sup>

On leverage applicable by small nuclear powers:

It is likely that other nations with a relatively small number of megatons in their hands will be able to exert a disproportionate leverage on the distribution of political power.<sup>75</sup>

On rising anger directed at the West:

Rising nationalism, racism, envy, greed exacerbated by the population explosion, a partial frustration of the revolution of rising expectations, and the memory of real or imagined past wrongs—all of these may act as spurs to the wider

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<sup>70</sup> TATU, p. 227.

<sup>71</sup> TATU, p. 230.

<sup>72</sup> TATU, p. 230.

<sup>73</sup> TATU, p. 233.

<sup>74</sup> TATU, p. 234,. (Quote included by HK is from Morton Kaplan.)

<sup>75</sup> TATU, p. 238.

acquisition of nuclear and other military capabilities, and to an acceleration of technology while imposing new strains on whatever degree of international order may exist. *We must not fall into the error of imputing to others our own sense of legality and restraint.* A large number of the actors on the international stage are going to consider the old system as a corrupt, evil and inefficient ancient regime designed to protect ill-gotten gains and privileges. As a result there may be bitter struggles between white and colored, rich and poor, developed and underdeveloped. These struggles could reach levels of conflicts—waged with weapons of modern technology—that, even if relatively limited, might be more bitter and destructive than the religious and ideological wars of the past.<sup>76</sup>

On pressures in the West for disarmament:

Moreover, unless arms control or new developments lead to ways of controlling the vast destructive potential of our technology, it would seem almost certain that fear of the arms race will grow. As a result the ban-the-bomb and unilateral disarmament groups will gain in influence. There may be, in effect, a rejection of the nation-state system, at least by the intellectuals, and a corresponding decline in the morale, confidence, and strength of the Western States before we have worked out any replacement.<sup>77</sup>

On gambles by leaders:

We tend to forget that throughout history many decision-makers were delighted to accept “double or nothing” tactics if the odds looked sufficiently favorable.<sup>78</sup>

On missile defense:

[O]ne can emphasize that arms control can be made effective because each side has active and passive defenses of relatively high quality and therefore, is willing to trust control measures on strategic offense forces....

Assume, for example, that both the U.S. and S.U. had, by agreement, purely defensive forces....

...Under this situation the two countries would not worry much if one side or the other cheated....On paper the defense might be able to degrade...attacks so that they fall within some “tolerable” range. However, neither side can be so certain of its defenses that it is likely to risk provoking the other.<sup>79</sup>

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<sup>76</sup> TATU, pp. 239 – 239. (Italics added.)

<sup>77</sup> TATU, pp. 239 – 240.

<sup>78</sup> TATU, p. 270.

<sup>79</sup> TATU, p. 276.

On humor & thermonuclear war:

....Thermonuclear war is not a joke, but professional or serious discussions of thermonuclear war can include humor, at least in Europe and the United States.

Often the sharpest and clearest way to illustrate a point is through a humorous example or anecdote. The shock value of using humor may go far toward dispelling illusions and conventional assumptions. There is also the classical use of humor for emphasis and to prevent a flagging of the interest of the audience (an important consideration in a “briefing” lasting for two hours to three days). Finally, one wishes to relieve the grimness of the subject matter. People in a state of horror are not good analysts or detached and objective listeners.<sup>80</sup>

### ***On Escalation: Metaphors and Scenarios (1965)***

In 1965’s *On Escalation* Kahn developed more fully for lay readers his theories of bargaining via threats and responses that might take place in event of an intense crisis between the superpowers and (possibly) their allies.

Kahn on escalation in brief:

In a typical escalation situation, there is likely to be a “competition in risk-taking,” or at least resolve, and a matching of local resources, in some form of limited conflict between two sides. Usually, either side could win by increasing its efforts in some way, *provided the other side did not negate the increase* by increasing its own efforts.... [T]he fear that the other side may react, indeed overreact, is most likely to deter escalation, and not the undesirability or costs of the escalation itself.<sup>81</sup>

On use of power by strong nations against weaker ones:

In all the colonial conflicts that have taken place in the decade and a half since World War II, there has hardly been one in which the colonial power did not have the physical power, or at least the potential physical power, to suppress indefinitely the nationalist movement or uprising.<sup>82</sup>

HK’s 44-rung Escalation Ladder is

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<sup>80</sup> TATU, pp. 282 – 283.

<sup>81</sup> OE, p. 3. (Italics in original.)

<sup>82</sup> OE, p. 24.

