

**Bobby Ray Inman**  
**LBJ Lecture March 1, 1984**

Introduction of Admiral Bobby Ray Inman  
The Fifth Lyndon Baines Johnson  
Distinguished Lecturer  
Robert L. Hardesty  
President  
Southwest Texas State University

Welcome to the fifth of the Lyndon Baines Johnson Distinguished Lectures.

Many of you are now familiar with the Lyndon Baines Johnson Distinguished Lecture Series. When the series began in the spring of 1982, it was to carry out a dream that President Johnson had for Southwest Texas State University. Speaking on campus only a week before his death, he said that he wanted to bring the nation's most influential and respected people to this campus to talk to students and faculty and to comment on the issues of the day.

In the two years since the series began, we have carried out that dream. And tonight we are continuing this tradition. A key difference in our speaker this evening is that he represents not the past, or even the present, so much as he represents the future. Admiral Bobby Ray Inman and MCC, the corporation that he heads, are on the leading edge of the future not only of Texas, but of the nation, and of the world.

When Governor Mark White determined that Microelectronics and Computer Technology Corporation — MCC — should be housed in Texas, he left no stone unturned in bringing it here. He probably did more than any other governor in Texas history to consciously shape the destiny of our state. For MCC will do more than bring industry and jobs to Texas. It will bring the future. It will also bring challenges. As high tech plays an increasingly important role in our lives, all of us in education are challenged to build an educational structure that will support it. That is the special meaning of Admiral Inman's presence here tonight.

This is not the first time that Bobby Ray Inman has been in the forefront of events, both personally and professionally. He was the first naval intelligence officer to attain the four-star rank of admiral. To achieve this rank is almost unheard of for someone who did not attend the naval academy. He was the youngest director of the National Security Agency. He served as deputy director of the Central Intelligence Agency. And throughout his career, he earned a formidable reputation in Washington as America's most respected intelligence officer.

All of these activities have taken Bobby Ray Inman a long way from Rhonesboro, Texas, where he was born. We are delighted that he has returned to his native state so that we might benefit from his knowledge and understanding. And we are honored that he is here tonight to provide us with insight into our high tech world.

It gives me great pleasure to present Admiral Bobby Ray Inman.

Lyndon Baines Johnson Distinguished Lecture  
Admiral Bobby Ray Inman  
Challenges and Confrontations to the End of the Century

Before so many audiences over the past year, I have had the privilege of talking about MCC and the challenges that lie ahead of it. But, in reflecting on the rare opportunity presented by doing the Lyndon Baines Johnson Lecture, and in recognizing that the intent is to get those who will be the leaders of this country to focus on the challenges that lie ahead of us, I'm going to use the speaker's license to take a broader look at the challenges. Then I will come back to the critically important role of technology in ensuring that we have a peaceful and stable world.

Indeed, all of you who are gathered here this evening will share a very exciting time between now and the end of the century—a time of great economic opportunity if we manage our affairs well, a time of great challenge, potentially a time of great confrontations.

We hear much about superpowers. When we talk about confrontations, we tend to talk about military confrontations. Unfortunately, that is a fact of life. Within the world I see to the year 2000, the confrontations, the challenges are far broader than just those that are military. How we learn to look comprehensively at all of those challenges and to deal with them in a broad way ultimately will determine whether we have a peaceful and prosperous world or one with increasing conflict.

The challenges I foresee primarily will be military and economic, but they will play out in a world that has many challenges in the political arena. It is a time, I am sad to report, of growing political instability, not slackening instability. It is a time when there is a new scourge, terrorism, and we have not yet found the ways to bind civilized men and women together to deal with it in an effective way.

There is a lot of debate from time to time about nuclear weapons held by the Soviet Union and the United States. However, there is too little concentration on what may be a far greater challenge to our peaceful world: nuclear proliferation in countries that may bring a different standard to bear on the use of weapons and less concern for and understanding of the ultimate damage that could be wrought.

