

Ron Robin's Biography of Roberta and Albert Wohlstetter: Setting the Record Straight

Late in 2018 I discovered the published form of a roundtable discussion held in 2017² of reviews of Ron Robin's 2016 book, *The Cold World They Made: The Strategic Legacy of Roberta and Albert Wohlstetter*.³ I first met Roberta and Albert in 1971 when I was a student at the University of Chicago. I began working for them in 1973 and continued to do so until 1996. As a result, I am probably as familiar with Roberta's and Albert's work as anyone left alive and therefore was interested in Robin's book. The roundtable consisted of three reviews of the book, followed by Robin's response to these reviews. What Robin said about the Wohlstetters in his response was untrue and I was motivated to obtain a copy of the book. Unfortunately, the level of inaccuracies and falsehoods in the book far exceeded my worst fears. Though Robin claims to admire the Wohlstetters, his book is full of animus towards them. As one of Robin's reviewers, Robert Jarvis of Columbia University says, Robin's admiration of the Wohlstetters is "well disguised."⁴

One of the problems with the book is that about one quarter of it does not deal with the Wohlstetters at all but rather with three people, Paul Wolfowitz, Zalmay Khalilzad, and Richard Perle, whom Robin terms "The Wohlstetter Acolytes." Robin claims that "The Wohlstetters' fingerprints are...indelibly marked on the policies executed and designed by these three proteges."⁵ This is an attempt to implicate the Wohlstetters in the 2003 invasion of Iraq, an event which had disastrous long-term consequences. Since this ill-considered invasion occurred six years after Albert's death and at a time when Roberta was seriously ill, it is not at all clear that they would have supported this policy. Further as pointed out by Jarvis, these three "acolytes" were hardly the main persons driving U.S. foreign policy at that time, and events would have played out much the same way even if they had been absent.⁶

With regard to the Wohlstetters themselves, the book is littered with falsehoods. Robin continually distorts and misstates what the Wohlstetters have written. Here are two examples of Robin's false statements. In 1974 Albert published two articles on the subject "Is There A Strategic Arms Race?"⁷ These articles contain some of the first work that I had performed for Albert. Some had claimed that the U.S. and the Soviet Union were in a strategic arms race, which was being driven by exaggerated fears and estimates of the opposing forces. Albert's

¹ This paper is the product of the author's personal research and the analysis and views contained in it are solely his responsibility. Though the author is also a part-time adjunct staff member at the RAND Corporation, this paper is not related to any RAND project and therefore RAND should not be mentioned in relation to this paper. I can be reached at GregJones@proliferationmatters.com

² H-Diplo | ISSF, Roundtable, Volume X, No. 17, 2018. <https://issforum.org/ISSF/PDF/ISSF-Roundtable-10-17.pdf>

³ Ron Robin, *The Cold World They Made: The Strategic Legacy of Roberta and Albert Wohlstetter*, Harvard University Press, Cambridge, Massachusetts, 2016. Hereafter "Robin."

⁴ H-Diplo | ISSF, Roundtable, Volume X, No. 17, 2018, p. 15.

⁵ Robin, p. 15.

⁶ H-Diplo | ISSF, Roundtable, Volume X, No. 17, 2018, p. 14.

⁷ Albert Wohlstetter, "Is There a Strategic Arms Race?", *Foreign Policy*, No. 15, Summer, 1974, pp. 3-20 <https://www.jstor.org/stable/pdf/1147927.pdf> and Albert Wohlstetter, "Is There a Strategic Arms Race? (II): Rivals but No 'Race,'" *Foreign Policy*, No. 16, (Autumn, 1974), pp. 48-81. <https://www.jstor.org/stable/pdf/1147844.pdf>

work showed that in the early 1960s to the early 1970s, the U.S. was actually underestimating the Soviet Union's ICBM, SLBM, and medium and heavy bomber deployments. Albert concluded that the U.S. should not swing to the opposite error and begin to overestimate the Soviets. Rather he suggested that the U.S. try to get it right. He wrote that even if the U.S. correctly estimated Soviet capabilities, the implications for the U.S. strategic budget "will by no means be simple."⁸ Robin completely misrepresents Albert's conclusion as: "He called for massive spending in order to achieve at least technological parity with the Soviet Union."⁹ However, Albert's articles say nothing about whether the U.S. was technologically ahead or behind the Soviet Union.

Another example of Robin's distortions involves an incident between Albert and the analyst Bernard Brodie. (I will discuss in much greater detail later in this paper the "feud" between Albert and Brodie.) In an interview in 1985, Albert describes a complaint Brodie had made to Frank Collbohm (the president of RAND) about the preference of French visitors to accept dinner invitations at the Wohlstetters' and not Brodie's. Unable to believe that this preference had to do with the analytical substance that would be imparted at these dinners, Brodie thought it was due to the quality of the wine and food that the Wohlstetters were serving. As Albert said in the interview:

But he [Brodie] had complained to Frank that Frenchmen came to see me more than they came to see him because I was serving all of these expensive wines and food. Well, as it happens I generally didn't charge RAND for most of these. In fact, I had been told by Goldy [J.R. Goldstein, vice president of RAND], "Albert, you shouldn't do that. These are legitimate expenses." But the whole thing was so petty, I just didn't bother to think about it. Frank had asked me about that and I said, "Frank, I like wine. And as it happens so do a lot of Frenchmen, especially French wine and so I don't think that is the reason they come to see me. But if so I can't really help it. Why don't you buy Bernard some better wine?" I mean the whole thing just struck me as being so trivial that I didn't take it seriously.¹⁰

Alex Abella, in his book on RAND,¹¹ clearly had read this interview and related much the same story:

Collbohm showed Wohlstetter a letter from Brodie, complaining that visiting French dignitaries were neglecting Brodie's invitations to dinner. They preferred instead to frequent Wohlstetter's soirees because he served expensive wines and food. Brodie felt that he was missing out on important contacts and sources of

⁸ Albert Wohlstetter, "Is There a Strategic Arms Race?", *Foreign Policy*, No. 15, Summer, 1974, p. 20.

⁹ Robin, p. 106.

¹⁰ "The Development of Strategic Thinking at RAND, 1948—1963: A Mathematical Logician's View", Interview with Albert Wohlstetter, date of interview, July 5, 1985, Interviewers: Jim Digby and Joan Goldhamer, p. 85. Hereafter "Digby/Goldhamer interview." Note that there are at least two versions of this document, one held at the Hoover Institution and one held at RAND. The Hoover Institution version has space and a half spacing whereas the RAND version uses double spacing. This causes differences in pagination between the two versions but as best I can tell, there are no substantive differences. Since Robin apparently used the Hoover version, I have as well.

¹¹ Alex Abella, *Soldiers of Reason: The RAND Corporation and the Rise of the American Empire*, Harcourt Inc., 2008.

information and that his own contributions were being denigrated by Wohlstetter's dinner parties.

At first Wohlstetter thought Collbohm was joking. After all, Wohlstetter did not charge RAND for his food and wine, even though Vice President [of RAND] J. Richard Goldstein told him they were legitimate expenses and he should put in for reimbursement. Realizing the intensity that shone in Collbohm's eyes, Wohlstetter simply replied, "Frank, I like wine. And as it happens, so do a lot of Frenchmen, especially French wine, and so I don't think that is the reason they come to see me. But if so, I can't really help it. Why don't you buy Bernard some better wine?"¹²

Later in a separate matter, Brodie would complain to Collbohm about Albert's handling of an internal RAND document (I will discuss this incident in more detail later in this paper). This latter complaint would result in Collbohm firing Albert. Robin greatly misreports this matter regarding Albert's wining and dining of Frenchmen, "...he [Brodie] eventually retaliated by pressing charges of financial impropriety that led to Albert's dismissal."¹³ Later in his book, Robin does discuss (inaccurately) the matter of the handling of the internal RAND document. But then Robin adds, "...Brodie had allegedly complained that Albert had abused RAND funds by extravagantly wining and dining clients and colleagues at RAND's expense."¹⁴ Robin gives as a reference for this later statement the exact pages of Abella that I have just quoted which say just the opposite, that Albert was not charging RAND at all for the expenses incurred by his dinners. Robin has libeled not only Brodie but under the theory of "where there is smoke, there is fire" Albert as well. Already Robin's false statements have metastasized their way to Wikipedia. In fact, no one has ever accused Albert of any financial improprieties related to any matter. That Robin should read this material and report just the opposite of what they plainly state shows the degree of animus that Robin holds towards the Wohlstetters.

By no means do these two examples mark the extent of Robin's errors. In various sections of the book there seems to be an error in every paragraph. As a result, it is very hazardous to rely on anything Robin has written. I have no idea why Robin has so misstated the facts. I leave it to Robin to explain his multitude of errors. I have never met or talked to him. Indeed, this illustrates another problem with his work. Robin appears not to have interviewed anyone, such as myself, who knew the Wohlstetters well and who could have helped to steer him in a direction closer to the truth.

Rather than tediously go page by page through the entire book detailing Robin's errors and distortions, I intend to limit myself to discussing some of his main errors. At the same time, given the obvious problems Robin had in understanding much of the Wohlstetter's work, I intend to, at some places, provide detailed explanations of their work. First, I will discuss the relationship between Albert's first major defense policy work, generally referred to as "the base study," and Roberta's book on Pearl Harbor. Second, I will show that Albert's 1985 interview, which I have quoted from above, does not reveal, as Robin claims, a secret dark side of the

¹² *Ibid.*, pp. 129-130.

¹³ Robin p. 22.

¹⁴ Robin p. 97.

Wohlstetters, but rather is totally consistent with everything else Albert has said. Third, I will discuss several important areas of Albert's work that Robin has ignored. In particular, Albert's and Roberta's contributions to nuclear nonproliferation which were the major focus of their work between 1975 and 1979 and led to major changes in U.S. policy regarding the civil use of plutonium. Additionally, I will discuss Albert's early recognition that the coming computer revolution would permit very accurate conventional weapons and that such weapons could carry out tasks that previously would have required nuclear weapons. Fourth, I will discuss the so-called feud between Bernard Brodie and Albert. This is a matter that is bigger than just Robin's book. I will provide my own view of this "feud" and show that Albert ignored Brodie's jealousy inspired attacks. As far as analytical substance, it would have been difficult to have an ongoing feud with Brodie because his views were so changeable and inconsistent.

The Discovery of the Importance of Surprise Attack for Determining the Security of the U.S. Nuclear Forces

The Relative Timing of the Base Study and Roberta's Pearl Harbor Book

In 1954, RAND published a report entitled "Selection and Use of Strategic Air Bases," colloquially known as "the base study."¹⁵ Albert was the report's principal author and the report not only was Albert's first claim to fame but also the work that put RAND on the map.¹⁶ A major conclusion of this report was that the Strategic Air Command's (SAC) bomber bases were quite vulnerable to a surprise Soviet attack and that most of SAC's bombers could be wiped out on the ground in such an attack.

In 1962¹⁷ Roberta published the book *Pearl Harbor: Warning and Decision*.¹⁸ This book, which won the Bancroft Prize for diplomatic history from Columbia University, was the first to seriously look at why the U.S. was surprised at Pearl Harbor. Before Roberta's book, conspiracy theorists had often put the blame for the surprise on the malfeasance or incompetence of various people in the U.S. A popular theory was that President Roosevelt had deliberately allowed the attack to get the U.S. into World War II.¹⁹ Roberta's was the first book to look at the signals available to decision makers and to show that given the various conflicting information regarding Japan's intentions, an attack on Pearl Harbor was by no means obvious. This examination of how intelligence "signals" can be lost in the "noise" of competing information is considered important for intelligence analysis even today.

¹⁵ A. J. Wohlstetter, F. S. Hoffman, R. J. Lutz and H. S. Rowen, "Selection and Use of Strategic Air Bases," R-266, The RAND Corporation, April 1954. The report was originally top secret but is now declassified. <https://www.rand.org/content/dam/rand/pubs/reports/2006/R266.pdf>

¹⁶ See the RAND-produced video, "Ideas in Action: 60 Years of RAND," CP501, December 2005.

¹⁷ Though the book was published in 1962, it was finished in 1958 as a RAND report. However, one of its Pentagon reviewers was a Pearl Harbor conspiracy theorist who blocked the report's publication claiming it was very highly classified. It took a change of administrations before the book could be published.

