The Sputnik Moment

Once in a great while in the history of a nation, there comes a moment when a change occurs that affects everyone. At a moment like this, people know that something fundamental has shifted; that forevermore their lives will be divided into what came before it and all that will follow after it.

The film you are about to see tells a story of one of these moments that took place in America roughly 50 years ago.

Johnny is my given name. America is my nation. The schoolhouse is my learning place ...

The Sputnik moment.

It was October 4, 1957. A Friday evening. For most Americans, life was, as they said at the time, normal. Just about everyone has been following the world series, where the legendary New York Yankees were facing the upstart Milwaukee Braves. Also this evening, millions of families were gathering to watch the premier of a new TV show.

7,000 miles away, in deepest secrecy, engineers working for our archenemy, Soviet Russia, were putting the final preparations on a rocket that would carry a 23 inch aluminum sphere, polished so that it would shine like a star. Although no one knew it yet, what these scientists and engineers were about to do would change America and the world forever.

Moments of farewell. Photographers have taken their last shots. Our space rocket is ready in the center of the cosmos ( ). The countdown begins. Now only a few moments remain. The mighty roar, our rocket vibrates. White hot flame gushes downward, and the great beast lifts slowly from the Earth. We are about to create a new planet that we will call Sputnik.

The first artificial Earth satellite in the world has been created. This satellite has been successfully launched in the USSR.

We are bringing to you the most important story of this century, mankind's breakthrough into space.

In about 24 minutes it will be over Santiago, Chile, and about 50 minutes from now, will be over Spain.

The entire neighborhood, the entire city -- in fact, the entire nation it seemed was standing outside watching what the Russians had done.

What did you say when you saw Sputnik one?
I shouted to Mr. Robert Brown: I think I have it.

Scanning the horizon while the world watches the flight of the ...

Right at the appointed hour, Sputnik flew over. And I tell you what, if God himself in a chariot had flown over, I would not have been more impressed.

A tiny voice is heard from the vastness of space, lonely and mysterious cry that separates the old from the new.

Every man was out there in his backyard watching history change; not at a great battle or not at a great revolution, but in fact a little blip in the sky.

Sputnik was the first man-made thing that ever floated above our heads in outer space. It didn't do anything but send out innocent radio beeps, but Sputnik was Earth shattering. Not only because it was the first man made thing in space, but because of the rocket that got it there and what that rocket meant.

The Soviets say the kind of rockets which had taken Sputnik up could also carry nuclear weapons in space. They were using Sputnik to try to scare the United States, to scare Americans into the idea that we were all in danger of Soviet nuclear weapon coming from space.

The United States is in a state of confusion and surprise.

Sputnik was the 9/11 of our day. People were shocked that Russia had the technology that could do this and we didn't.

America said: Now wait a minute. Russians can't even build a refrigerator. What are they doing putting a Sputnik, a satellite into orbit?

We were convinced, as Americans, that we were the dominant power in the world; we had to be. So the idea that our archenemy, the evil Soviet empire, could beat us by getting into space first was just devastating. People were walking around saying, how could this happen? The U.S. is number one. What is this?

This is the Soviet Union's first man-made Earth satellite, on display at the USSR industrial exhibition in Moscow.

Ever since news of Sputnik flashed around the world, America has been asking questions. What went wrong? How did a nation of backward peasants forge so dramatically ahead of us in the race to space?

Because the American people are alarmed that a foreign country, especially an enemy country, can do this. We fear this. We fear that they have something out there that the majority of the people don't know about.

Senator Jackson of Washington describes the Russian achievement as a devastating blow to the prestige of the United States.

The people of the United States have been humiliated, they are disturbed, and they are unhappy. An enemy of ours has outdistanced us.

Russia's getting into space really bothers me.

We are headed downhill to the status of a second rate world power.
Night after night, politicians and other leaders were telling Americans that Sputnik revealed that we were at great risk.

Not just our pride, but our security is at stake.

We surely don't want to become hysterical, but let's become factual. Let's start telling the truth. And let's face the fact that we've taken a licking psychologically at least and scientifically, and it has embarrassed us throughout the world.

If Russia wins dominance in this completely new area, well, I think the consequences are fairly plain. Probable Soviet world domination.

(In Russian: Down with slavery. The sooner we bury it, and the deeper, the better.)

To understand why the Sputnik launch and all the political rhetoric that followed was so effective in scaring Americans, you have to get a sense of what America was like back then. The time was 1957. The king of rock-n-roll, Elvis Presley.

Rock-n-roll was new, and Elvis was the king. Gasoline was cheap, 25 cents a gallon. And it was pumped for you by uniformed attendants.

Service without having to ask for it.

Telephones had rotary dials, and when you needed to look up information, you didn't go online, you went to the library and looked through index cards.

7 million index cards fill the row on row of drawers that line the calls.