When one thinks of the challenges and confrontations ahead, there is a stark fact that we have to confront. Whether we as a nation want to lead or not, we have no options, because the only country that will be a major player in both the military and the economic confrontations is the United States.

Economic confrontations will be primarily between the U.S. and its principal allies on the military-political side—Japan and Western Europe. It will play out within our own countries and increasingly, toward the end of the century, in that unstable Third World.

On the military side, we are going to worry about a lot of brush-fire wars: the tragic events we have been watching in Lebanon, Iran, Iraq, even in parts of southern Africa; the continued violence in northern Ireland; the uneasy situation in southeast Asia created by the Vietnamese occupation in Kampuchea and Laos; and the passion in Libya and North Korea, the two most unstable governments in the world, for creating activities outside their own country that destabilize peace.

But even as we worry about those situations, our concentration and the military confrontation through the end of the century will be with the Soviet Union simply because of its massive size and power. What passes for a defense debate rarely looks at the evolving nature of Soviet military forces and even less at evolving Soviet attitudes. One looks back in history to World War II. We now understand that in early 1944, in

addressing the post-war era, Stalin was determined to refurbish facilities quickly for building aircraft, ships, and tanks, and to build in the immediate post-war years a very large standing military force. Why? Because of concern that his war-time allies would come after the war to roll back the gains of empire that had come as spoils of war. And indeed, in the years from 1946 to 1953, a massive military force was built, but its capacity was limited to use within a few hundred miles of the periphery of the Soviet Union.

In the '50s, Stalin's death brought instability for two years, and then Khrushchev began to consolidate his control. Gradually, attitudes began to evolve about the need to expand the potential range for use of force, the move toward missiles, the effort to try to bring the U.S. under direct threat of military conflict in the event of any war. The barrier where one looked to use force moved from 200 miles to 600 miles to 1,500 miles. Then came an attempt to jump beyond that by placing missiles in Cuba, a maneuver that proved to be a disaster.

Khrushchev was retired in 1964, partly for his adventures abroad but also partly because of his tinkering with the education system at home, threatening the privileged positions of those who were in leadership positions in the Communist Party.

The new regime set out to guarantee support. One of the measures was a substantial increase in investment in military forces, with a great deal of authority left to the Ministry of Defense on how that money would be spent. In the first part of the period from 1965 to 1970, most of the money went to infrastructure, shipyards, new aircraft factories, and new tank factories. Production never began to reach capacity probably because of a shortage of skilled manpower. By 1970, as the government leaders looked at the balance and began to recognize that they were for the first time narrowing the military gap, their answer was simply to put in place steady, annual increases that have continued unabated to the present. Those increases have brought about small incremental changes in the strategic forces, but they have wrought fundamental change in conventional military forces. Steadily a force has been built that is capable of being moved rapidly by air and sea all around the globe and capable of being sustained there.

If one stands back and looks at the reality of these past 18 years, one can see that the old Bolsheviks who have been in charge have been extraordinarily cautious about using their burgeoning military power. Their ideas about use of force have come far slower than the realities of their capabilities to use it. We saw the adventures in Angola in '75 and Ethiopia in '77, using Cuban proxy troops. But one still has to say that, as long as the older generation is in charge, the likelihood of their moving for a direct military confrontation with the U.S. and its allies is judged to be low.

Over the next ten years, the leadership in the Soviet Union will change almost entirely for reasons of age and health. We know far too little about the generation that will move to power. We know they will have grown up in the Party. We know they will have very privileged positions. We know they will have made their way by keeping priorities as they have been, so they will have no internal urge to turn to a consumer society. Any effort to alter priorities might cause fundamental changes in who will end up ruling in the politburo.

We may be very lucky. That next generation of leaders will be comfortable bureaucrats, who may be very cautious about taking risks to endanger their privileged positions. Unfortunately, we run an equal risk that they will be far more arrogant about

the use of power. As they sit and look at the great economic competition and the great economic prosperity hopefully going on in much of the rest of the world, their sense of inferiority and their sense of disappointment about recognition of their great power status will grow. And the temptation will be there to consider using conventional military forces in unstable areas around the world to assert their great power status.