¹⁸ Roberta Wohlstetter, *Pearl Harbor: Warning and Decision*, Stanford University Press, 1962.

¹⁹ One of the many problems with this theory is that Roosevelt was concerned about the war in Europe. Having the U.S. at war with Japan would tend to distract from that goal. In his famous speech on December 8, 1941 Roosevelt only declared war on Japan. It took the unexpected declaration of war by Germany on December 11 to involve the U.S. in the war in Europe.

Robin, without presenting any direct evidence, contends that Albert's work on surprise attacks against SAC has an "intellectual debt" to Roberta's Pearl Harbor work that is "quite obvious."²⁰ This view that Roberta provided the idea for Albert's first major work and therefore she is yet another woman whose work a man takes credit for, plays well in this era of #MeToo. However, it is entirely untrue.

Robin is not the first person to have this clever idea. Various people raised it several times in the 1980s and Roberta told me that it was untrue and indeed the reverse was true, Albert's work on SAC's vulnerability had sparked Roberta's interest in researching Pearl Harbor. Nor does the timing of the two works support Robin's claim, a point that has also been made by Jarvis in his review of Robin's book.²¹ Though the base study was published in April of 1954, Albert started work on the basing issue in the summer of 1951 and he has said that he had produced the main conclusions by the latter part of 1952. The first version of the base study, R-244-S, was published March 1, 1953. In contrast, since Roberta did not finish the RAND version of her book until 1958 and has said that the work took five years,²² she did not start work until sometime in 1953. The follow-on report to the base study, R-290, which was published September 1, 1956, quotes from a portion of Roberta's Pearl Harbor work which was at that time still being drafted (the work was said to be "forthcoming").²³ Therefore the timing of the publication of these works fully supports Roberta's statements to me.

Protecting U.S. Nuclear Forces: The Base Study and R-290

Having established that Albert's base study work came before Roberta's examination of the Pearl Harbor attack, there is still the question of how Albert came to discover the importance of surprise attack as a threat to the survivability of U.S. strategic nuclear forces. As we will see it was a result that naturally came out of Albert's analysis. To understand this issue better, it is useful to discuss the base study work in some detail.

The base study was Albert's first piece of important work performed for RAND. It was seemingly a simple problem and at first Albert was the only one working on it and even he was only a consultant and not a RAND employee. In World War II, the U.S. did not bomb either Germany or Japan using bases in the U.S. Rather to attack Germany the U.S. based its bombers in England, North Africa and southern Italy. To attack Japan, U.S. bombers were first based in China and then moved to bases in the Marianas. The U.S. Air Force expected that in a war with the Soviet Union that SAC would move to overseas operating bases and conduct the bombardment of the Soviet Union from there. The Air Force just wanted to know where these overseas operating bases should be.

Albert has described how he proceeded with the analysis for the base study:

²⁰ Robin, p. 11.

²¹ H-Diplo | ISSF, Roundtable, Volume X, No. 17, 2018, p. 10.

²² Roberta Wohlstetter, *Pearl Harbor: Warning and Decision*, Stanford University Press, 1962, p. xi.

²³ A. J. Wohlstetter, F. S. Hoffman and H. S. Rowen, "Protecting U.S. Power to Strike Back in the 1950's and 1960's," R-290, The RAND Corporation, September 1, 1956, p. 6. Hereafter "R-290."

<http://albertwohlstetter.com/writings/19560901-AW-EtAl-R290.pdf>

The base study...proceeded by a method of successive approximations. It compared forces for their efficiency in carrying a payload between the bases and targets without opposition by enemy interceptors or enemy bombers. Then it introduced obstacles successively: first enemy defenses; then enemy bombardment of our bombers and other elements needed to retaliate.²⁴

This method of performing the analysis is probably not how it would be done today, where the entire system would be analyzed at once. However, Albert was learning as he went along and this method allowed him to learn systematically. The Soviets had a large fighter force and he had expected that the problem of penetrating Soviet defenses would be the main one: "...penetrating enemy defenses which had previously been taken as the main obstacle."²⁵ By attacking at night and using bomber routes that minimized the required penetration into the Soviet Union, the fighter problem was reduced to manageable proportions. However, if the Soviets struck first, it made a large difference in the number of U.S. bombers that would reach their targets and most would be destroyed on their bases.

Albert pointed out that by performing the analysis in this way, it made the first strike/second strike distinction obvious. The analysis looking at the efficiency of payload delivery and just the Soviet fighter defenses, would be the results if the U.S. had struck the Soviet Union first. Adding in the effects of the Soviets striking U.S. bases would be the result if the U.S. were to strike second. The large difference in the number of weapons delivered against Soviet targets between these two cases, showed the importance of a Soviet surprise attack.

The vulnerability of U.S. overseas operating bases led Albert to answer the Air Force's question on base location with the recommendation that SAC should not have any overseas operating bases. Rather SAC should conduct its operations from bases in the U.S. Albert did not want to eliminate all overseas air bases. Instead he wanted them used as refueling bases for SAC bombers operating from the U.S. In this way the bombers would only be on these overseas bases for brief periods, greatly reducing their vulnerability to Soviet nuclear attack. At the same time, these overseas refueling bases would allow the use of bombers that were smaller and more agile than bombers that could operate unrefueled from bases in the U.S.

Albert also realized that even a small Soviet surprise attack using just atomic and not hydrogen bombs would be capable of destroying most of SAC even on bases in the U.S. This vulnerability was due to the short warning time available before an attack due to gaps in U.S. radar coverage and that many SAC bases were located in coastal parts of the U.S. Albert's solution was to move the bases inland to provide better warning of attack and for SAC to have the capability to rapidly evacuate its bases once radar had detected an incoming attack.

A common stereotype of Albert was that he was always advocating for ever larger defense budgets and nuclear arsenals. This is a stereotype that Robin often repeats in his book.²⁶ But the

²⁴ Albert Wohlstetter, "Analysis and Design of Conflict Systems," in E. S. Quade ed., *Analysis for Military Decisions*, R-387-PR, The RAND Corporation, 1964, pp. 125-126.

<https://www.rand.org/content/dam/rand/pubs/reports/2007/R387.pdf>

²⁵ *Ibid.*, p. 126.

²⁶ For example, without providing any evidence, Robin says, "Albert's advocacy for a U.S. nuclear spending spree..." Robin, p. 173.

changeover to using overseas refueling bases and rapid evacuation of SAC's U.S. bases just involved changing the way SAC operated, not increasing the size of the nuclear arsenal.

Nor was Albert's groundbreaking work protecting SAC from a surprise attack limited to just the base study. Albert and his RAND team consisting of Henry Rowen and Fred Hoffman continued to offer improvements to protect the U.S. nuclear arsenal though Robin barely mentions this work. Even before the base study was formally published, Albert and Fred Hoffman were examining the importance of passive hardened blast shelters for protecting SAC against Soviet ICBMs which were expected to be a threat after 1960.²⁷ This work realized that early ICBMs would be rather inaccurate (they would have large CEPs to use the defense vernacular) and a hardened shelter would sufficiently reduce the effective area of even a large yield nuclear warhead so that ICBMs would be ineffective against such shelters. Albert and his team recommended such shelters for both U.S. bombers and ICBMs but in the end, they were only used for ICBMs. This was the origin of the missile silo. When Albert first proposed this idea, experts believed that it would be impossible to build such hardened shelters but Albert refused to take no for an answer. Albert had RAND contract with Paul Weidlinger and Mario Salvadori who showed that shelters that could resist blast overpressures of at least 200 psi were possible.²⁸

By 1956, Albert and his team had produced a follow-on study (R-290) to the base study which contained 50 recommendations on ways to improve the survivability of SAC.²⁹ As was discussed, one of these recommendations was the use of hardened shelters to protect both U.S. bombers and ICBMs. Such shelters (missile silos) were adopted to protect the ICBMs but not the bombers. The reason for the difference was that ICBMs once launched could not be recalled but the bombers could. Therefore, one would not want to launch the ICBMs just on radar indications that an attack might be underway but rather one would want to wait to be sure. But by that time the missiles themselves might be under attack. Missile silos allowed the ICBMs to ride out the first wave of an attack and then be launched. In contrast the bombers could be launched to strike the Soviet Union just on radar indications of a possible attack. Since the bombers were manned and took many hours to reach their targets, the bombers could be recalled if it turned out to be a false alarm.

However, Albert and his team found that there was a serious problem with the procedure to recall the bombers. Radio communications could be rather unreliable and not all aircraft might get the recall signal.³⁰ The aircraft that failed to receive the recall signal would carry on and bomb their targets, thereby starting a nuclear war by accident. Instead, R-290 suggested a procedure known as "Fail-Safe." Under this procedure, the bombers would be launched on possible warning of an attack but they would only proceed to a fix point (their Fail-Safe point) and then turn around and return to their base unless they received a second signal instructing the bombers to carry out their attack. In this way if some bombers did not receive the second signal, the attack might be somewhat weakened but the risk of starting an accidental war would be eliminated. The development of Fail-Safe and missile silos were two of Albert's most

²⁷ Albert Wohlstetter and Fred Hoffman, "Defending a Strategic Force After 1960," D-2270, RAND, February 1, 1954. <https://www.rand.org/pubs/documents/D2270.html>

²⁸ R-290, p. 77.

²⁹ *Ibid.*, p. 3.

³⁰ In the 1980s, my Pan Heuristics colleague Richard Brody, found a 1957 SAC exercise where all ten aircraft involved failed to receive the recall message until after they had "bombed" their targets.

significant innovations regarding the protection of the U.S. nuclear force but surprisingly Robin makes no mention of them in his book.

Roberta's Pearl Harbor Book and Surprise Attacks

That Albert did not use Roberta's Pearl Harbor work as his source for the importance of surprise attack does not decrease the significance of her work. Indeed, it could not have been easy for her to have produced such a groundbreaking book, given society's attitudes towards women at that time. Roberta told me of a time in the 1970s when she was sitting in a conference room in the Pentagon waiting for a meeting to start. She was the only woman in the room. A general walked in and handed her a bunch of papers to photocopy. I expected that Roberta would have told the general somewhat forcefully that she was one of the meetings participants and not a secretary. But instead, Roberta, ever polite, simply said that she did not know how to operate the photocopy machine. Albert was always proud and supportive of Roberta's work.

As Roberta notes, the surprise on December 7 was not that the Japanese attacked but that they attacked Pearl Harbor. Hawaii is roughly two-thirds of the way from Japan to the U.S. The Japanese navy had always tended to operate near Japan and its distant strike at Pearl Harbor was quite unprecedented. Further Japan had many other closer targets. Amazingly Japan attacked them all at the same time as Pearl Harbor. The Japanese attacked and then invaded the U.S. targets of: the Philippines, Wake Island, and Guam. The Japanese also attacked and the invaded the British targets of Hong Kong, Malaya and the Gilbert Islands. Japanese troops actually landed in Malaya an hour before the attack on Pearl Harbor. Yet of Japan's six main aircraft carriers, all six were used to attack Pearl Harbor. Roberta pointed out that this last fact was so extraordinary given the wide-ranging Japanese attacks, that even after the war, some in the U.S. still believed that only four carriers had been used in the attack.³¹

Though it is often ignored by other historians, Roberta also examined the surprise attack on the Philippines. She pointed out that even though the Philippines were considered to be a far more likely target and despite receiving notice of the attack on Pearl Harbor, most B-17s on Luzon were caught on the ground and destroyed.³² As she noted, though the surprise at Pearl Harbor inspired much outrage and investigation, the surprise in the Philippines did not, perhaps because the U.S. expected that such an attack might occur.

The base study does refer to the attack on Pearl Harbor but Albert would have hardly needed Roberta's work for him to be aware of the importance of that attack. Nor is Pearl Harbor the only example of a significant surprise attack that was relevant to the base study. As Robin notes in his book, the U.S. was surprised in June 1950 by the attack in Korea and again in November 1950 by the Chinese entry into the conflict. Additionally, the Soviet Union was surprised by the German attack in June 1941. Of particular relevance to the base study, in this attack the Luftwaffe destroyed over 1,200 Russian aircraft, mostly on the ground during the opening of the war. In June 1944 the U.S. attempted employ "shuttle bombing" of German targets by using

³¹ Roberta Wohlstetter, *Pearl Harbor: Warning and Decision*, Stanford University Press, 1962, p. 354.

