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## And the Truth Shall Keep You Free: Recollections by the First Deputy Director for Science and Technology

Albert D. Wheelon

“We must know what we are up against so that we can focus our efforts in that direction. Only by so doing can we survive the Cold War.”

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*Editor's Note: Dr. Albert D. Wheelon made the following remarks at a symposium at CIA Headquarters on 12 December 1994. The symposium was one of the events associated with his being honored as the 1994 recipient of the R. V. Jones Intelligence Award.*

I am going to comment about the environment and the opportunities that I faced when I came here on 1 June 1962. You may not believe it, but it was a lot worse then than it is now.

The CIA was in a shambles in 1961. A group of Cubans had stormed ashore in Cuba that spring with disastrous results for themselves, for the Agency, and for John Kennedy's presidency and for his conscience. Kennedy was angry with the Agency, with himself, and with others. Allen Dulles was the Director. Pree Cabell, a four-star Air Force general with a distinguished war record, was his deputy. Dick Bissell was in charge of the Clandestine Service and the reconnaissance activities that the Agency had pioneered. These three men were forced to resign.

Against that background, John McCone was brought back into government service to head the CIA. He enjoyed great independence due to his wealth, an independence that Kennedy understood and respected. He was a Republican in a Democratic administration, as were McGeorge Bundy and Robert McNamara. He was 20 years older than most of the people around

Kennedy, but they respected his ability and keen intelligence.

Dick Helms was appointed head of the Clandestine Service. The question was—what would happen to the important CIA reconnaissance programs that were under way? There were some people in the Department of Defense who thought these programs ought to move to the Pentagon.

There was a group of people, however, who were outside the Agency and were influential private citizens: James Killian, who was President of MIT and had been President Eisenhower's science adviser, was the first head of the President's Foreign Intelligence Advisory Board, and was really the leader of this group. Edwin "Din" Land, who had invented the Polaroid camera and was the founder and Chairman of Polaroid, was one of this group. Jimmy Doolittle, a flyer and a fine aeronautical engineer and my fishing companion, was one of this group. James Baker, a telescope designer at Harvard University, was one of this group. William Baker, who was to be eventually President of Bell Laboratories, was one of this group. Jerome Weisner was professor of electrical engineering and one of my mentors when I was at MIT—as was Killian. Weisner was now Kennedy's science adviser and later became President of MIT. And there were others. This group spent a great deal of their time and influence trying to make the intelligence system work more

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effectively. They were listened to by both Eisenhower and Kennedy.

This group was bound together by a conviction—a conviction that *intelligence is the most highly leveraged component of national security*. Din Land explained it to me this way: "We simply cannot afford to defend against all possible threats. We must know what we are up against so that we can focus our efforts in that direction. Only by so doing can we survive the Cold War." I agreed with Land.

The Killian group saw the importance and significance of technology for intelligence. This group had urged Eisenhower to proceed with the U-2 program. This group had supported Bissell on beginning the Oxcart Mach-3 airplane, now known as the SR-71. They went to Kennedy in the wake of the Bay of Pigs with a plea to enhance—not disband—the technical capabilities of the CIA. They were mindful of the CIA's extraordinary achievement in bringing the U-2 to operation in about one year with [redacted] of CIA reserve funds and strong support from the Air Force. Great difficulty had been experienced in the Air Force Samos program. This group had urged that the KH-4 system be started as a joint project with the Air Force. The Killian group wanted to institutionalize the partnership between the CIA and the Air Force—a dream that eventually became the National Reconnaissance Office (NRO). They wanted to blend the Air Force's resources and experience with the developmental swiftness and security alertness of CIA. They also valued the CIA's focus on the single task of gathering intelligence.

It was in this climate that McCone sought to strengthen the Agency's technical collection and analysis capabilities. I was brought to the Agency to replace Pete Scoville as Director of the Office of Scientific Intelligence in June 1962. I agreed to take this job because I agreed with Land that *this is the most highly leveraged component of national security*. And so I came to the Agency in 1962 at age 33.