...a methodological device that provides a convenient list of the many options facing the strategist in a two-sided confrontation and that facilitates the examination of the growth and retardation of crises. Most important of all, the ladder indicates that there are many relatively continuous paths between a low-level crisis and an all-out war, none of which are necessarily or inexorably to be followed.<sup>83</sup>

On irrational conduct or threats:

The term “rationality of irrationality” describes a class of bargaining or negotiating tactics or escalation situations whose common characteristic is that there is a rational advantage to be gained from irrational conduct or from the expectation of irrational conduct.<sup>84</sup>

On the probabilities of things going wrong:

[N]o one really knows what the probability is that things will go wrong. In particular, no one could put together a completely persuasive story to a hostile and skeptical audience.<sup>85</sup>

On a “firebreak” between conventional and nuclear weapons:

Deputy Secretary of Defense (Comptroller) Alain Einthoven has described the nuclear threshold as follows: “In efforts to limit violence, there is and will remain an important distinction, a ‘firebreak’ if you like ... a recognizable, qualitative distinction that both combatants can recognize and agree upon if they want to.”<sup>86</sup>

HK adds:

That other “easily recognizable limitations” exist is clear; but it remains true that once war has started no other line of demarcation is at once so clear, so sanctified by convention, so ratified by emotion, so low on the scale of violence, and—perhaps most important of all—so easily defined and understood as the line between not using and using nuclear weapons.<sup>87</sup>

On weakening the nuclear threshold:

Nevertheless, I believe that two or three uses of nuclear weapons would weaken the nuclear threshold, at least to a degree where it would no longer be a strong

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<sup>83</sup> OE, p. 37.

<sup>84</sup> OE, p. 57.

<sup>85</sup> OE, pp. 64-65.

<sup>86</sup> OE, p. 94.

<sup>87</sup> OE, p. 95.

barrier to additional uses of nuclear weapons in intense or vital disputes. There would ensue a gradual or precipitate erosion of the current belief—or sentiment—that the use of nuclear weapons is exceptional or immoral. The feared uncontrolled escalation would be rather more likely to occur at the second, third or later use of nuclear weapons than as a consequence of first use.<sup>88</sup>

On command and control containing escalation:

Particularly, if most or all of the parties with nuclear weapons had also initiated procedures and equipment for reliable command and control, and the controlled-response tactics ... were well understood, it would not be likely that nations would automatically involve themselves in, or escalate, a conflict simply because a nuclear exchange had taken place. It is more likely that everyone would be extraordinarily cautious of the dangers of escalation, and would be most careful not to respond blindly or emotionally to either accidental or deliberate attack.<sup>89</sup>

On nuclear non-use possibly *decreasing* Cold War stability:

[T]he longer the West refuses to consider seriously the use of nuclear weapons, and the longer the nonuse tradition continues, the more likely it is that certain weaknesses in the nuclear capability will develop in the West. These weaknesses would then present the Soviets with the temptation to use nuclear weapons. They might succumb to this temptation if an opportunity arose in which they could achieve important gains by the first nuclear use.

This last possibility is not limited to U.S. – Soviet relationships. As more and more countries acquire nuclear weapons, and as more and more countries fear escalation and eruptions, the possibilities for large gains by either straight blackmail or blackmail combined with some calculated limited use of nuclear weapons may grow very large.<sup>90</sup>

On societal logistical constraints being fewer as to instituting nuclear war:

Nuclear war can escalate to total violence without significantly involving the citizenry in the process of prewar mobilization. Their major energies are not, as in pre-atomic total war, necessary to feed the war machine. Hence, one argument against nuclear war is that it may be peculiarly unstable, or volatile, because the tendency for social lethargy to break violence is reduced nearly to the vanishing point. Preparations for large-scale conventional war are painful; for nuclear war,

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<sup>88</sup> OE, p. 98.

<sup>89</sup> OE, p. 99.