³² The B-17s had dispersed on notice of the attack on Pearl Harbor but due to fog on Taiwan the Japanese were unable to attack as planned. The B-17s returned to their bases to prepare to strike the Japanese and were then surprised and destroyed. *Ibid.*, p. 396.

bases in the Soviet Union but major German bombing attacks which destroyed many U.S. aircraft on the ground, limited the effectiveness of this U.S. effort.³³

Surprise attack continues to be of more modern relevance. At the start of the 1967 war, Israel destroyed most of the Egyptian Air Force on the ground. At the start of the 1973 Yom Kippur war, it was the Israel's turn to be surprised. In 1979 the U.S. was surprised by the Soviet invasion of Afghanistan. The U.S. had detected the Soviet troop buildup but had accepted Soviet assurances that it was just a training exercise.

Failing to recognize that Roberta's Pearl Harbor work came after the base study and R-290 leads Robin to erroneously interpret Roberta's conclusions. Robin claims "...she [Roberta] implicitly, but quite clearly, argued for a significant buildup in military might as the only realistic tool to dissuade an enemy from a surprise attack."³⁴ The word "implicitly" means that Roberta did not make this argument at all but rather this is another Robin fabrication. What Roberta actually said was:

We cannot *count* on strategic warning. ... However, since we cannot rely on strategic warning, our defenses, if we are to have confidence in them, must be designed to function without it.³⁵ [Emphasis in original]

Since R-290 had already been published, Roberta would have known of the methods needed to ensure the functioning of SAC without relying on strategic warning. In particular, R-290 argues specifically against a military buildup, saying "no simple device--such as merely multiplying the number of bombers or the number of bases...will remedy this situation [the vulnerability of SAC] without infeasibly large expenditures."³⁶ Rather, as was discussed, R-290 has 50 specific recommendations including missile silos and Fail-Safe.

In sum, Albert did not need to rely on Roberta's work (which did not exist at the time) to be interested in including in the base study the effect of a surprise Soviet attack on SAC's ability to strike targets in the Soviet Union. Albert had expected Soviet fighter defenses to be the main hurdle for SAC but found that given the great destructive power of even atomic weapons, a small Soviet surprise attack would be enough to greatly cripple SAC. This work convincingly demonstrated the importance of the first strike/second strike distinction. Albert's solution was not to expand the U.S. nuclear arsenal but to change the way it operated by using operating bases in the U.S. combined with refueling bases overseas. His further work on this problem led to the development of missile silos and Fail-Safe.

The chronology of when Albert performed the base study and when Roberta wrote her Pearl Harbor book are easily available. It is certainly contained in the sources Robin used in writing his book. Robin vigorously promotes his false thesis regarding Roberta's influence on the base study while ignoring Albert's important development of missile silos and Fail-Safe.

³³ This was operation FRANTIC. See: Wesley Frank Craven and James Lea Gate, *The Army Air Forces in World War II, Volume 3, Europe: Argument to V-E Day, January 1944 to May 1945*, Office of Air Force History, The University of Chicago Press, 1951, pp. 308-319.

³⁴ Robin, p. 65.

³⁵ Roberta Wohlstetter, *Pearl Harbor: Warning and Decision*, Stanford University Press, 1962, pp. 400-401.

³⁶ R-290, p. 3.

Albert's View of the Soviet Threat and the "Confessional Interview"

Buried in the middle of Robin's book is a section entitled "The Confessions of Albert."³⁷ Robin has called this section "The crux of my vicarious relationship with the Wohlstetter creed..." and as such is one of the most important sections of the book.³⁸ Robin claims that in the Digby/Goldhamer interview, "Albert gradually let down his guard"³⁹ and revealed his true views of the Soviet enemy which "flew in the face of his public posturing."⁴⁰ Robin claims that Albert dismisses the Soviets as "strategic midgets" and says that Albert never took the Soviet threat seriously but just promoted it to support other agendas. Furthermore, Robin says in this section that Albert explained that his "fixation on a Soviet surprise attack" was due to "Roberta's towering ...influence..."⁴¹ As we saw in the last section this is completely false. Albert was referring to Pearl Harbor before Roberta started working on the subject. Robin also claims that Albert had a "bellicose position on weapons development"⁴² even though as we saw in the previous section, Albert's major innovations such as overseas refueling bases, missile silos and Fail-Safe did not involve the development of any weapons but was concerned with changing how the U.S. nuclear force would be configured and employed so as to allow reliable retaliation against nuclear attack while helping to prevent accidental nuclear war.

Nothing in the Digby/Goldhamer interview is confessional, despite Robin's claims to the contrary. Everything Albert says in the interview is fully consistent with his views expressed elsewhere.⁴³ What is involved is more of Robin's profound misreading of Albert's plain words. Take Albert's use of the term "midgets" in the Digby/Goldhamer interview. In the interview, they are having a discussion about the base study. The discovery that a Soviet surprise attack might wipeout a good portion of SAC naturally surprised many people. Some accused Albert of using a very capable Soviet attack in his analysis. As Digby put it "Albert, you were sometimes accused of making your Soviets a bit overly clever in some of the sneak attacks." Albert responded:

I do not make them ten feet tall. On the contrary I gave them much less than the capability attributed to them by the Air Force and the CIA. I assumed that they were midgets—but normally bright midgets. That they might attack the time-urgent targets and let the others go till later. That they might go *around* the radar cover rather than straight through it, etc.⁴⁴ [emphasis in original]

Albert was not making any sort of general statement about the Soviet's capabilities or threat and was certainly not calling the Soviets midgets, as claimed by Robin. Albert was talking about his hypothesized Soviet attack on SAC. He was saying that he used an attack that was far less than

³⁷ Robin, pp. 169-175.

³⁸ H-Diplo | ISSF, Roundtable, Volume X, No. 17, 2018, p. 19.

³⁹ Robin, p. 170.

⁴⁰ *Ibid*, p. 171.

⁴¹ *Ibid*.

⁴² *Ibid.*, p. 174.

⁴³ Having had many discussions with Albert over our 25 year association, there is nothing in this interview that I had not heard many times before.

⁴⁴ Digby/Goldhamer interview, pp. 59-60.

the full Soviet capabilities. In using the term “midgets” he was simply contrasting with “ten feet tall.” It is baffling how Robin could have misread the interview so badly.

What was Albert’s view of the Soviet threat? Robin correctly says that Albert didn’t believe that the Soviets were *eager* to attack the U.S. But then Robin jumps to the opposite extreme and incorrectly says that Albert was concerned about a Soviet threat not because it was probable but simply because it was possible even though, in Robin’s incorrect view, Albert thought the probability was very small.

Albert view of the risk of a Soviet attack involved what Albert called “comparative risks.” Albert first expounded this view in R-290 (in 1956) and repeated it in many other places including the Digby/Goldhamer interview. However, Robin seems to have totally missed the significance of what Albert said. For example, in the Digby/Goldhamer interview he says:

...does this [the vulnerability of SAC as shown by the base study] mean that the Soviets are likely to strike, and I said no because that depends first of all on their knowing about it, and second of all, what alternatives they have to striking—and the more plausible cases are that it might occur to them, but they wouldn’t do it out of the blue. But if they were in real trouble, because there are always going to be large uncertainties even against a force as vulnerable as SAC was, they would do it only if the other alternatives looked bad. The problem was that the risks in striking SAC were much smaller than people realized.⁴⁵

Albert was saying that a Soviet attack was not going to occur in normal peacetime, when the risks of not attacking would be low and the risk of attacking would be significantly higher. However, in a crisis or limited war that was going badly, there might be substantial risks in not attacking and the risk of attacking might seem to the Soviets the lesser of two evils. Having a vulnerable SAC would reduce the risks to the Soviets of attacking. In such circumstances the probability of a Soviet attack could become quite high. Albert’s wanted to raise the risks to the Soviets of their attacking the U.S. by ensuring that SAC could survive a Soviet first strike. Albert’s goal was to try to ensure that the risks to the Soviets of attacking the U.S. were always higher than the alternative, thereby preventing a nuclear war. As Albert said: “It is a matter of comparative risks. Under some circumstances an aggressor might be faced with several unpleasant alternatives, and we would like to guarantee that the most unpleasant always appears to be the risk of making an attack.”⁴⁶

Note that this issue is related to the question of whether the U.S. could maintain a vulnerable and unready SAC in peacetime and rely on strategic warning of Soviet attack preparations to protect SAC. In R-290, Albert has argued that the U.S. should not rely only on warning, as the U.S. might not recognize or properly react to warning signals. This issue is discussed in more detail below in the section on Bernard Brodie.

⁴⁵ *Ibid.*, p. 55.

⁴⁶ Albert Wohlstetter and Henry Rowen, “Objectives of the United States Military Posture,” RM-2373, The RAND Corporation, May 1, 1959, p. 4. <http://albertwohlstetter.com/writings/19590501-AW-Rowen-RM2373.pdf>

In this same section of his book, Robin demonstrates that he does not understand the first strike/second strike distinction. Robin correctly says that Albert stated in the late 1950s and early 1960s the Soviet nuclear forces were even less ready than SAC had been in the early 1950s. The Soviet bombers were normally very unready, their missiles did not have silos, and their ballistic missile submarines stayed mainly in port. Robin suggests that the U.S. response to this Soviet vulnerability should be to “curtail aggressive [defense] expenditures.”⁴⁷ However, Soviet vulnerability to a U.S. first strike, would not prevent the Soviets from readying their nuclear forces and delivering their own first strike. The U.S. nuclear forces needed to be able to survive a Soviet first strike whether or not the Soviets were vulnerable to a U.S. first strike.

Also, in this same section, as well as elsewhere in his book, Robin incorrectly claims that in a 1959 RAND research memorandum (RM),⁴⁸ Albert, along with Henry Rowen, was proposing large U.S. defense expenditures as a way to “induce Soviet economic suicide.”⁴⁹ Robin quotes the RM as saying “Our object is to select feasible measures that force infeasibly expensive countermeasures.”⁵⁰ In fact Albert is not calling for attempting to spend the Soviet Union into bankruptcy. As is apparent on pages 34-35 of the RM, Albert is simply calling for actions that the Soviet Union would be unable to afford to counter.

It was not until the 1980s, that multiple analysts, including Rowen, noted the faltering Soviet economy and the strain imposed by large defense expenditures. Rowen, in his role as Chairman of the CIA’s National Intelligence Council stated that “Soviet economic growth has slowed markedly in recent years.” As a result, the Soviets would face “much harder choices for the leadership in allocating resources to consumption, investment and defense.” However, he predicted that “the Soviet economy is not going to collapse.”⁵¹

The growing economic burden in the late 1980s was one of the key factors that led the Soviets to give up their empire. One can debate the role that increased U.S. defense expenditures played in this outcome but the main point is that in the late 1950s, no one, including Wohlstetter and Rowen, had the idea of trying to spend the Soviet Union into bankruptcy despite Robin’s claims to the contrary.

In sum, Albert’s “Confessional Interview” is nothing of the sort. Robin completely misunderstands what Albert is saying in this interview. Albert did not, as Robin claimed, discount the Soviets as “midgets.” When Albert was using that term, he was only referring to his hypothesized attack on SAC and was simply contrasting it to an unrealistically capable “ten feet

⁴⁷ Robin, p. 173.

⁴⁸ Albert Wohlstetter and Henry Rowen, “Objectives of the United States Military Posture,” RM-2373, The RAND Corporation, May 1, 1959.

⁴⁹ Robin, p. 174.

⁵⁰ Robin, p. 173, fn 32. Robin’s footnote 32 is clearly in error. It cites the Digby/Goldhamer interview as the source of this quotation when it is actually from the RM-2373, p. 8.

⁵¹ Testimony of Henry S. Rowen, Chairman, National Intelligence Council, Central Intelligence Agency, before the Joint Economic Committee, Subcommittee on International Trade, Finance and Security Economics, *Central Intelligence Agency Briefing on the Soviet Economy*, December 1, 1982. This was published as Henry S. Rowen, “The Soviet Economy,” *Proceedings of the Academy of Political Science*, Vol. 35, No. 3, 1984, pp. 32-48. <https://www.jstor.org/stable/pdf/1174115.pdf?refreqid=excelsior%3A277cbf4c93961ddd190f619d6441608f> This issue is also discussed in: Henry S. Rowen, “Living with a Sick Bear,” *The National Interest*, Winter 1986, pp. 14-26.

tall” Soviet attack. Albert did not believe that the risk of a Soviet attack would always be very small. Instead, Albert in the Digby/Goldhamer interview and in many other of his writings, described his view of “comparative risks” and believed that in a crisis, if the U.S. nuclear forces were vulnerable, the risk of attack could become quite high. Albert’s goal was to try to ensure that the risks to the Soviets of attacking the U.S. were always higher than the alternative, thereby preventing a nuclear war.