Not everyone shared the Killian dream. Robert McNamara and his deputy, Roswell Gilpatric, considered the existing arrangement that evolved around Dick Bissell and the Agency as untidy. They were consolidating defense space activities at a time when there was an unseemly competition among the Army, Navy, and Air Force for space projects. They wanted to consolidate all reconnaissance activities under the Air Force and sought to transfer these activities from the Agency to the Department of Defense. They imagined a possible role for the Agency in setting requirements, perhaps doing some R&D, and exploiting the photography (along with other organizations) when it was available.

Initially, McCone was beguiled by this model. He had developed a high regard for Air Force officers during his time as Under Secretary of the Air Force. He enjoyed a close personal relationship with Gilpatric and was inclined to follow his friendly suggestions. There was, however, considerable rivalry between John McCone and Bob McNamara. That rivalry was expressed in the tug of war over these reconnaissance activities. Neither was willing to suffer defeat on this issue, and clean deci-

sions were not made often. Even though McCone was taken in by this Gilpatric model and the McNamara model, he still had this mandate from Kennedy. He had Killian and Land and others pressuring him to build up the technical capabilities for collection and analysis at the Agency, not to tear them down. He was in a quandary during my first year here at the Agency.

Pete Scoville was the Deputy Director for Research (DDR). That organization was the beginning of the Directorate of Science and Technology (DS&T). Scoville had been told that he would be responsible for all of the Agency's technical activities. He naturally assumed that the technical arm of the Clandestine Service (DSD) would be a part of the DDR. But the Clandestine Service was unwilling to agree to this and McCone was unwilling to force it to do so. The Office of Scientific Intelligence was to be a part of the DDR, but a new DDI fought successfully to keep it. Scoville was given two activities. The first was the fledgling Office of ELINT which provided a technical connection with NSA and the Clandestine Service's liaison activities with friendly governments. The second was a major operational activity—the Office of Special Activities (OSA).

OSA was the organization in the Clandestine Service that Bissell had used to develop and operate reconnaissance aircraft and satellites. In 1962 it was actively involved in training, upgrading, and flying operational missions with the U-2 fleet—not over the Soviet Union in accord with Eisenhower's commitment, but regularly elsewhere in the

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world. OSA was just beginning flight tests with the Oxcart. It was responsible for procuring, testing, and assembling the camera and film-recovery payload for the KH-4 broad-area search system in a joint venture with the Air Force. The Pentagon wanted this robust activity. They chipped away at the Agency's programs and independence from June 1962 to June 1963. About half-way through the year, McCone conceded fiscal control of these programs to the Air Force and made a number of other decisions that undercut Scoville. Pete Scoville was a man of considerable wealth and independence. He resigned in June 1963 because he felt that he had not been supported internally or externally.

I was flattered beyond belief when I was asked to take Scoville's place. I knew something of the problems that Pete had faced because he was my good friend and one of the primary reasons for my joining the Agency. I told McCone and Carter: "Well, there is no point in screwing another good light bulb into a socket that is shorted out. We had better find out what is wrong with this circuit." With their concurrence, I sought out Scoville on Cape Cod. I spent a full day trying to understand what had gone wrong and what needed to be done to get the directorate back on track. Scoville was a man of great good will and was gracious in his comments. But he left no doubt in my mind that anyone would fail to achieve the lofty goals of Killian and others unless the ground rules were changed. I returned to Washington and gathered my thoughts.

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I met with McCone to discuss these matters. I repeated Din Land's logic about the importance of hard intelligence. I noted that espionage in the USSR was exceedingly difficult. Whatever its successes, it could not provide the broad range of answers that we needed. I noted that communications intelligence against the USSR was helpful but eroding as the Soviets moved their traffic to land-lines and microwave links. I said that the only way to monitor the Soviet strategic capabilities was to use satellite reconnaissance. In essence, to use the sun's light to illuminate their facilities and our cameras in space to take their pictures.