That will not be a decision they will make casually. There will be two principal equations that will drive their judgments. The first will be their judgment about the military capabilities of the U.S. and its allies and the cohesion of these alliances. The second will be their judgment about will. That is a much tougher one to gauge in this world of instant media coverage. As they try to make judgments about the cohesion of alliances and will, they will be watching as intently as we the nature of the economic competition in the West and how it is being unfolded.

As one looks at the prospects for that economic competition, we have a far greater prospect of influencing that in a positive way than we do of influencing Soviet attitudes about building and sustaining military forces. One looks back to the development of the great economy that we have. Over the first 100 years of our existence we imported technology from abroad, and we used our own ingenuity and innovations to use that technology not only to create a broad-based economy but also to spread across a great continent.

Then in the darkest days of the republic, in 1862, the Congress in its wisdom enacted the Morrill Act, creating the land grant colleges and laying the foundation for the creation of technology in this country on a very broad scale. MIT did a study not long ago on the economic growth of this country from 1860 to 1940. It was their judgment that 80 percent of the growth in the gross national product was a result of creating technology and commercializing it. In its day, every one of the steps taken was probably considered high technology.

The demands of World War II brought something new to these shores: a collaboration between the academic community, private industry, and the government on a scale that we had never witnessed before. Driven by the needs to win a war, that collaborative effort produced the weapons that won a war, weapons which we have found increasingly difficult to harness in the subsequent years. That effort also laid the basis for a great leap forward in our economic capability. Out of the search for substitutes and research in the petrochemical industry came synthetic fibers and many, many other things.

On top of that, in the years immediately after the war came the greatest single investment in education that has occurred anywhere on this globe: the GI Bill and the often forgotten but very substantial, unconstrained grants from the federal government—mostly from the Department of Defense—for graduate studies in science and engineering. From that surge came a capacity to create technology unequalled anywhere on the globe and a reasonable process of commercializing that technology at an advantageous pace. Indeed, if you look around at many of the best universities and the best companies in this country, you will find people in key leadership positions who earned their baccalaureate degree on the GI Bill and their doctorate on a grant from the Office of Naval Research or one of its counterparts.

Then came the 1960s, when we lost our way on this topic as on so many others. In 1963 we were moving pretty far along in applying a new measuring rod to national

security: Is it cost effective? Weapon systems can be measured reasonably for cost effectiveness, but many other elements of government and infrastructure don't stand up well. The intelligence community found that it was very hard to sustain an investment in such esoteric data as fundamental Islamic religions. For the field of education, for the ability to create technology, the impact came. It was decided that it was not cost effective for the Department of Defense to make unconstrained grants for doctoral studies in science and engineering. They could make them only if the study could tie directly to a future weapon system.

You can chart, beginning in 1968, the drop in the number of U.S. graduate students in science and engineering. The seats didn't go vacant in the graduate schools of this country. Foreign students came in large numbers, usually in full scholarships from their governments for the finest technical education in the world. We have, over the last 15 years, greatly broadened the technology base of much of the rest of the free world. Some of those who came have stayed on green cards with citizenship and are productively engaged in our university and industry laboratories, but many have gone home to pool their talents and use innovative approaches to create technology.

When we had such a commanding lead in creating technology, we could afford to squander talent. There is, however, a commonly believed myth that all new development comes from the single individual who has an idea and does a design, gets goes to the market, and starts an industry. That is the way most new industries start and the way major off-shoots from industries start. But the reality of the bulk of creation and commercialization of technology is that as you progress in a new industry, more capital is required, and more investment in research is required. Quite rapidly, some companies 'fail, and others merge. Then, as the industry matures, it suddenly reaches the stage where the capital needs are large, and the critical mass for research for breakthroughs is larger still. The standard pattern at that point is for businesses to collapse into a few very large corporations. Those large corporations have created lots of jobs, lots of economic opportunity. They have had the resources to invest in long-range research, but often they have not had the urge to bring the products of that research to the marketplace quickly if they were making money on products they were already producing. In a world in which we were primarily concerned with the domestic marketplace, that approach still worked reasonably well. However, what we didn't recognize as a society was the pace at which the entire world was changing.