Important Work Ignored by Robin

As was shown above, Robin ignored key innovations Albert made in the field of nuclear deterrence such as missile silos and Fail-Safe. In addition, Robin ignored or barely mentioned whole areas of analysis to which Albert and Roberta made important contributions. I will discuss two of these in some detail. First, the analysis of the problem of the spread of nuclear weapons to other countries (nonproliferation) and second, the early recognition that the computer revolution would make weapons much more accurate, allowing conventional weapons to take over some roles from nuclear weapons.

Albert’s and Roberta’s Work on Nonproliferation

Both Albert and Roberta mainly focused on issues of nonproliferation between 1975 and 1979. However, Robin barely mentions their work from this period and denigrates nonproliferation concerns in general because of what Robin calls the “Wohlstetter school” using weapons of mass destruction as a pretext for the war with Iraq in 2003—six years after Albert’s death. Yet Albert’s and Roberta’s work in the 1970s had immediate impact on U.S. policy regarding the commercial use of plutonium-based fuels, an impact that continues until today. It is also puzzling that Robin would ignore this work since he was concerned with how Albert and Roberta affected each other’s work. During this time, they would both be focused on this subject and would coauthor several publications. In addition, the only book of which Albert was the main author was produced during this time, so it is difficult to see how Robin ignored Albert’s and Roberta’s work on nonproliferation.

In 1961 Albert published his first work on nonproliferation “Nuclear Sharing: Nato and the N+1 Country.”⁵² The main thrust of this article related to the U.S. guarantee of nuclear protection to Europe. Albert believed that the maintenance of this guarantee was the best way to help protect Europe and was superior to either individual European countries acquiring their own nuclear arsenals or creating some sort of multinational European/U.S. nuclear force.

In his section on “National Strike Forces” he makes clear that he opposed the spread of nuclear weapons to any country, not just NATO members. He applies to smaller nuclear powers the requirements developed in his 1959 “The Delicate Balance of Terror” for maintaining a secure nuclear force. Since Albert found that developing a secure second strike force would be difficult for powers such as the U.S. and the Soviet Union, it is not surprising that he found that smaller nuclear powers face very great difficulties deterring a great power. Albert was quite concerned as to how smaller nuclear powers might control their forces:

⁵² Albert Wohlstetter, “Nuclear Sharing: Nato and the N+1 Country,” *Foreign Affairs*, Vol. 39, No. 3, April 1961. <http://npolicy.org/userfiles/file/Nuclear%20Heuristics-Nuclear%20Sharing.pdf>

With the multiplication of national strike forces, the control problem becomes especially acute. If many nations have the power of decision, and if, in addition, each nation decentralizes its control to a multiplicity of subordinates, or—worse—to some electronic automata, it is evident that the situation could get out of hand very easily. The difficulty of distinguishing accidents from attacks or, if the attack is actual, in identifying its source would be enormously increased.⁵³

Even when small nuclear powers would be facing other small nuclear powers, Albert had significant concerns:

The view that widespread diffusion [of nuclear weapons] will be stabilizing assumes that the prototype relation among the many powers will be mutual deterrence. But it would in fact be a miracle if *every* pair of countries out of a large number of nuclear powers stood in this relationship. These countries are at different stages of development and in different relative strategic positions. It would be remarkable if there were not strong asymmetries and sometimes symmetrical “preclusive” capabilities.⁵⁴ [Emphasis in original]

Therefore by 1961, Albert had made clear his opposition to the spread of nuclear weapons to other countries. Albert reiterated this opposition in a speech given December 2, 1967 at the University of Chicago’s twenty-fifth anniversary observance of the first controlled self-sustaining nuclear reaction.⁵⁵ He noted that there was a considerable overlap between peaceful nuclear activities and military ones and India, in particular, had made progress towards nuclear weapons thanks to its civilian nuclear energy program.

Albert’s concerns were confirmed by India’s May 18, 1974 so-called peaceful nuclear explosion. In response he returned to this issue in early 1975 and by December of that year, he, Roberta and the members of his research group at Pan Heuristics had already produced a draft of the report “Moving Toward Life in a Nuclear Armed Crowd?”⁵⁶ The report was finalized on April 22, 1976.

The report’s key finding was that commercial nuclear power activities were carrying many countries closer and closer to a nuclear weapon capability even though these activities were under International Atomic Energy Agency (IAEA) safeguards. Particularly dangerous was the separation of plutonium from spent fuel (reprocessing) and its use in plutonium-based fuels. By stockpiling separated plutonium or possessing unirradiated plutonium fuels, countries would already be rather close to acquiring nuclear weapons.

⁵³ *Ibid.*, p. 363. The page numbers cited here are from the original article and not the reprint linked to above.

⁵⁴ *Ibid.*, p. 370.

⁵⁵ Albert Wohlstetter, “Perspective on Nuclear Energy,” *Bulletin of Atomic Scientists*, Vol. 24, No. 4, 1968. <https://www.tandfonline.com/doi/pdf/10.1080/00963402.1968.11457650?needAccess=true>

⁵⁶ Albert Wohlstetter, Thomas A. Brown, Gregory Jones, David McGarvey, Henry Rowen, Vincent Taylor, and Roberta Wohlstetter. “Moving Toward Life in a Nuclear Armed Crowd?,” ACDA/PAB-263, Pan Heuristics, December 4, 1975, revised April 22, 1976.

At this time, due to the oil shortages in 1973-1974, many countries were considering large nuclear power programs and the use of plutonium fuel was considered essential. Countries might well be interested in only nuclear power and not nuclear weapons but these large nuclear programs using plutonium fuel would nevertheless create an “overhang” of countries very close to a nuclear weapon capability. If in a crisis a country were to suddenly use its plutonium stocks to acquire nuclear weapons, other countries might follow suit and the number of countries having nuclear weapons could quickly grow—hence the title of the report.

Another key insight of the report was that the most dangerous aspects of nuclear power, the separation of plutonium and the use of plutonium-based fuels were not essential to the general use of nuclear power. If these activities were eliminated, then the plutonium produced in nuclear power reactors would be safely locked up in the highly radioactive spent fuel and it would be much harder for a country to acquire nuclear weapons.

The recommendation to ban plutonium reprocessing and plutonium-based fuels was briefed in 1976 to both President Ford’s staff as well as the staff of then candidate Carter. Before the election, both came out in favor of a reprocessing moratorium. After the election, President Carter adopted the policy of banning reprocessing and the use of plutonium-based fuels in the U.S. and opposed reprocessing and the use of plutonium-based fuels overseas. This has remained U.S. policy until today, though it has not always been implemented coherently or consistently.

A version of this report was published in 1977 in the journal *Minerva*. An updated and expanded version of the report was published as the book *Swords from Plowshares* in 1979.⁵⁷ This would be the only book where Albert was the main author.

In 1976 Albert published the important article “Spreading the Bomb Without Quite Breaking the Rules.”⁵⁸ The nuclear industry was attempting to fight the ban on reprocessing by claiming that the sort of plutonium produced in power reactors, reactor-grade plutonium, could not be used to produce nuclear weapons because this plutonium would cause nuclear weapons to predetonate and have very low yields.

Albert’s article contained key excerpts from two declassified memos from 1945 that revealed the predetonation characteristics of the Nagasaki nuclear weapon.⁵⁹ In particular there is a lower limit on the yield of any predetonating weapon, which is referred to as the fizzle yield. This is the yield that would be produced if a stray neutron started the chain reaction just as the weapon became critical. One of these memos stated that for the Nagasaki weapon the minimum yield would be about one kiloton. Since the lethal area of a one kiloton nuclear weapon is about 25%

⁵⁷ Albert Wohlstetter, Thomas A. Brown, Gregory S. Jones, David McGarvey, Henry Rowen and Roberta Wohlstetter, *Swords from Plowshares: The Military Potential of Civilian Nuclear Energy*, The University of Chicago Press, 1979.

⁵⁸ Albert Wohlstetter, “Spreading the Bomb Without Quite Breaking the Rules,” *Foreign Policy*, No. 25, Winter 1976-1977.

<https://www.jstor.org/stable/pdf/1148025.pdf?refreqid=excelsior%3A386f54d0d558329febbe41821080c972>

⁵⁹ *Ibid.*, pp. 160-161. These memos had been discovered in September 1976 as part of ongoing research at Pan Heuristics. The key persons involved in this discovery were Albert, Arthur Steiner and myself.

of that of the 16 kiloton weapon that devastated Hiroshima, this yield can hardly be considered insignificant.

When the Energy Research and Development Agency (ERDA--the predecessor to the current Department of Energy) found out that Albert was going to publish the predetonation probabilities and yields of the Nagasaki weapon, its first impulse was to attempt to reclassify the information. When this was not possible, ERDA decided to preempt Albert. In mid-November 1976 Robert Selden of the Lawrence Livermore National Laboratory and J. Carson Mark the Director of the Theoretical Division, Los Alamos Scientific Laboratory gave a series of briefings explaining that reactor-grade plutonium can be used to produce nuclear weapons. This was the first time that the U.S. government had publicly provided this information. Later Mark would use the information from the two memos published by Albert to detail the range of yields that could be produced by nuclear weapons using reactor-grade plutonium.⁶⁰

Also in 1976, Roberta presented an important paper on the background to the Indian nuclear weapon program.⁶¹ She showed that India was an example that confirmed the concerns expressed in “Moving Toward Life in a Nuclear Armed Crowd?.” India had made the decision to obtain plutonium as early as 1956, well before it had any interest in acquiring nuclear weapons. But in 1964, in the aftermath of its war with China and that country’s nuclear weapon test, the prior decision to acquire plutonium made it easier for India to start to move slowly towards nuclear weapons. Unwitting U.S. nuclear aid to India, including the provision of the heavy water used to produce the plutonium, eased the difficulty of India’s acquiring nuclear weapons. Roberta recommended that if India did not disavow its nuclear weapon program [it did not], the U.S. should end nuclear cooperation with India [it did].

A 1979 report written by Albert, Roberta and myself represents the culmination of the five year effort on nonproliferation at Pan Heuristics.⁶² The report calculated the time and effort required to produce nuclear weapons from various nuclear capability starting points. It also countered many of the arguments put forward by the nuclear industry attempting to rebut the new Carter Administration policy on plutonium. In addition to plutonium, the report examined the dangers of highly enriched uranium and uranium enrichment technologies. It concluded:

...some enrichment technologies should not be transferred to nonweapon states if bomb material is not to become quickly accessible. This is true for gas centrifugal technology and facilities...⁶³

This conclusion is quite relevant today as it pertains to the issue of whether Iran should be allowed to retain its centrifuge enrichment program.

⁶⁰ J. Carson Mark, “Reactor-Grade Plutonium’s Explosive Properties,” Nuclear Control Institute, August 1990.

⁶¹ Roberts Wohlstetter, “U.S. Peaceful Aid and the Indian Bomb,” paper presented at the California Seminar on Arms Control and Foreign Policy, November 18, 1976. This paper was later published in: Albert Wohlstetter, Victor Gilinsky, Robert Gillette and Roberta Wohlstetter, *Nuclear Policies: Fuel Without the Bomb*, Ballinger Publishing Company, 1978, pp. 57-72.

⁶² Albert Wohlstetter, Gregory Jones, Roberta Wohlstetter, “Towards a New Consensus on Nuclear Technology, Part I, Why the Rules Need Changing,” Pan Heuristics, July 6, 1979. <http://www.npolicy.org/files/19790706-TowardsANewConsensus-Vol01.pdf>

⁶³ *Ibid.*, p. 74.