I had great appreciation for the aircraft systems, particularly from my involvement the previous year in the Cuban missile crisis. I had learned that airplanes can exploit breaks in the weather to photograph priority targets in crisis situations, whereas satellites have to contend with cloud cover over targets of interest and cannot take photographs on demand. (The large Soviet ABM radar in Siberia went undetected for almost two years because of this limitation.) We had the U-2s in service and the Oxcart coming along. But we also had Eisenhower's commitment not

to overfly the USSR again. Even if we were not so constrained, I saw little possibility that we would be able to fly often enough over the USSR to provide the broad-area, repeated coverage that we required.

This left the primary task to satellite reconnaissance with its ability to overfly large areas frequently without provocation. There were four problems with the systems then in operation or being planned. First, they depended on physical recovery of the film capsules from orbit, and this meant that the coverage was always at least 30 days old. Second, the resolution was not good enough to do a high-confidence search for new activities. Third, the only program then operating successfully was being progressively shifted to the DOD at Gilpatric's urging. Fourth, the Air Force's efforts in building such systems had been marked by repeated failure. The Samos program had been under way for a number of years, and there had been one tragic accident after another. We had exactly 2,000 feet of film for years and years of flying.

I made a simple case to McCone: "Satellite reconnaissance is too important to be turned over to a monopolist provider whose demonstrated capability is so weak. The country needs competition—and the stimulus that it provides—here more than anywhere else". The CIA under Bissell had demonstrated its capability to do exciting, important programs that produced real intelligence. I acknowledged that dual sourcing was inefficient, but I reminded him that the country had created a second nuclear design laboratory at Livermore when

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Los Alamos was stumbling. I reminded him that this action had been demanded by the Air Force and approved by John McCone when he was responsible for the Atomic Energy Commission. With this, I rested my case and left him to consider the matter.

McCone called me back later and said that the Agency should play a vigorous, equal role in satellite reconnaissance rather than go out of the business. He agreed to throw his enormous support behind my efforts if I would take the job. I agreed to do so. In his parting remarks at the Deputies meeting on his last day at CIA in June 1965, his primary point was an apology that he had not done enough to solve the NRO problem . . . but he had tried.

And so the task passed to me in the summer of 1963. It was now my turn to generate the new capabilities that the country needed. I was sure that technology was adequate to the task, because I had come from the world of missile and space development. Successful projects require that the technology is sound and that appropriate public policy exists. The technology for this task was ready, or would be if we just pushed it somewhat. Certainly the need existed. The public policy also existed in the form of pressure from the Killian group, from Weisner, and from Kennedy himself that we ought to move in that direction.

We had ongoing problems to deal with as well. The Office of Scientific Intelligence (OSI) finally moved from the DI to the DS&T. It benefited immediately from being close coupled to technical collection activi-

ties. We established the Foreign Missile and Space Analysis Center (FMSAC) as a response to the priorities of the Cold War, with its missile gap and the space race hysteria. I persuaded Carl Duckert, who was the outstanding person in missile intelligence, to come to the CIA and build this organization. He did a magnificent job. I was given the responsibility for managing the CIA computer complex—a task to which I paid too little attention because of the relentless pressure of reconnaissance issues. The U-2 operations under Jack Ledford and Jim Cunningham were then worldwide and this took a great deal of attention. Each mission required presidential approval, and we suffered painful losses year after year.

We even ran missions from a Navy carrier [redacted]

The Oxcart flight test program under John Peringsosky consumed a great deal of my time. It was a frustrating technical development with a number of crashes [redacted] and the loss of good pilots. It was only as I ended my term of government service that the Oxcart went operational.

I remained personally involved in both our aircraft and satellite programs. I did so to set an example. I flew in the Oxcart to show confidence in the plane when it was

experiencing great difficulties, although I was roundly criticized by John McCone for risking my person in this way.

The KH-4 program in California was placed under John Crowley, and, with [redacted] support, we reassumed our programmatic responsibilities. We were involved in a number of ELINT [redacted] grams [redacted]

But my principal challenge was to make a difference—a big difference—in satellite reconnaissance. It was this opportunity and this promise that had galvanized McCone's considerable ability and determination. It was primarily this prospect that had motivated Killian, Land, Weisner, and others to brace Kennedy on building the Agency's capability. More fundamentally, it was what the country desperately needed.