<sup>90</sup> OE, p. 119.

they are not. The restraints on the outbreak of large-scale violence in nuclear war are therefore chiefly intellectual, ethical, or doctrinal ones.<sup>91</sup>

On limited war's artificiality as a constraint against its outbreak:

Limited war must, almost by definition, be artificial, and the higher the degree of artificiality, the clearer—and perhaps the more reliable—the inhibitions on raw violence.<sup>92</sup>

Explaining “coldly considered” arguments for using nuclear weapons:

One of them is that a world in which nuclear weapons have been used, and used purposefully and effectively to punish an aggressor, is a stable world. The lesson that nuclear weapons exist to be *used* against an aggressor (say, China) would be a deterring one, and it would be a lesson that would gain force from repeated demonstration. This is an argument that does not deny that such a use would accelerate the process of the diffusion of nuclear weapons. It incorporates the objection. But its conclusion is that such accelerated proliferation of nuclear weapons, far from provoking a catastrophe, is more likely to bring about a peaceful world, or at least one without major war. In such a world, clashes of national interest, if allowed to lead to violence, would nevertheless be fought out at a low level of violence, under an umbrella of strategic parity or at least a balance of terror.<sup>93</sup>

On sudden widespread proliferation and the risk of nuclear war:

But this would not prevent the technology from improving, and the theoretical availability from increasing. As a result, sometime in the 1980's or 1990's, an incident might occur that would result in a number of nations *suddenly* procuring the then easily available weapons within a very short period of time, possibly only a year or two. We might thus experience an explosive diffusion of nuclear weapons to fifty or sixty inexperienced and “uneducated” nations. Such a diffusion could present a far greater danger, a far greater potential for disaster, than the gradual adaptation of international and national societies to these devices.<sup>94</sup>

On nuclear weapons status as equalizing influence of such nations:

While *present* Nth country arsenals and delivery systems may be crude, they are not likely to remain so: cheap, small fusion weapons—the “poor man's bombs” of

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<sup>91</sup> OE, p. 120.

<sup>92</sup> OE, p. 121.

<sup>93</sup> OE, p. 121. (Italics in original.)

<sup>94</sup> OE, p. 131. (Italics in original.)

the future—are only a single case in point, very likely attainable within a decade or two. The long-range effects of nuclear weapons are almost certain to be to “equalize” states—to neutralize the importance of conventional wealth, population, or geographical advantage.<sup>95</sup>

On the consequences of the U.S. breaching the nuclear threshold:

Thus, if fears for the arms race are legitimate, a U.S. decision to breach the nuclear threshold for some strategic or even tactical convenience would seem extremely shortsighted and imprudent.<sup>96</sup>

On the difficulty of restoring the tradition and custom of nonuse after nuclear use:

More important, in a world in which there is no legislature to set new rules, and the only method of changing rules is through a complex and unreliable systems-bargaining process, each side should—other things being equal—be anxious to preserve whatever thresholds there are. This is a counsel of prudence, but a serious one: it is not often possible to restore traditions, customs or conventions that have been shattered. Once they are gone, or weakened, the world may be “permanently” worse off.<sup>97</sup>

On arguments re nuclear deterrence and war made with sparse historical data:

Despite the fact that nuclear weapons have already been used twice, and the nuclear sword has been rattled many times, one can argue that for all practical purposes, nuclear war is still (and hopefully will remain) so far from our experience that it is difficult to reason from, or illustrate arguments by, analogies from history. Thus, many of our concepts and doctrines must be based upon abstract and analytical considerations.<sup>98</sup>

On the strategic use of “credible first-strike capability” and the escalation ladder:

[T]he chief effect of some degree of “credible first-strike capability” (plus an invulnerable and large second-strike force) may be tacit. It is less likely to be used, or its use even explicitly threatened, than it is to provide an extra degree of

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<sup>95</sup> OE, p. 132. (*Italics in original.*)

<sup>96</sup> OE, p. 132.

<sup>97</sup> OE, p. 133.

<sup>98</sup> OE, p. 134.

pressure in dealings in an intense crisis or even further up the rungs of the ladder.<sup>99</sup>

On deterrence, second strike & damage limitation:

While we can agree that deterrence of a major war is the highest priority task of the strategic forces, the country still needs much more from its strategic forces than an adequate second-strike capability. Among other things, it needs some capability for limiting damage if, despite this second-strike capability, war occurs.<sup>100</sup>

On uses of thin missile defense shield: (1) badly-designed, weak attacks; (2) accidental launch; (3) small, crude attacks; (4) “facade” re psychological and/or political value; (5) force attacker countermeasures, reducing warhead payloads; (6) raise threshold of “exemplary” attacks; (7) optimal cost-effective deployment.<sup>101</sup>

On US or Soviet first strike not targeting civilians:

[C]ivilians are not high-priority military targets, whatever the present importance of city attacks in deterrence. The nation that strikes first is likely—initially, at least—to wish to preserve its opponent’s civilians, both in order not to provoke retaliation and to preserve hostages.<sup>102</sup>

On Korea: By forcing massive US spending increase, it was a huge defeat to the Soviets, and otherwise the US might have lost the Cold War.<sup>103</sup>

On consequences of failure to carefully consider nuclear options:

None of this is necessarily understood by the governments and war planners of either side. In a new war, it is perfectly possible that a nation might, simply out of a failure to have thought about what it was doing, attack cities.<sup>104</sup>

On changes in audience reactions between 1960 & 1965, as to response to Soviet first strike obliterating New York City:

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<sup>99</sup> OE, p. 137. Kahn’s “first-strike” means what strategists later termed “first use.” First-strike starts a war, while first-use introduces nuclear weapons into an ongoing conventional conflict, as the US did in 1945.