After this report, Albert moved on to other issues, but he returned to writing about nonproliferation in the mid-1990s and two of the last articles that he wrote were concerned with this issue. The first article expressed grave doubts as to whether the 1994 “Agreed Framework” deal with North Korea would in fact stop it from obtaining nuclear weapons—doubts that have since been confirmed by North Korea’s subsequent six nuclear tests.⁶⁴ The second article, called for a revision of the Nuclear Nonproliferation Treaty and its attendant IAEA safeguards. The article pointed out that the current treaty allows nonnuclear weapon states to process materials (such as separated plutonium) and processes (such as centrifuge uranium enrichment), that facilitate countries moving very close to the possession of nuclear weapons.⁶⁵ This article repeated the warning about the dangers of centrifuge enrichment: “Even when centrifuge plants are configured to enrich uranium to a low 3%, batch processing can produce 90% enriched uranium in less than a week.”

As one can see Albert’s concerns about nonproliferation span over three decades, yet Robin virtually ignores this substantial body of work.

Albert’s Early Recognition of the Impact of Computer Technology on Weapons Accuracy

Another area of Albert’s work ignored by Robin is Albert’s early recognition that improving computer technology would lead to much greater weapon delivery accuracies, which would allow conventional weapons to take the place of nuclear weapons for some missions.

In 1967 Albert had already seen that computers would be improving very rapidly. In a talk to the Institute for Strategic Studies, [now the International Institute of Strategic Studies] he said:

Computers are also critical components of the weapons system designed... Order of magnitude improvements come even more swiftly in the tiny elements that form essential parts of computers, sensing and communications systems. ...It appears now, for example, that it may be practical soon to pack as many as one hundred thousand transistors on a quarter-inch wafer. Such startling densities are promised by the techniques known as LSI or “large scale integrated circuitry.” The packing not only cuts size, but perhaps more important, increases speed and by reducing the number of wafers and critical interconnections, may vastly increase reliability and make new ranges of complexity workable. By “discretionary wiring,” even if fewer than a third of the potential gates are working, paths of connection on the wafer may take advantage of the many alternatives to detour faulty gates. LSI and related techniques will affect almost every phase of electronics and, ultimately, the shape of military offense and defense systems.⁶⁶

⁶⁴ Albert Wohlstetter and Gregory S. Jones, “Breakthrough in North Korea?,” *The Wall Street Journal*, November 4, 1994.

⁶⁵ Albert Wohlstetter and Gregory S. Jones, “A Nuclear Treaty That Breeds Weapons,” *The Wall Street Journal*, April 4, 1995.

⁶⁶ Albert Wohlstetter, “Strength, Interest and New Technologies,” D-16624-PR, RAND, 1968. Presented as the opening address of the 9th Annual Conference of the Institute of Strategic Studies on Military Technologies in the 1970s, September 28, 1967. The paper was also published in *The Implications of Military Technology in the 1970s*,

Even today, most people do not possess such a detailed knowledge of the inner working of computers. Albert's foresight and understanding on this subject in 1967 is quite remarkable. Later Albert told me that no one at the meeting had any idea what he was talking about.

When I first met Albert in 1971, he was quite interested in the historical example of British strategic bombing in World War II. When the war first started, the British attempted to carry out daytime precision bombing but heavy losses forced the bombers to only operate at night. The British attempted to carry out precision bombing at night and the bomber crews reported that they were being quite successful. However, at Lord Cherwell's initiative, Mr. Butt, a member of the War Cabinet secretariat, performed a careful study of the bombing accuracy based on photos taken when the planes dropped their bombs. He found that only one-third of planes reporting having successfully bombing the target, were actually within five miles of the target.⁶⁷ In the face of such large bombing inaccuracies, the British began firebombing German cities. The result was large firestorms in cities such as Hamburg and Dresden producing high numbers of civilian casualties.

Albert anticipated the large improvement in weapon delivery accuracy and how it would allow civilian casualties to be greatly lowered. He would discuss this issue in various writings. Here is an example from 1982:

Since the late 1950s when most of the current strategic conceptions were formed, expected CEPs have improved from the 12,000-30,000 feet first anticipated for ICBMs and SLBMs to the 200 ft. CEPs for cruise missiles (without terminal guidance) and 500-600 feet CEPs for ballistic missiles in the process of deployment. This improvement is roughly the equivalent for blast damage against a point target of an increase by six orders of magnitude in yield, and offsets an six order of magnitude increase in hardness against blast overpressures. It means an increase in effectiveness of four orders of magnitude, and a corresponding decrease in the areas surrounding the target subject to unwanted collateral damage....

The additional one order of magnitude improvement involved in the future deployment of weapons capable of delivery at great range with near-zero inaccuracy, will be, in many ways, even more revolutionary since it will open up the possibility of using non-nuclear weapons for many targets previously open only to nuclear destruction. (And a correspondingly drastic further potential reduction in collateral damage—perhaps by several orders of magnitude).⁶⁸

Albert was always opposed to military attacks that would cause large numbers of civilian casualties. This included not only direct "city busting" sorts of attack preferred by those

Adelphi Papers, Number Forty Six, March 1968, Institute of Strategic Studies, London.

<https://www.rand.org/pubs/documents/D16624.html>

⁶⁷ Sir Charles Webster and Noble Frankland, *The Strategic Air Offensive Against Germany, 1939-1945*, Volume I: Preparation, Her Majesty's Stationery Office, 1961, p. 178.

⁶⁸ Albert Wohlstetter, "Strategy, Technology and the Threat," Originally presented at the DNA New Alternatives Workshop, November 22-23, 1982, revised December 17, 1982, pp. 8-9.

espousing a “minimum deterrence” doctrine but also indiscriminate attacks against opposing military forces that would cause many civilian casualties.

This view had its ultimate expression in the 1988 publication “Discriminate Deterrence.” This was the report of The Commission on Integrated Long-Term Strategy which was co-chaired by Albert and Fred C. Ikle. The report said:

Dramatic developments in military technology appear feasible over the next twenty years. They will be driven primarily by the further exploitation of microelectronics, in particular for sensors and information processing...

The precision associated with the new technologies will enable us to use conventional weapons for many of the missions once assigned to nuclear weapons.⁶⁹

The membership of the commission who all signed on to this point of view was quite diverse and included Zbigniew Brzezinski and Henry A. Kissinger. The potency of highly accurate weapons would be confirmed in 1991 by the decisive defeat of Iraqi forces in the Gulf War.

These two areas of research ignored by Robin illustrate the great breadth of Albert’s and Roberta’s work. Their writings (a number of them coauthored) on nonproliferation had an immediate and lasting effect on U.S. policy on the separation of plutonium and the use of plutonium-based fuels. Albert was one of the very first to recognize the impact of the computer revolution on defense systems and how it would allow them to be much more accurate. The increased accuracy would allow missions that had previously required the use of nuclear weapons to use conventional weapons instead.

The “Feud” Between Albert and Bernard Brodie

A number of researchers have discussed what they believe to have been a “feud” between Albert and the analyst Bernard Brodie. Robin has taken this viewpoint to an extreme with his over-the-top rhetoric, referring to Brodie as Albert’s “nemesis” and claiming that they had “fraught exchanges” and engaged in “incessant [intellectual] brawling.”⁷⁰ As with much of what Robin has written, this is not true. However, this is an issue that is broader than just Robin and I will discuss in substantial detail the relationship between these two analysts.

Albert was never shy about expressing his views regarding people with whom he had intellectual disputes. When I first met Albert in 1971, he had been in a debate over the virtues of the proposed deployment of an antiballistic missile system and he referred on multiple occasions to the parties involved such as Hans Bethe and George Rathjens. Yet I never once heard Brodie’s name in the 1970s and I did not even know who he was until the 1980s. Albert was quite willing to engage in written exchanges with those with whom he disagreed but Robin does not quote

⁶⁹ “Discriminate Deterrence,” The Commission on Integrated Long-Term Strategy, Co-Chairman, Fred C. Ikle and Albert Wohlstetter, January 1988, p. 8.

⁷⁰ Robin, pp. 80 & 196, p. 99 and p. 99 respectively.

from any written piece where Albert attacks Brodie. In fact, Albert almost never mentioned Brodie in anything he wrote.

Brodie's Jealousy of Albert

Robin correctly states that Albert believed Brodie was quite jealous of his success. Robin dismisses this possibility but as I will show, Brodie's intense jealousy was plain to see.⁷¹

Brodie received his PhD from the University of Chicago in 1940. In 1946 he would edit and be a significant contributor to the book, *The Absolute Weapon*, laying his claim to being a nuclear strategist.⁷² He joined RAND at about the same time as Albert in 1951. He would write a number of works at RAND. Despite Robin saying that they had an "uneasy cohabitation at RAND,"⁷³ the relationship between Albert and Brodie appears to have been cordial into the 1960s.⁷⁴ However, the quantitative collaborative thrust of RAND's work during this time tended to push aside the qualitative loner Brodie. In later writings Brodie would complain about this development.

Within RAND itself there was a quiet but strongly-felt status differential between those who knew how to handle graphs and mathematical symbols, especially if they also knew how to manage teams of similarly equipped young men, and those who merely knew how to probe political issues.⁷⁵

Albert was in the first group and Brodie was in the group of those who "merely knew how to probe political issues." In a footnote to this quotation, Brodie, clearly referring to himself, talked of people in this latter group having "thought through [problems] perceptively."

The turning point appears to have occurred with Albert's publication of "The Delicate Balance of Terror" in 1959.⁷⁶ Albert's work at RAND up to this time had been classified but "The Delicate Balance of Terror" brought Albert more public and international notice. The very positive reception of this work appears to have galled Brodie, who in his later writings would not miss an opportunity to criticize this article. Albert's wide notice must have particularly upset Brodie since it occurred at the same time Brodie published his own RAND book, *Strategy in the Missile*

⁷¹ Robin, pp. 97-100.

⁷² Frederick S. Dunn, Bernard Brodie, Arnold Wolfers, Percy E. Corbett, and William T. R. Fox, *The Absolute Weapon: Atomic Power and World Order*, Bernard Brodie ed., Harcourt, Brace and Company, 1946.

⁷³ Robin, p. 100.

⁷⁴ A letter (contained in my personal files) written by Brodie to Albert in April 1961 is quite friendly.

⁷⁵ Bernard Brodie, "Why Were We So (Strategically) Wrong?" *Foreign Policy*, No. 5, Winter 1971-1972, p. 156. <https://www.jstor.org/stable/pdf/1147725.pdf?refreqid=excelsior%3Aa676cac572ff9efc5a9252b997b0188f>

⁷⁶ Albert Wohlstetter, "The Delicate Balance of Terror," *Foreign Affairs*, January 1959. Note that RAND would publish versions of staff members' outside publications in its "P" [papers] series. So with this publication: Albert Wohlstetter, "The Delicate Balance of Terror, P-1472, November 6, 1958, revised December 1958. <https://www.rand.org/pubs/papers/P1472.html> Often there was little or no difference between a published version of an article and its P version. However, this is not the case for this article, where there are significant differences between the two versions. This difference is important since it is the P version that is most readily available online.

Age.”⁷⁷ Brodie wrote in a 1975 letter to the British defense analyst, Colin Gray: “...word got around in Washington and elsewhere that Wohlstetter really was RAND and vice-versa--that all the important and original work done there was inspired and led by him.”⁷⁸ Brodie did not explain how “word got around” and the truth that he did not want to face was that “The Delicate Balance of Terror” was considered to be a far more a significant work than his *Strategy in the Missile Age*.

It apparently took a while for Brodie’s resentments to build up and they did not initially manifest until sometime after the start of the Kennedy Administration. Several people who Brodie saw as being in what he called Albert’s “court” at RAND, obtained positions in Robert McNamara’s Department of Defense. They and others became known as Robert McNamara’s “whiz kids.” (Note that Albert himself never entered government.) Again, Brodie felt left out, saying “I do think I had something to contribute and should have been asked...”⁷⁹ Brodie attributed his being passed over to Albert, even though it seems unlikely that Albert was the one determining who was being hired by the Department of Defense. McNamara adopted a policy of building up NATO conventional forces in Europe as a means to lessen reliance on nuclear weapons. Brodie, who had become a strong proponent of tactical nuclear weapons, opposed this policy.

