



ROBERT M. STEIN

1937–2019

Elected in 2019

“For contributions to electronic systems for national security applications.”

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ROBERT MERRITT STEIN, a leader in national security analysis and technology, died April 2, 2019, at the age of 82. Sadly, he and his family did not get to enjoy his scheduled induction into the NAE in September 2019.

He was born in Hartford, Connecticut, on February 19, 1937, the son of Michael and Edna (née Smith) Stein. He spent his youth in Brookline, Massachusetts, where he attended the Roxbury Latin School, frequently ranked as the best boys' high school in the state.

Bob navigated a world of very bright engineers and scientists with ease and was often found explaining to them how a particular problem could be dissected, analyzed, and solved. He possessed a delightful combination of a brilliant mind, an ability to articulate complex issues concisely, and a friendly, engaging personal aura, qualities that made him everybody's friend, confidant, teacher, and mentor. He exuded an enviable degree of self-confidence without any hint of arrogance. These attributes made him an outstanding “truth seeker,” systems analyst, and problem solver, and a wonderful colleague.

Bob started his career in industry in 1958 when he joined the Raytheon Company as a design engineer; he spent his entire industrial career there in positions of increasing responsibility. During the 1960s and 1970s he led system engineering efforts

on the Safeguard, Sentry, Hard Site, and Patriot air/ballistic missile defense systems. As deputy director of the company's Strategic Defense Directorate, in 1970 he was appointed a consulting scientist, Raytheon's most senior technical position. He became deputy manager of the company's Advanced Air Defense Programs Office in 1985 and manager in 1989, and was the company focus for future configurations of the Patriot, Hawk, Stinger, Standard Missile, Sparrow, and AMRAAM air defense missile systems. He was responsible for developing the original concepts for the Patriot PC-1 and -2 and Standard Missile Block IVA advanced tactical ballistic missile capabilities.

In 1992 Raytheon awarded Bob the Thomas L. Phillips Award for Excellence in Technology, the company's highest special recognition for technical achievement. In May 1993 he was elected a Raytheon vice president by the company's board of directors. In 1998, with the acquisition of Hughes and Texas Instrument Defense, his responsibilities were extended to include the integration of the three legacy companies' advance concepts teams.

I first met Bob at Raytheon some 40 years ago when he was the company's leading broad systems thinker. In team sports (e.g., basketball), there is the "go-to guy" who shines at critical moments and gets the ball when a single basket can win the game before the clock runs out. For many years, Bob was Raytheon's "go-to guy" and he saw plenty of action. These accomplishments are hidden from view by classification or company proprietary restrictions, but I was there enough times to witness Bob's calm ability to lead his team and marshal the company's resources to solve big challenges.

Bob retired from Raytheon in 2000 and then focused on helping investigate national security challenges on the Defense Science Board (to which he was appointed in 1994). He participated in some 30 of these task forces and chaired or cochaired 7 of them over his 25 years of service to the DSB. He seemed to have an indefatigable amount of energy and was often simultaneously on several task forces because his analytical talent and insight were in great demand.

Most DSB task force reports are classified, but Bob and I were involved in one that was publicly released and is a good example of his ability to see through the technical uncertainties and challenges and to point out the simplest and most convincing argument for government action. Some 2 million acres of land in the continental United States are unusable because of the presence of unexploded ordnance left over from testing, mostly from World War II. The government was interested in remediation since much of this land was valuable for development. A task force was set up on this topic and I recruited Bob to join us.

The challenge was that the potential explosives were underground, and the ability to accurately identify objects underground was weak. A rock can be confused with a hand grenade, any metallic object is suspect, and military test ranges tend to be cluttered with metallic debris. In a horrendous number of false alarms, a detected harmless object (e.g., a buried soda can) had to be treated as a lethal object until it was excavated and identified. At a cost of \$150 to carefully dig the hole and remove the object, the false alarm rate applied to the 2 million acres translated into 200 million holes at a cost of \$30 billion, making the cost of remediation prohibitive.

While the rest of us fretted about the complexities of electronic detection of underground objects, Bob produced a simple table to make the case for more R&D funding to reduce false alarms. He argued that \$100 million a year could produce a tenfold reduction in false alarms; the total US clearance would then be \$3 billion—a savings of close to \$27 billion! It is pretty difficult to come up with a stronger incentive than that! Bob's convincing argument resulted in a substantial increase in government R&D on the false alarm problem and we received a big "thank you" from the researchers in the field.

The Eugene G. Fubini Award was established in 1996 by then-Secretary of Defense William J. Perry to recognize on an annual basis an individual from the private sector who has made highly significant contributions to the Department of Defense in an advisory capacity over a sustained period of time. Gene Fubini, the first recipient, was known for his innovation,

willingness to tell leadership what they needed to hear, and fearless and powerful perseverance in providing independent advice. The 2014 Fubini Award was presented to Bob Stein on December 10, 2014, in the Pentagon for his numerous contributions to the Defense Science Board and for his earlier contributions as a leader at the Raytheon Corporation.

Bob's professional career provided many interesting stories. One of his favorites was a meeting with an Army general who was in charge of an air defense program. Bob noticed a hockey puck with the West Point insignia on his desk and asked if the general had played hockey at West Point. The general replied that he had played until some goon from the MIT hockey team broke his leg in a collision on the ice. For many years, Bob held off telling him he was that goon!

Bob's ambitious career was mirrored in a private life loaded with adventure. For example, he loved motorcycles and, after retirement in 2000, took his wife Gail on the back of a motorcycle for a ride across the United States by a northerly route, then down the West Coast to a southerly route back across the country, concluding with a run up the East Coast—a journey of 10,000 miles spent largely on local roads, avoiding the interstates and meeting all kinds of interesting folks.

Among his many avocations, Bob was a "foodie"—he loved fine food and enjoyed cooking it. He was particularly fond of Chinese food. During his Raytheon career, he was on a business trip to China and his hosts treated him to many fine meals. When they later traveled to the United States and visited the Raytheon Company, Bob arranged fine Chinese dining for them—at his home where he was chief cook! (I mentioned his self-confidence earlier.)

He was also active in Brookline town government, serving as a town meeting member and, for 2 years, chair of the board of selectmen. And one of his favorite projects was the design and building, with the help of his wife and sons, of a vacation home on a hill in Vermont.

Bob is survived by Gail (née Saperstein), his courageous wife of 59 years, sons David (Debra) and Rick, and three grandchildren.

Bob Stein was a rare combination. Our national security depends on very bright people to lead us in solving major challenges and, along the way, we cherish those wonderfully nice people who brighten every day. Bob Stein did both; we will sorely miss his presence.