It was a very different world than the one we live in today. And perhaps one of the biggest differences is that it was the early days of national television. Television was revolutionary, and it made it possible for America to show itself to itself and to the world.

Television is most certainly here to stay.

Everything presented on TV looked different than shows look today, and quite often the people appearing on TV looked, by today's standards, uncomfortable. And they were. Shows were live then, and TV cameras were huge. And remember, almost no one had ever been in front of a TV camera before. So when this intimidating box was pointed at them. People often spoke in ways that seemed a bit stilted.

Our son Merritt took the course. He understands the rules and he follows them.

It's tempting to chuckle and look at these people from the 1950s as uptight. The students like it, the parents like it, and best of all, it works.

But don't let this fool you. Look behind their unease, and you will find that these people were ordinary American citizens, just like us who felt lucky to be living in what they felt were the best of times. And in many ways, they were. As a nation they had been through some very rough times. Ten years of the great depression, and six years of World War II where tens of millions had died. And much of Europe and Asia were destroyed. Now, post-war Americans felt that it was finally their time to settle down, to live what was called the good life.

For most Americans, the good life meant working toward living the American dream.
Maybe a nice home in suburbia and some nice kids and a beer and ball game on Saturday afternoon.

We will have the living room right here, and the kitchen right here. Oh, Daniel, it's going to be just perfect.

The American dream, owning a home.

Because with a home we can live and work as Americans.

And a car or maybe two.

And an American car. We have a right to take pride in our cars.

And modern appliances their grandparents had never known.

You can own your own home, complete with its own refrigerator, television set and clothes dryer.

Well, here's real emancipation from old fashioned chores.

A refrigerator, washer and dryer, perhaps a dishwasher, and so much more. And all of this was possible because of our industrial and economic power, and because of what was commonly called better living through science.

Inventors, engineers and manufacturers continually offer us improvements so we can have...

Ever greater progress in science and business that ensure a way of life that is physically gratifying and spiritually uplifting.

Chemists have a lot to do with this, turning coal into everything from truck tires to sheer nighties.

The world of science has given us some fabulous things.

Materials which make fabrics more beautiful and easier to care for than natural ones.

New and better stretch yarn for women's stockings.

In the world of tomorrow, plastics will certainly call a tune.

The scientist has something to offer to the public which is far, far more than gadgets and inventions.

We had faith in our science and our scientists. In the 1950s American scientists had given us the discovery of DNA.

The thread of life.

And the Salk polio vaccine.

The vaccine can prevent paralyzing polio. Invented by Dr. Jonas Salk.

And American engineers won high praise worldwide for our highway system and millions of miles of paved roads.
More motorized ability than ever dreamed of before. Freedom of movement for all, symbol of democracy.

We have become the nation on wheels.

And this is Levittown. Levittown, one of the world's largest single unit housing developments.

To make the American dream a reality for everyone, developers were building tens of millions of houses.

The budget priced home. This symbol of modern American living has changed the great USA.

You can raise your children far from the city's dirt, crowding and crime, in comfort and safety.

Suburban cities sprang up almost overnight, with new water supply systems, streetlights, sewer systems, electrical power grids and more. Much of the infrastructure we depend on today was built during this time. As millions of people bought homes and got college degrees, and "settled down" they became a part of something that the world had never seen: The huge American middle class.

Never in history has the American family known such well-being.

A standard of living beyond the wildest dreams of anyone who lived a half century ago.

Today the middle class American dream is sometimes made fun of. But for adults at that time it wasn't funny. It was literally a dream come true. But there was a dark cloud hanging over that dream, over every home, over every suburb and every city.

The possibility of a nuclear war in which some will survive.

You are the target of those who would trample the liberties of free men. You are in the cross hairs of the bomb sight, an enemy is centering on you, the United States of America.

We face a hostile ideology, global in scope, Atheistic in character, ruthless in purpose and insidious in man.

Communist Soviet Russia was bragging to the world that they could and very well might destroy us. And the Soviets had recently exploded a huge destructive hydrogen bomb.

We have successfully detonated a 20 megaton hydrogen bomb. This is of a weight that our current rocket can carry anywhere. Our Sputnik proves to the world that we have the ICBM, the ultimate weapon.

Sputnik and the rocket that launched it made all of this Soviet blustering and threatening very real and very scary.

Do we have any defense against Russia's intercontinental ballistic missile?

No, we have not.

In just 30 days after the launch of Sputnik, things were about to get even more scary.
We carried our lovely space dog down to the capsule and placed her inside. She was groomed for her voyage. We attached the instruments, bid her farewell and turned away from the launch pad. And didn't look back.


Good afternoon. A dog knocked a goat right out of the world's attention today. In a masterpiece of propaganda timing, the Soviet Union announced it had launched Sputnik number 2, carrying a live dog. This is reportedly history's first space traveler.

Moscow reports this morning that the dog in the new Sputnik is in satisfactory condition and, the reds hint that she may be parachuted safely back to Earth.