Unable to prevail in the policy debate, Brodie began complaining to RAND management about Albert. Brodie’s complaints about Albert’s wining and dining important visitors have already been discussed. My prior discussion of this issue was based on Albert’s statements in the Digby/Goldhamer interview, but Brodie gives his view of this matter in his letter to Gray, though he leaves out his pettiness in complaining to the RAND management. In discussing Albert’s ability to command a following at RAND he said:

...I doubt if the attraction is often primarily intellectual. In W.’s case I suspect it is a matter of personal style and especially of his having a certain flair for good living, which many otherwise hum-drum people find seductive. Certainly many at RAND became gourmets and fanciers of good French wines who would never have become such had they not been invited to share W.’s rather extraordinary fascination with these things.⁸⁰

For the record, I have never drunk alcoholic beverages, including good French wine, and I always preferred a trip to McDonalds to any of Albert’s French food. Albert found this latter fact appalling but this did not hinder our 25 year collaboration which was based on matters far more serious than the triviality of “what’s for dinner.” This is another example of Brodie attempting to rationalize away the fact that intellectually, most preferred Albert’s work to his.

Note also that Brodie makes no mention of any supposed financial impropriety of Albert’s. Robin’s claims in this regard appear to be quite fictional.

⁷⁷ Bernard Brodie, *Strategy in the Missile Age*, The RAND Corporation, Princeton University Press, 1959. The RAND version was R-335. https://www.rand.org/content/dam/rand/pubs/commercial_books/2007/RAND_CB137-1.pdf

⁷⁸ Letter to Colin Gray, undated but given the dates of bracketing letters from Gray, was written between July 4, 1975 and August 11, 1975, p. 3. Bernard Brodie papers, UCLA Special Collections, Box 8. Hereafter “Gray letter.”

⁷⁹ *Ibid.*, p. 1.

⁸⁰ *Ibid.*, p. 2.

The other example of Brodie's complaints is far more serious as it led to Albert being fired from RAND. Albert discusses this matter in the Digby/Goldhamer interview. In 1963, Albert gave an internal RAND document to Henry Rowen who had been at RAND during the 1950s. Rowen was a coauthor with Albert of a number of important studies, including the base study and R-290. In the Kennedy Administration, Rowen had become an Assistant Secretary of Defense. Robin and Alex Abella in his book on RAND both mischaracterize this incident as Albert's improper handling of a classified document.⁸¹ The document in question was not classified and was written by a French national. Even if the document had been classified, Rowen as an Assistant Secretary of Defense would have been cleared for anything that RAND could produce. Rather RAND categorized its products by letter designators. Reports, its highest product were Rs, research memorandum, RMs. Internal RAND documents were known as Ds. As Albert pointed out in the Digby/Goldhamer interview, it was not uncommon that Ds were sometimes shown to clients. Given Rowen's long association with RAND, Albert saw no reason not to show this particular D to Rowen. Somehow, Brodie found out about this and complained to RAND president Collbohm, who then fired Albert.

It is not clear why Collbohm fired Albert over such a trivial matter. Albert hints in the Digby/Goldhamer interview that he and Collbohm had never gotten along. In the early 1990s Albert recounted this story to me and his retelling was the same in substance as in the Digby/Goldhamer interview. Albert was not angry at Brodie over this incident. If anything Albert seemed to feel sorry for him. Albert's main anger appeared to be focused on Collbohm.

As it turned out his being fired may have been the best thing that could have happened to Albert. After spending a year teaching in the University of California system at Berkeley and UCLA, he was appointed as a University Professor in Political Science at the University of Chicago. By the 1970s, Albert had his own research group of which I would become a member.⁸²

In his later writings, Brodie's jealousy would become painfully obvious. In a 1973 book, he descends into *ad hominem* attacks. He first starts with a discussion of what he sees as the shortcomings of systems analysts who were originally trained as economists.

The best of the systems analysts have been most often been trained as economists. ...the usual training in economics has its own characteristic limitations, among which is the tendency to make its possessor insensitive to and often intolerant of political considerations that get in the way of his theory and calculations. He is normally extremely weak in either diplomatic or military history or even in contemporary politics and is rarely aware of how important a deficiency this is for strategic insight. One is often amazed at how little some of the best-known

⁸¹ Robin calls it "a breach of security." Robin p. 97. Alex Abella, *Soldiers of Reason: The RAND Corporation and the Rise of the American Empire*, Harcourt Inc., 2008, p. 196.

⁸² This group was originally the Santa Monica Technical Office of the General Research Corporation. In 1974 it became Pan Heuristics and was associated with Science Applications Inc. Between 1979 and 1989 Pan Heuristics was attached to R&D Associates.

strategic analysts of our times may know about conflicts no more remote in time than World War II, let alone World War I or earlier wars.⁸³

So that one does not miss the point, Brodie adds in a footnote:

To avoid sounding unnecessarily cryptic, I should state that the persons I have particularly in mind include primarily Alain Enthoven, Malcolm Hoag, Henry Rowen, and Albert Wohlstetter. All these were trained as economists. Wohlstetter was, however, later appointed to a chair in political science at the University of Chicago, a fact that proves nothing except the free-wheeling nature of my own alma mater.⁸⁴

All four people listed had worked with Brodie at RAND. Not so coincidentally, Brodie had written several historical works. Brodie's crack at Albert's faculty appointment shows another aspect of Brodie's jealousy. Brodie had received his PhD from the University of Chicago, yet Albert, who did not even have a PhD, had gained this prestigious position. Brodie in his later years would teach at the less prestigious UCLA. In his letter to Gray, Brodie gave full vent to his jealousy:

The University of Chicago, which is my own university, has always had standards second to none in the United States. Yet after W. left RAND (for reasons not relevant here) he was, after some dickering with UCLA, offered an appointment at the University of Chicago, and not simply as a full professor but with the special rank of University Professor. At that time he had had no previous university experience except as a student, and that Foreign Affairs article was his only publication of any significance. To top it all, he was made a professor of political science and if there is one respect in which his article is critically weak it is in totally lacking any degree of political perception...⁸⁵

It is interesting that Brodie fails to mention his role in Albert's leaving RAND. Apparently, it was nothing he was proud of.

Brodie's jealousy led him in his later years to make a number of false statements regarding Albert and his work. Unfortunately, many writers have uncritically accepted Brodie's fabrications at face value. In this case, it has led to Brodie seriously distorted Albert's background. He was not trained as an economist but as a mathematical logician. Brodie implies that Albert knew nothing of history but as I have related Albert was quite interested in history including British strategic bombing in World War II. And as Robin points out, Albert often worked closely with the historian Roberta, so Albert would always have had access to historical understanding even if (as was untrue) Albert himself were ignorant of the subject. Before his appointment at Chicago, Albert had published multiple unclassified articles and as Brodie knew, he had produced a number classified works as well. Albert had taught in the University of

⁸³ Bernard Brodie, *War & Politics*, MacMillan Publishing Company, Inc., 1973, pp. 474-475. The entire section between p. 473 and p. 479 is worth reading.

⁸⁴ *Ibid.*, p. 475.

⁸⁵ Gray Letter, p. 3.

California system including Berkeley though Brodie claims he had only a student's background before going to Chicago. Further Brodie knew this to be the case as he had corresponded with Albert in 1964 when he was at Berkeley (in the Political Science Department).⁸⁶

Brodie's Inconsistent Views

As far as analytical substance, it would be difficult to have an ongoing feud with Brodie because his views were so changeable and inconsistent. Albert would point this out in one of his few mentions of Brodie in print. In an exchange with Theodore H. Draper, Albert points out that though Draper quotes from something Brodie wrote in 1946, Brodie had held quite different views in the 1950s.⁸⁷ Draper does not deny this fact but simply claims that since Brodie started expressing views closer to his 1946 views later in life, these represent his true views. This is a problem when quoting from Brodie as one must be careful to specify which Brodie you are referring to. The changeability of Brodie's views may account for some of his popularity since it is often possible to find a version of Brodie that supports the point you are trying to make. As will be discussed, even within the same article, Brodie could be rather inconsistent, a point also noted by Trachtenberg.⁸⁸

Take Brodie's view of Albert himself. In his later writings Brodie repeatedly attacked Albert's "The Delicate Balance of Terror" article saying that since the dawn of the nuclear age, the nuclear balance between the U.S. and Soviet Union has never been delicate (I will discuss in more detail, Brodie's criticism below). Yet in his 1959 book *Strategy in the Missile Age*, his views are quite different:

If in this book we have frequently reiterated the importance of the *security* of the retaliatory force, it is because our ability to retaliate in great force to a direct Soviet attack is taken far too much for granted by almost everybody, including our highest national policy-makers.⁸⁹ [Emphasis in original]

Brodie adds in a footnote to this sentence:

An incisive and well-informed discussion of this problem is presented by Albert J. Wohlstetter, "The Delicate Balance of Terror," *Foreign Affairs*, XXXVII (January 1959), 211-234.

Brodie himself noted his changing views though he attempted to explain the inconsistency away. In his 1959 book *Strategy in the Missile Age*, he suggested a buildup of conventional forces as a means to help keep wars limited.⁹⁰ With the change to the Kennedy Administration, there was an attempt to improve and expand U.S. and NATO conventional forces. Brodie, who had

⁸⁶ Bernard Brodie papers, UCLA Special Collections, Box 2. Note Albert was fired from RAND in 1963. Though one might have expected this incident to end all communications between Albert and Brodie, this exchange of letters in 1964 indicates that at this time they appear to have had at least civil relations.

⁸⁷ Albert Wohlstetter, reply by Theodore H. Draper, "Nuclear Temptations: An Exchange," *The New York Review of Books*, May 31, 1984.

⁸⁸ Marc Trachtenberg, *History & Strategy*, Princeton University Press, 1991, p. 18.

⁸⁹ Bernard Brodie, *Strategy in the Missile Age*, The RAND Corporation, Princeton University Press, 1959, p. 282.

⁹⁰ *Ibid.*, p. 333.

become a major proponent of tactical nuclear weapons, opposed this policy. Brodie had to confront this inconsistency when writing a new preface for *Strategy in the Missile Age* in 1964. Referring to new Kennedy Administration policies he said:

...I had nevertheless made some contribution to it, chiefly in the area of thought about limited war.

I mention this to mainly put into perspective my later criticisms of certain [Kennedy] administration defense policies that seemed superficially to be entirely in line with ideas advocated in the original volume. [The 1959 edition of *Strategy in the Missile Age*] For example, my article “What Price Conventional Capabilities in Europe?” published in the May 23, 1963 issue of *The Reporter* systematically criticized what I held to be excessive devotion to the idea of resisting possible Soviet aggression in Europe mostly by conventional means—though I had apparently advocated comparable ideas in my Chapter 9.⁹¹

However, it is clear from reading his “What Price Conventional Capabilities in Europe?” article that Brodie’s views had changed drastically between 1959 and 1963. In 1959 he said: “...between the use and non-use of atomic weapons there is a vast watershed of difference and distinction, one that ought not be cavalierly thrown away...”⁹² In 1963 he was not opposed simply to an “excessive” conventional force buildup in Europe but rather any such buildup. Brodie instead preferred “a somewhat lesser [conventional] force committed to using nuclear weapons at a relatively early stage...”⁹³ In 1959 Brodie said: “We have to ask ourselves what chance we would have of keeping a nuclear war in Europe limited for more than a few hours.”⁹⁴ In 1963 Brodie was in favor of using nuclear warning shots arguing “it is far from obvious that use of a few nuclear weapons—to demonstrate readiness to use more—will force the level of violence upward rather than down.”⁹⁵ In 1963 he even went so far as to praise the very short-range Davy Crockett mini-nuke (which today is considered a rather absurd weapon) saying “Even the little Davy Crockett makes *large* conventional artillery forces not merely unnecessary but rather a joke...”⁹⁶ [Emphasis in original] Despite Brodie’s claim to the contrary, by 1963 his views were quite different than in 1959, which illustrates how changeable and inconsistent his positions could be.

But what about the specifics of Brodie’s criticisms of Albert? In his 1973 book *War & Politics*, Brodie would say:

In 1959 an article that won extraordinarily wide attention was published in *Foreign Affairs*. Its argument was not especially a novel one—that our long-

⁹¹ *Ibid.*, Preface to the Paperback Edition, pp. v-vi, dated November 5, 1964, published 1965.

⁹² *Ibid.*, p. 327.

⁹³ Bernard Brodie, “What Price Conventional Capabilities in Europe?” *The Reporter*, May 23, 1963, p. 28. This article was reprinted in a number of places including as: Bernard Brodie, “Conventional Capabilities in Europe,” *Survival*, Vol. 5, No. 4, 1963, pp. 148-155. The RAND “P” version (P-2696, February 1963) of this article is significantly different from the version that was published in *The Reporter*.