<sup>100</sup> OE, p. 153.

<sup>101</sup> OTW, p. 303.

<sup>102</sup> OE, pp. 160-161.

<sup>103</sup> OE, p. 165.

<sup>104</sup> OE, p. 169.

Almost nobody in the audience now (as opposed to five years ago) will reply that Johnson would go ahead and launch an all-out attack on the Soviet Union.....The overwhelming majority always suggests that he get on the Hot Line....

[I]f the same questions had been asked five years ago of quite technical and skilled audiences, to say nothing of lay audiences, the overwhelming majorities would have opted for some kind of large or spasm response without any further communication with the Soviets or indeed any investigation at all.

In the past five years, almost everyone in the U.S. who has any interest in these problems or is even modestly well informed has, as a result of both serious and fictionalized discussions, learned that there are possibilities for control in such bizarre situations.<sup>105</sup>

On all-out spasm nuclear response to a nuclear strike:

It has come as a distinct shock to me that many people not only accept, in effect, the concept of spasm or insensate war, but assign a humanitarian value to it, arguing that if this is the only conception of war a country has (or discusses) war becomes “unthinkable” or “impossible”—or that deterrence is improved. Thus, there is a curious area of agreement between some extreme “militarists,” some arms-controllers, and some members of the peace movement, although they arrive at their agreement from quite different assumptions and moral positions.<sup>106</sup>

On the impact of nuclear weapons, atomic & hydrogen bombs, on strategy & tactics:

When the atom bomb was developed, many scholars, military professionals, and informed laymen believed that strategy and tactics, as they understood them, had come to an end. This feeling was reflected in the late 1940’s in such phrases as “the absolute weapon,” and in many aphorisms and analogies that made the point, more or less dramatically or ironically, that the inevitable result of a nuclear war would be mutual annihilation. Since this would happen no matter what tactics were used, tactical theory was irrelevant. Strategy was equally irrelevant, since it could not be an objective of strategy to ring about the destruction of the nation. Atomic war thus became unthinkable, both literally and figuratively.<sup>107</sup>

Use of nuclear weapons for threats:

Today we are beginning again the comprehensive pursuit of new ideas and procedures. We realize that, terrible as these weapons are, they exist, and

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<sup>105</sup> OE, pp. 185-186, fn. 6.

<sup>106</sup> OE, p. 195.

<sup>107</sup> OE, pp. 197-198.

therefore they may be used. In any case, their use will be threatened, and such threats are a kind of use.<sup>108</sup>

Code of behavior for nuclear age:

As courageous behavior, whatever personal fears may be felt, is expected from an officer or soldier as part of his professional standard, so coolness and rationality already have been established as part of the expectations the public has of its crisis leaders in the nuclear age. There is now a widespread hostility to defiant or rashly “brave” counsels of nuclear conflict or bargaining....

This current emphasis on coolness and calculation sharply contrasts with much in the Western tradition, which has inclined to a romantic or quixotic attitude toward war. The Soviets, unlike Westerners, have almost no tradition of chivalry or of war as a romantic occupation. They are more influenced by the Byzantine tradition of a cynical and instrumental use of force, waging war so as to maximize the gains.<sup>109</sup>

On de-escalation as being different from escalation:

De-escalation also differs from escalation in that it is harder to force a suitable response. It is not really true that it takes two to make a quarrel; only one side need be aggressive in order to generate some certainty of a quarrel. But it usually does take two to make an agreement (barring total surrender by one side).<sup>110</sup>

Nor is de-escalation always benign:

De-escalation is usually thought of as a “friendly” act, but it need not be so. Thus, after the Battle of France, Hitler deliberately avoided provoking the British in an attempt to decrease their willingness to continue the war.<sup>111</sup>

HK presents a taxonomy of his nuclear strategy terms in Appendix A (pp. 275-300).