I felt that broad-area search was our top priority. The first step was to find a way to improve the 20-foot resolution of the search capability being provided by the KH-4. We simply did not know where important activities were in the USSR. We had to find them by methodologically searching film at NPIC. Our experience with U-2 flights had the

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need for complete coverage at regular intervals was driven home.

As I did so often, I reached outside the Agency for technical help. I persuaded Sid Drell of Stanford to take a leave of absence. He assembled a team of first-class scientists and engineers to determine the natural limits of KH-4 resolution. The group was also asked to work with NPIC to establish an appropriate resolution goal for a follow-on search system—a goal that would make a real difference in our ability to locate and identify targets in the vast amounts of film provided by these broad-area-search systems. This group worked for about four months and concluded that the desired resolution was well beyond the limits to which the KH-4 could be pushed by upgrades. They suggested that we begin a new system based on entirely new principles, and this became the

programs. I carefully inquired if they had experienced problems of this sort. They were stunned by the question and pointed out that the CIA was a joy to work with precisely because our people did not try to second guess their technical decisions. Rather than being discouraged or intimidated, McCone was galvanized by this affair and threw himself into vigorous support of our efforts.

This strange event had an unexpected and salutary effect on the program.

system was opposed by powerful people in the Pentagon, especially the Under Secretary of the Air Force, Brockway MacMillan. Years later he would say publicly that this was the biggest mistake that he had ever made. The development went forward and produced a truly remarkable ability. With it, we could scan the entire Soviet Union. It was the result of the efforts of Sid Drell, Jack Maxey, John Crowley, Les Dirks, John McMahon, and many others.

Another system grew out of my experience in the Cuban missile crisis. In that rapidly developing situation, we needed photographs of Cuba almost as soon as they were taken. The satellites were completely useless because their film capsules had to be recovered off Hawaii, flown to Rochester, New York, and then analyzed weeks after the orbital passes that covered Cuba. Subsequent Soviet maneuvers in Eastern Europe showed me how irrelevant satellite systems were to current intelligence and crisis management. The problem was clear: the film-return systems and orbital constraints on systems then in operation represented a fundamental barrier.

The solution was equally clear. We needed a way to take pictures in orbit and immediately transmit them by radio waves to the ground. Television cameras were doing this every minute of every day for national television networks, but not in Earth orbit. I called in a young CIA scientist who had been a Rhodes Scholar after studying physics at MIT—Les Dirks. He found a technical solution for which every President has been profoundly grateful. He was awarded the National Security Medal for this

I had my doubts and visited the CEO of every contractor involved with CIA in reconnaissance

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achievement and later became DDS&T.

In October 1966, I returned to civilian life as I had planned to do when I joined the CIA. My bargain with John McCone had been to stay for not less than three years, nor more than four. He agreed to those terms, but wanted to know how I had reached that formula. My response was simple. "It will take me one year to learn how the system works and what needs to be done. It will take me another two years to accomplish that. If I have accomplished what I believe is both necessary and possible, I will have irritated far too many people to stay on." Dick Helms graciously asked me to extend, but honored the bargain that I had struck with McCone.

I believe that my four years here should give heart to those among you

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who want to make a difference in government. If you have a clear vision of what needs to be done and are willing to risk your career, you can move mountains in this government. Our country desperately needs courageous leadership to supplement the loyal service of many. It is true now as it was true then that bureaucratic inertia and turf issues impose a large overhead burden on your efforts. What you need to remember is that individuals

make things happen. Jack Maxey made [redacted] system happen. Les Dirks made the near-real-time [redacted] system happen. These people are gone now, but their legacy lives on. The country is much in their debt.

This is a tough time for the Agency. As bad as it is, it is not as difficult as it was in the aftermath of the Bay of Pigs. The CIA came out of that tragedy and made an enormous contribution to the winning of the Cold War. Each of you can make a difference. You must begin from first principles and try to understand what really needs to be done in the next decade. Then, you must devise realistic plans to meet those needs. Finally, you must have the courage to make things happen.

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