⁹⁴ Bernard Brodie, *Strategy in the Missile Age*, The RAND Corporation, Princeton University Press, 1959, p. 341.

⁹⁵ Bernard Brodie, “What Price Conventional Capabilities in Europe?” *The Reporter*, May 23, 1963, p. 33.

⁹⁶ *Ibid.*, p. 29.

range bombers in SAC, which then comprised the major part (though by no means all) of our retaliatory forces, were exceedingly vulnerable to surprise enemy attack, especially if that attack be by the missiles that were then thought to be flowing into the Soviet arsenals....The article proved especially useful in shaking up the Strategic Air Command of the United States Air Force, which had consistently refused to recognize that it had a serious vulnerability problem. Wohlstetter entitled his article "The Delicate Balance of Terror," thus...inevitably throwing the emphasis on the word *delicate*.

This article, as is characteristic of so many writings on military technological affairs, took no account whatever of the inhibitory political and psychological imponderables that might and in fact *must* affect the conditions implied by that word *delicate*. Many things are technologically feasible that we have quite good reason to believe will not happen. It has in fact become abundantly clear since the Wohlstetter article was published and indeed since the dawn of the nuclear age, that the balance of terror is decidedly *not* delicate.⁹⁷ [Emphasis in original]

Brodie's biographer, Barry Steiner, twice quotes approvingly from this latter paragraph but fails to note the inconsistency with the paragraph before it.⁹⁸ In the first paragraph, Brodie says that the USAF had a serious vulnerability problem and that Albert's article had the beneficial effect of "shaking up" the Air Force. In the next paragraph, Brodie says that due to the "inhibitory political and psychological imponderables," there was essentially no threat of attack and therefore no vulnerability.⁹⁹ Further there never had been. Likewise this second paragraph is inconsistent with Brodie's passage from *Strategy in the Missile Age*, referring to "our ability to retaliate...is taken far too much for granted..." and that "The Delicate Balance of Terror" was "incisive and well-informed" (quoted above).

In his last article, "The Development of Nuclear Strategy," published in 1978, the year of his death, Brodie further develops his arguments.¹⁰⁰ He drops any mention of the Air Force's vulnerability and any beneficial "shaking up." He invents a quite fictional account of the origins of "The Delicate Balance of Terror" article.¹⁰¹ Brodie claims that Albert wrote the article because the Air Force would not accept his recommendation that the its bombers should be protected in underground shelters. Brodie claims that Albert was only interested in defending the bombers from attack but that ICBMs in missile silos (ignoring Albert's role in creating missile silos) and Polaris submarines made the issue irrelevant.

⁹⁷ Bernard Brodie, *War & Politics*, MacMillan Publishing Company, Inc., 1973, pp. 379-380.

⁹⁸ Barry H. Steiner, *Bernard Brodie and the Foundations of American Nuclear Strategy*, University Press of Kansas, 1991, p. 17 and p. 199.

⁹⁹ Similarly, one does not talk about the vulnerability of Seattle to a hurricane strike even though the city would be seriously damaged if one were ever to occur.

¹⁰⁰ Bernard Brodie, "The Development of Nuclear Strategy," *International Security*, Vol. 2, No. 4, Spring 1978.

<https://www.jstor.org/stable/pdf/2538458.pdf>

¹⁰¹ *Ibid.*, p. 68.

In a letter to the writer Fred Kaplan on August 11, 1981, Albert specifically stated that this version of events regarding the origin of “The Delicate Balance of Terror” was false.¹⁰² Albert’s reasons for writing the article are discussed in the Digby/Goldhamer interview.¹⁰³ Albert’s initial work on SAC’s vulnerability had all been classified and there was a need to inform the public debate on these issues. In May 1958 Albert gave an unclassified talk to the Council of Foreign Relations and he then wrote up this talk, producing the article.

Albert had no fixation with bomber shelters and had developed Fail-Safe which allowed safe bomber operation without the need for shelters. Albert considered all means of protecting both bombers and missiles. In “The Delicate Balance of Terror,” he says “Protecting manned bombers and missiles is much easier [than protecting cities] because they may be dispersed, sheltered or kept mobile, and they can respond to warning with greater speed.¹⁰⁴ ICBMs and Polaris submarines had their own problems. “The Delicate Balance of Terror” discusses six “successive obstacles” that any system must overcome to provide the capability to strike second. For example, Polaris submarines at sea would have had a good capability of surviving a first strike but communicating the decision to retaliate to the submarines posed serious problems.

Surprise Attacks “Out of the Blue” and “Out of the Gray”

In this 1978 article Brodie makes a statement similar to his one in 1973 that “human inhibitions against taking monumental risks” means that he could “never accept...that the balance of terror...ever has been or ever could be ‘delicate.’”¹⁰⁵ However, Brodie has added a paragraph which Robin calls “one of the most cogent critiques” of Albert.¹⁰⁶ He says:

However, I do support fully the belief implicit in the Air Force position that some kind of political warning will always be available. Attack out of the blue, which is to say without a condition of crisis, is one of those worst-case fantasies that we have to cope with as a starting point for our security planning, but there are very good reasons why it has never happened historically, at least in modern times, and for comparable reasons I regard it as so improbable for a nuclear age as to approach virtual certainty that it will not happen, which is to say it is not a possibility worth spending much money on.¹⁰⁷

In fact, Albert never talked of an attack out of the blue but consistently based his concerns regarding a surprise attack on his view of “comparative risks” discussed earlier. In “The Delicate Balance of Terror,” Albert said, “Deterrence is a matter of comparative risks” and stated:

¹⁰² Letter in the author’s personal files. At this time, Albert apparently did not know that it was Brodie who was the source of this story.

¹⁰³ Digby/Goldhamer interview, pp. 70-73.

¹⁰⁴ Albert Wohlstetter, “The Delicate Balance of Terror,” *Foreign Affairs*, January 1959, p. 221. Note that this sentence does not appear in the RAND “P” version of this article.

¹⁰⁵ Bernard Brodie, “The Development of Nuclear Strategy,” *International Security*, Vol. 2, No. 4, Spring 1978, p. 69.

¹⁰⁶ Robin, p. 100.

¹⁰⁷ Bernard Brodie, “The Development of Nuclear Strategy,” *International Security*, Vol. 2, No. 4, Spring 1978, pp. 68-69.

...the risks of not striking might at some juncture appear very great to the Soviets, involving, for example, disastrous defeat in peripheral war, loss of key satellites with danger of revolt spreading—possible to Russia itself—or fear of an attack by ourselves. Then striking first, by surprise, would be the sensible choice for them, and from their point of view the smaller risk.¹⁰⁸

Brodie, in the above quotation, is saying that not only will strategic warning of an attack be available but this warning can be relied upon to protect U.S. strategic nuclear forces. As was quoted above, Roberta in the conclusion to her book on Pearl Harbor has said: “We cannot *count* on strategic warning.”¹⁰⁹ [Emphasis in original] In R-290 Albert had discussed the idea that a strategic force can be protected by responding in a timely manner to strategic warning and said it was a bad one: “...planning on strategic warning *is* dangerous and this cannot be overemphasized. By their nature, indicators are ambiguous.”¹¹⁰ [Emphasis in original] Albert adds “Before Pearl Harbor and before the fall of Singapore there were many ‘indicators,’ but none specific enough to make obvious this very choice between increasing future readiness and immediate protection.”

Brodie says that there are no modern historical examples of surprise attacks occurring “out of the blue.” However, he fails to note the many examples of surprise attack occurring out of what might be called “the gray.”¹¹¹ Just because a developing crisis might provide indicators of an attack does not mean that a surprise attack cannot occur.

Roberta’s book on Pearl Harbor is full of indicators of a coming attack. A war warning had been sent to Pearl Harbor on November 27, 1941.¹¹² On December 6 the British sighted the Japanese invasion convoy sailing towards Malaya. Crossing the date line, this information arrived in Pearl Harbor the morning of December 6 local time. However, Vice Admiral Pye, who was in command of the fleet at Pearl Harbor thought that it was clear that the Japanese were going to attack the British but unclear if they were going to attack the U.S. as well. If they were to attack the U.S., he thought that the Japanese would want to clear their flank and attack the Philippines and Guam.¹¹³ As was discussed above, the Japanese attacked both the British and the U.S. The attack on the U.S involved the Philippines, Guam, Wake Island and Pearl Harbor.

The German invasion of the Soviet Union on June 22, 1941 is another good example. The British had broken the Luftwaffe Enigma coding machine and clearly saw that the Luftwaffe was being repositioned to attack the Soviet Union. Without revealing their source, the British warned the Soviet Union. At the same time, the Germans were conducting long-range reconnaissance flights deep into the Soviet Union and were massing three and one half million men on the Soviet border. This last could hardly be conducted secretly. Soviet intelligence provided

¹⁰⁸ Albert Wohlstetter, “The Delicate Balance of Terror,” *Foreign Affairs*, January 1959, p. 222. This quotation is the same in the RAND “P” version of the article.

¹⁰⁹ Roberta Wohlstetter, *Pearl Harbor: Warning and Decision*, Stanford University Press, 1962, p. 400.

¹¹⁰ R-290, pp. 18-20.

¹¹¹ For more on this issue, see Richard Brody, “The Limits of Warning,” *Washington Quarterly*, Vol. 6, No. 3, Summer 1983. Brody was a staff member at Pan Heuristics between 1977 and 1989.

¹¹² Roberta Wohlstetter, *Pearl Harbor: Warning and Decision*, Stanford University Press, 1962, p. 45.

¹¹³ *Ibid.*, p. 43.

numerous reports of the massing of German forces. Yet Stalin refused to believe that an attack was coming and the Soviet Union was caught completely off-guard.

Bellamy has a detailed discussion as to why the Soviets were surprised.¹¹⁴ This discussion illustrates Albert's point that indications are inherently ambiguous. The Soviet were suspicious of the British warning as they thought that the British were trying to get the Soviet Union into the war on their side. They also thought that the German troop buildup was simply a way to put pressure on the Soviets to make more economic concessions. When the Soviet Foreign Ministry questioned the Germans about the buildup, the Germans said that they were training to invade England and needed to keep its forces out of range of the Royal Air Force. Indeed, the Germans had retained large forces in the West, though all of the best troops including the panzers were in the East. The March 27, 1941 coup in Yugoslavia, followed by the German invasion in April helped provide an excuse for the presence of German troops in the East. Stalin believed that rogue elements in the German army might be trying to provoke war without Hitler's consent. Even right before the invasion, Stalin opposed mobilizing Soviet forces, since World War I had in part been triggered by competing mobilizations. Surprise attacks, on the other hand, were very rare in history. It would turn out that 1941 would be a banner year for surprise attacks. Relevant to the protection of SAC, on the first day of the German attack, over 1,200 Soviet aircraft would be destroyed, mostly on the ground.

As Albert noted in R-290, one of the problems with relying on strategic warning is that putting forces on alert involves costs including foregoing training which lowers future readiness, making one reluctant to do it very frequently. Israel relies on mobilizing its citizenry to field its army. However, such a mobilization is very disruptive to the country and its economy. Before the October 1973 war, Israel failed to mobilize until right before the attack by Arab forces, in part because it had mobilized in May 1973 on indications of an impending attack but nothing had happened.

Brodie had complained that system analysts trained as economists (Brodie falsely put Albert into this category) knew very little about the history of World War II. Yet it seems that it was the historian Brodie who was in need of a history lesson.

Brodie vs Albert: Little Analytical Substance

Other than "The Delicate Balance of Terror" article, Brodie did not make any substantive comments on any of Albert's other writings. In his 1965 review of William Kaufmann's book, *The McNamara Strategy*, Brodie would say:

Henry Kissinger and the distinguished French writer Raymond Aron, as well as many others, have generally attributed the McNamara philosophy [emphasizing conventional forces in Europe over tactical nuclear weapons] in its most characteristic attributes to the influence of The RAND Corporation. Professor Kissinger could have stated it more exactly. He knows that it was a relatively small group of persons formerly associated with RAND but with an exceptionally

¹¹⁴ Chris Bellamy, *Absolute War: Soviet Russia in the Second World War*, Vintage Books, New York, 2007, chapter 6, pp. 136-163.

strong in-group cohesion among themselves and thus a sometimes marked degree of personal and intellectual separation from most other members of that organization that developed a philosophy extremely close in detail to that which Mr. McNamara has since made his own.