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<sup>108</sup> OE, p. 199.

<sup>109</sup> OE, p. 221.

<sup>110</sup> OE, p. 231.

<sup>111</sup> OE, p. 237.

## ***Thinking About the Unthinkable in the 1980s (1984, posth.)***

*Thinking About the Unthinkable* updated Kahn's thinking after 15 years.

On nuclear war victory:

It is incorrect to say that victory in nuclear war is impossible. It is especially possible if either side, or both, have low levels of nuclear forces that are vulnerable to destruction through creative or clever enemy tactics....The Soviets, for example, won the war started by Nazi Germany despite suffering 20 million deaths and losing a quarter of their capital stock.<sup>112</sup>

Moral obligations of our nuclear strategy:

Our common moral obligations are: (1) preserve nuclear deterrence on terms consistent with our security interests; (2) improve the safety of the world in the face of dangers posed by nuclear weapons; and (3) alleviate the consequences of a nuclear war if our best efforts to prevent such a conflict fail.<sup>113</sup>

On US "escalation dominance" versus Soviet Union:

Escalation dominance requires that Soviet leaders always consider conciliation to be preferable to continued conflict and escalation. Such a criterion for measuring the adequacy of U.S. strategic forces calls for a much greater military capability than that associated with "assured destruction" (and flexible targeting options). However ... our extended deterrence responsibilities with regard to the defense of Western Europe render escalation dominance a necessary standard for measuring "how much is enough" when it comes to the strategic forces that country procures and maintains.<sup>114</sup>

Revolutions in warfare:

The most fundamental of these "revolutions" clearly involves nuclear warheads and the increased efficiency in terms of kilotons deliverable per pound of payload, going from .002 kt./lb. for the Hiroshima bomb to a reported 2 kt./lb. in the mid-1970—a factor of 1,000 in thirty years, or ten in every decade, or more than three in every five years.<sup>115</sup>

On deterrence dependent upon who holds the nuclear weapons:

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<sup>112</sup> *Thinking About the Unthinkable in the 1980s*, p. 29 (hereinafter TATU 1980s)

<sup>113</sup> TATU 1980s, p. 53.

<sup>114</sup> TATU 1980s, p. 79.

<sup>115</sup> TATU 1980s, p. 83. KT = kiloton = 1,000 tons TNT equivalent explosive power.

Deterrence, therefore, is not just a matter of military capabilities; it has a great deal to do with perceptions of credibility, *i.e.*, the other side's estimates of one's determination, courage, and national objectives. For example, in the early days of the nuclear era, the British nuclear forces probably could have inflicted much greater damage to the Soviet Union in either a first or second strike than the Soviet Union could have inflicted on the United States in a first or second strike. However, we are reasonably sure that the Soviets were not too concerned about the British, whereas we were very concerned about the Soviets.<sup>116</sup>

Assumptions about enemy attacks:

Thus, in evaluating an enemy's capabilities, it is important to look beyond the conventional tactics that the standard assumptions lead one to expect, since a clever enemy might employ creative and unconventional methods. A defender should not assume what Albert Wohlstetter has called "defender-preferred attacks"—*i.e.*, that potential defender feels most able to deal with and therefore would prefer. Instead, the focus should be on "attacker-preferred attacks, "namely those a desperate or highly ideological aggressor may prefer."<sup>117</sup>

Re preventive war, HK notes Bismarck's dictum that preventive war is like committing suicide for fear of death.<sup>118</sup> Re accidental war, HK notes that in 1962 the US communicated, publicly and then in private follow-up, information on how to "accident-proof" their nuclear weapons.<sup>119</sup>

HK set **nine objectives for a nuclear policy**: (1) make nuclear weapons be & seem to be "virtually unusable—either politically or physically": (2) prevent nuclear intimidation except to preserve deterrence; (3) decrease the prestige of having them, to discourage proliferation; (4) limit proliferation without necessarily freezing *status quo*; (5) if nuclear weapons are used, limit the damage done; (6) competent—resilient & flexible enough to withstand crises, conventional wars & even nuclear breaches; (7) responsible to national interest, sentiments, doctrine & negotiable; (8) improve international standards; (9) permanent yet flexible.<sup>120</sup>

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<sup>116</sup> TATU 1980s, p. 89.

<sup>117</sup> TATU 1980s, p. 111.

<sup>118</sup> TATU 1980s, p. 136.

<sup>119</sup> TATU 1980s, p. 193.

<sup>120</sup> TATU, pp. 221-222.