As late as 1960 there was no major segment of U.S. industry that had more than ten percent of its annual revenues involved in international trade. Twenty years later, encompassing that period when we began to neglect investment in creating talent, we had moved to a stage where at least 25 percent of the revenues came from the international marketplace for many sectors of this economy. Some were already at 50 percent. That is the world with which we will live as far ahead as I can see.

There are some approaches to dealing with competition from abroad that we have tried through our history. There is a well-documented trail showing that when you turn to trade barriers, not only do you damage your own economic capacity but you also cut off future growth. You also put intense pressure on alliances.

We have a challenge ahead of us to find new approaches that will enable us to sustain a momentum for creating the fuel that makes the economy burn, creating new technology, moving it rapidly to the marketplace, and ensuring that that is the approach

we take in holding alliances together. We have to license the technology abroad as well as here, rather than throw up barriers. Only by that approach do I believe we have a reasonable prospect of blocking off opportunities for the Soviets to use military force to assert their own great power status.

What do we need to do in this country? The list is very long.

At the top of the agenda has to be recreating a consensus on national security. We have to clearly understand as we set out for that objective that national security isn't just the size and deployment of our defense forces. Fundamentally, it must also include diplomacy, foreign aid, arms control, and international trade. Until we look at all of those coherently and establish policy to interlink them, we will not effectively manage the challenges, the confrontations in both the military and economic sectors.

Secondly, we have to find ways to accelerate investment in new technology. Sometimes we stumble onto the right ways to do it almost by accident. In the recent deep recession, this country invested more in research, not less. The cause is reasonably easy to find: tax credits for investment in research and development. It is an incentive that was used by industry even in a recession.

We have to find ways to modernize the basic industries of this country. We have to make them competitive for national security reasons as well as for broad prosperity. We must retrain the present work force in these basic industries to function in an automated environment and to work in service industries.

But the great, long-term prospects—the bright prospects—for creating new economic opportunity here and for effectively managing our affairs abroad lie again in the proven methods for ensuring that we do it right: collaboration between the government, the universities, and the private sector. Where that occurs, dramatic progress can be made.

MCC came to Texas in large measure because of the visible collaboration between state and local government, the academic community, and the private sector. The other important reason for our location here was the state's investment in graduate level education. Even as education was critically important in 1862 in laying the base for the ability to create technology, it is fundamentally important for the prospects still ahead of us, to the end of the century and beyond.

There are three levels of education to focus on and not confuse. First is the investment in graduate level education, creating more trained scholars and researchers. The second critical level is the baccalaureate. As a liberal arts graduate, I feel constrained to remind friends in the engineering community that they are still going to need liberal arts graduates not only to plan the production but also to operate in the world marketplace.

The third critical level is education at the primary and secondary school level. There is no guarantee that the manufacturing plants will be put near the centers of technological innovation. It is manufacturing and service that create the most jobs. The Achilles heel, I believe, in whether an explosion of manufacturing opportunities will occur in Texas will come from judgments about the adequacy of the public education system in the state. Perceptions are almost as important as reality. Ranking in the thirties at the national level simply will not do the job. We as citizens must set a goal of a public education system judged to be in the top five in the country. Setting the goal and striving toward it with consistency is far more important than the speed with which we produce

the results. If we do not establish the goal, we stand the substantial risk that Texas will be in the pack instead of at the lead of creating new technology, commercializing it, and of helping us ultimately through that process to ensure a stable and peaceful world.

*Lecture transcribed by Benjamin Hicklin, graduate research assistant, 2007-08*