The leader of this group has been the eminent Albert Wohlstetter, who though invited chose not to become a member of the new Administration but consulted with its leaders and also remained in very close contact with others in his old group, especially Henry S. Rowen and Alain C. Enthoven...

It is interesting to notice that all of these person (and some other close associates) were originally trained as economists...¹¹⁵

Brodie at this time had already started miscategorizing Albert as an economist, though Brodie did not indicate why this was important, unlike his 1973 views where he expounded on what he saw as the economists' severe shortcomings as analysts. In this regard Brodie makes no specific comment on any of Albert's writings though years earlier in the "The Delicate Balance of Terror," Albert had called for an expansion of U.S. conventional capabilities.¹¹⁶

Brodie is reluctant to directly state his views, resorting to "He [Kissinger] knows," when it is clearly "Brodie thinks." One can also see Brodie's personal resentments intruding as there is no reason why anyone concerned with possible war in Europe would care whether the policy resulted from "a relatively small group...with an exceptionally strong in-group cohesion among themselves..." that had a "...sometimes marked degree of personal and intellectual separation from most of the other members of that organization [RAND]..." Clearly Brodie felt left out of what he saw as the "in-crowd."

In his 1976 article "On the Objectives of Arms Control,"¹¹⁷ Brodie mentions Albert's two 1974 *Foreign Policy* articles examining the reality of arms race theories."¹¹⁸ Brodie does not analyze Albert's articles but simply dismisses Albert's conclusion that there was no arms race but only a competition. Brodie considers these two terms sufficiently similar so as to be of no distinction. For Brodie the important point was "...he [Albert] concedes there is an arms competition which raises costs on both sides."¹¹⁹

This latter statement is completely false. Albert concluded:

¹¹⁵ Bernard Brodie, "The McNamara Phenomenon," *World Politics*, Vol. XVII, No. 4, July 1965, pp. 678-679.

¹¹⁶ This was especially so in the RAND "P" version, p. 35.

¹¹⁷ Bernard Brodie, "On the Objectives of Arms Control," *International Security*, Vol. 1 No. 1, Summer 1976. <https://www.jstor.org/stable/pdf/2538574.pdf?refreqid=excelsior%3A537931733fd96b51230f9779031b2ae2>

¹¹⁸ Albert Wohlstetter, "Is There a Strategic Arms Race?," *Foreign Policy*, No. 15, Summer 1974, and Albert Wohlstetter, "Is There a Strategic Arms Race? (II) Rivals but No Race," No. 16, Autumn, 1974. <https://www.jstor.org/stable/pdf/1147927.pdf>

¹¹⁹ Bernard Brodie, "On the Objectives of Arms Control," *International Security*, Vol. 1 No. 1, Summer 1976, pp. 29-30.

That U.S. strategic budgets and the destructiveness of U.S. strategic forces have been going down, not up. U.S. strategic budgets have declined nearly exponentially from the high plateau of 1956-1961.¹²⁰

Brodie does not substantively comment on any of Albert's other works. Brodie does make a comment in print about the base study being "...the best advertised study in the history of systems analysis..."¹²¹ Brodie implies that the base study's success might have to do with Albert's or RAND's promoting the study but he makes no substantive comments on it.

As we can see Brodie's substantive comments on Albert's work were really limited to his "The Delicate Balance of Terror" article. Albert's substantive comments on Brodie's work are equally slight. As was discussed above, Albert did comment on the inconsistency of Brodie's work to Draper who was citing Brodie, rather than to Brodie himself, who had died six years earlier.

In 1968 Albert wrote a lengthy letter to the British historian Michael Howard. In this letter Albert produced a detailed early history of the development of nuclear strategy. This letter was circulated by Albert for many years after 1968 and it would eventually be published posthumously in 2008.¹²² Albert mentioned Brodie a number of times in this letter, referring to Brodie's earliest major work on nuclear strategy which was his two chapters in the book *The Absolute Weapon*.¹²³ Albert would group Brodie in a group he called "academic social scientists and historians." In the letter this would include Jacob Viner and William T. R. Fox (Fox wrote his own chapter in *The Absolute Weapon*), in addition to Brodie.

Albert generally had quite positive things to say about this group and its realistic views regarding hopes for World government: "The realistic insights of Viner, Brodie and Fox..." "Viner, Brodie and Fox were particularly discerning and incisive in their perception..." "...Viner, Brodie and Fox made many cogent points..."¹²⁴

Albert did say that when he was performing his work on protecting SAC in the 1950s he was unaware of Brodie's writings in *The Absolute Weapon*. Albert also stated that in *The Absolute Weapon* Brodie did not recognize the need to protect the retaliatory force against a surprise attack directed at it.¹²⁵

¹²⁰ Albert Wohlstetter, "Is There a Strategic Arms Race?," *Foreign Policy*, No. 15, Summer, 1974, p. 5. <https://www.jstor.org/stable/pdf/1147927.pdf>

¹²¹ Bernard Brodie, "Why Were We So (Strategically) Wrong?" *Foreign Policy*, No. 5, Winter 1971-1972, p. 154. <https://www.jstor.org/stable/pdf/1147725.pdf?refreqid=excelsior%3A3204552643f27f318647633f84f83ac2>

¹²² Albert Wohlstetter, "On the Genesis of Nuclear Strategy: Letter to Michael Howard," *Nuclear Heuristics: Selected Writings of Albert and Roberta Wohlstetter*, Robert Zarate and Henry Sokolski, Eds. Strategic Studies Institute, U.S. Army War College, January 2009, pp. 217-253. Hereafter: "Michael Howard Letter." <https://publications.armywarcollege.edu/pubs/1985.pdf>

¹²³ Frederick S. Dunn, Bernard Brodie, Arnold Wolfers, Percy E. Corbett, and William T. R. Fox, *The Absolute Weapon: Atomic Power and World Order*, Bernard Brodie, ed., Harcourt, Brace and Company, 1946.

¹²⁴ Michael Howard Letter, p. 231.

¹²⁵ *Ibid.*, p. 245.

In the Digby/Goldhamer interview Albert gives an overall assessment of Brodie. Albert says "...I certainly didn't regard Bernard as a rival, but he evidently regarded me as one."¹²⁶ Albert further stated:

...Bernard was not at the center of things at Rand. The center of Rand's work was on recommendations on policy. Bernard was a sensible man who was writing generally for the public and he was *not* an original man in any way. He was generally writing things that he had learned from people at Rand. He would write about the H-bomb--what he had learned when he was working with Charlie Hitch and Ed Paxson and Ernie Plesset and so on. A lot of this was a way of filtering some things of Rand into the public domain. And that was his job.¹²⁷ [Emphasis in original]

Albert's reference to Brodie as writing things he had learned at RAND is similar to what Steiner said about Brodie's book *Strategy in the Missile Age*. Steiner said the book, "was largely one of synthesis and conceptualization, following rather than leading other RAND analysis..."¹²⁸ Robin's claim that Albert had characterized Brodie as "a disgraced practitioner who had built up a false reputation as an intrepid strategist through light plagiarism and the production of journalistic ruminations of no scholarly value" is nowhere near the mark.¹²⁹

One of the clearest indicators that Albert did not see Brodie as a rival is that Albert never responded in writing to any of Brodie's attacks on his work as he had regarding others. Brodie's substantive comments on Albert's work were almost exclusively limited to "The Delicate Balance of Terror" while Albert seldom wrote about Brodie. It is a mystery how Robin could characterize this relationship as involving "fraught exchanges" and "incessant brawling" when there were none.

Conclusions

As was stated in the introduction, the above discussion covers only a portion of Robin's misstatements and fabrications. The main point of this paper is that *nothing* Robin has stated in his book can be relied upon. One of Robin's most serious fabrications is his claim that Brodie had accused Albert of financial impropriety involving the use of RAND funds to wine and dine visitors to his house. Brodie never made such a claim and the source Robin cites says exactly the opposite: Albert wasn't charging RAND for his expenses for these dinners, even though they were chargeable to RAND. No one has ever accused Albert of any financial impropriety.

Robin has claimed that Albert's base study report owed an intellectual debt to Roberta's Pearl Harbor work that is "quite obvious." However, when Roberta was alive, she specifically addressed this issue and said that just the opposite was true. Albert's base study had piqued her

¹²⁶ Digby/Goldhamer interview, p. 87.

¹²⁷ *Ibid.*, p. 85.

¹²⁸ Barry H. Steiner, *Bernard Brodie and the Foundations of American Nuclear Strategy*, University Press of Kansas, 1991, p. 26.

¹²⁹ Robin, pp. 97-98.

interested in studying the attack on Pearl Harbor. The timeline of the two works supports Roberta's statements.

Robin has completely misstates the import of Albert's 1985 interview with Digby and Goldhamer. Robin claims that in this interview Albert lets the mask drop and reveals his true motives behind his work. In fact, this is not the case. Everything Albert says in this interview is consistent with his writings and views expressed elsewhere.

Robin almost comically misreads Albert's use of the word "midgets" in this interview. Robin claimed that Albert is referring to the Soviet threat and his use of the word midgets means that Albert did not really think there was one. In fact, Albert is not referring to the Soviets at all, only his hypothesized Soviet attack that he used in the base study. He used an attack that assumed that the Soviets were less capable than the U.S. intelligence services thought they were. His use of the word "midgets" is simply to contrast it to an unrealistically capable "ten feet tall" Soviet attack.

Albert consistently viewed the Soviet threat through what he called "comparative risks." Albert did not think that a Soviet attack would occur in normal peacetime, when the risks of not attacking would be low and the risk of attacking would be significantly higher. However, in a crisis or limited war that was going badly, there might be substantial risks in not attacking and the risk of attacking might seem to the Soviets the lesser of two evils. Having a vulnerable SAC would reduce the risks to the Soviets of attacking. In such circumstances the probability of a Soviet attack could become quite high. Albert's wanted to raise the risks to the Soviets of their attacking the U.S. by ensuring that SAC could survive a Soviet first strike. Albert's goal was to try to ensure that the risks to the Soviets of attacking the U.S. were always higher than the alternative, thereby preventing a nuclear war.

Robin leaves a number of important accomplishments of the Wohlstetters entirely out of his book. Robin makes no mention of Albert's formulation of the concept and rationale for missiles silos and his development of Fail-Safe, both important measures to help protect U.S. nuclear forces and at the same time prevent a nuclear war by accident. Albert and Roberta spent five years in the 1970s collaborating on issues related to the spread of nuclear weapons to other countries and the lessons that could be learned from Indian experience in this area. The only book that had Albert as the main author was published on this subject. This work led to an almost immediate change in U.S. policy on the use of plutonium reprocessing and the use of plutonium-based fuels, yet again Robin hardly mentions it. Robin also ignores Albert's prescience with regard to how the rapid improvement in computer technology would allow accurate conventional weapons to be able to replace nuclear weapons for some missions.

Robin has characterized the relationship between Albert and the analyst Bernard Brodie as involving "fraught exchanges" and "incessant brawling." However, Brodie's substantive comments on Albert's work were almost exclusively limited to his "The Delicate Balance of Terror" while Albert seldom wrote about Brodie. Brodie's attacks on Albert were fueled by his jealousy, while Albert never responded in writing to any of Brodie's criticisms. Robin's "exchanges" and "brawling" are nonexistent. Indeed, it would have been difficult for Albert to have a substantive feud with Brodie since Brodie's views were so changeable and inconsistent.

In addition to correcting some of Robin's more egregious falsehoods, I have attempted to provide some of the background to the Wohlstetters' work that is so lacking in Robin's book. In addition to discussing Robin's omissions such as the Wohlstetters' work on nonproliferation, I have provided some more background on how Albert conducted the base study, and his "comparative risks" view of the Soviet threat. As early as 1956, Albert expounded the view that it is dangerous to rely on strategic warning to protect a nuclear force. I have provided some historical background on surprise attacks which supports Albert's view.

I can only hope that some future biographer of the Wohlstetters will take far better care with the facts than does Robin in his book. I also hope that the publisher of this future biography takes greater care than did Robin's publisher to ensure that the biography is sound. As it is, Robin's book is so littered with falsehoods that anyone making the mistake of reading it will be seriously misled as to the nature of the Wohlstetters and their work.