The dog, barking his way around the Earth every 122 minutes, has won Russia new respect. A British editor asked me, half jokingly: How does it feel to be the citizen of a second rate power?

When people around the world heard about Laika being in outer space, many mocked us, and our prestige plummeted among our allies, especially those wore neutral. The Japanese thought that the Russians did it again. It was a blow to the American prestige.

The thing that America used to stand for were the shot that was fired around the world, the sense of being the vanguard of human liberation and human progress. I don't think America stands there today.

To lead the world, we needed the world's respect. Now Soviet Russia, who we had mocked as technologically and scientifically backwards and primitive, were years ahead of us. The Soviets took advantage of this.

The hand of Soviet friendship has been reaching into every part of the world which shows the slightest inclination to receive it.

Premier Nikita Khrushchev traveled to the less developed nations and said that we were second rate; not only because our science and technology was inferior, but because we were not a true democracy. And he had proof.

In Little Rock, Arkansas white segregationists were violently protesting against nine black students who were just trying to go to high school.

The minute they walk in is when we walk out.

That's not right. They have schools just as good as ours.

We don't have a choice like they do.

They can go to ours or they can go to their own. We have to go to the white school.

We should have rights, too. Negras ain't the only ones that have the rights.

Thanks to international media coverage, the world was watching. And it looked to us the Russians were winning the battle for hearts and for minds, and that our way of life was being rejected.
One-third of the world is free, one third of the world is Communist. One-third of the world is uncommitted. The Communist struggle for that other third is going to decisively weight the balance of power and force and influence in the world for generations to come.

Third world nations had the choice to align themselves with either America or the Communists, and it looked like many were not going to choose America. And that wasn't all. The nightly news told us that a Russian dog in outer space with a life support system meant that next soldiers could be sent up who could attack us from space. And from space, the Russians could control the entire planet.

The kind of thing that a month ago would have sounded like a joke. But in Washington now anyone who cares to laugh at this does so at his own risk.

It is quite possible that an aggressor nation who dominates space will dominate the world. We just can't let that happen.

This constitutes the greatest crisis in the history of America.

All of this in such a short period of time was too much. The American people cried out for a response. President Eisenhower, pressured by America's concern, reacted and announced in just a month we would launch our first satellite called Vanguard.

America's first attempt to launch a satellite, a six-and-a-half-inch sphere weighing just over 3 pounds was checked out by scientists and declared ready. A great wave of advanced publicity focused attention at Cape Canaveral, Florida, for the launching of Project Vanguard.

Newsmen from all over the world were flown down for the big turkey shoot. At the launching site they were given a play-by-play account. They witnessed each tiny detail of the usually top secret preparation. It was carnival time at Cape Canaveral. All through the day and night, thousands of people thronged the nearby beaches and jetties, waiting eagerly for the big moment.

This is Charles Von Friend reporting from Cape Canaveral. Reporters and photographers have gathered here throughout the night and early morning. Now it is almost noon. We expect the Project Vanguard missile carrying the first United States satellite to be launched momentarily.

Inside the block house, the tension steadily mounts.

10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 0.

Vanguard started sounding like the money of some massive dinosaur. Fire filled its nozzles. It spit flame first, then built with great crescendo to a tremendous howl. It ripped itself from its chains, began to rise slowly. We all rose with it.

Oh God, no, somebody screamed.

I don't see it. I think the launching has been unsuccessful.

It seemed as the gates of hell had opened.

Before unbelieving eyes, the giant began to topple.

There is a sigh of disappointment through the crowd of observers.

It took just seven seconds to set back a nation's pride.
Our first attempt to launch an Earth satellite has apparently ended in failure.

This grievous blow to our already waning world prestige, one of the most humiliating failures in all our history.

Our Sputniks are circling the world. Now, with America's failure, it will not be able to stop the forward march of Communism.

After Vanguard, the pundits increased the intensity of their statements, warning us of our impending doom.

Ye, the Christian civilization that you and I know and love stands in greater danger today than it has in 20 centuries.

I believe the American people have to meet this threat with the same urgency that we would if this nation were in an all-out war. Unless we approach it from that standpoint, we may well go down the drain, as other great civilizations have in the past.

After the disaster, one thing seemed crystal clear: We could no longer keep doing what we had been doing. Life as we had been living it could not continue. As a nation, we needed to make major changes. Then, in an extraordinary moment, Americans looked inside and began to analyze ourselves, to ask what we had been doing, what had gone wrong, and what could be done to improve it.

Somehow there has to be sort of a switch in concentration it seems to me in this country. I think we have to decide whether we want the super fancy kitchen and 500 horsepower under the hood or whether we want to match the Russians.

Are we mastering science, or is science mastering us? That's a serious question. Because science dominates so much of our life.

Individuals across America from the left, the right and the middle began to speak out, saying we had been misdirecting our scientists and engineers, wasting their brain power on useless frivolities, like designing bigger tail fins and plush carpeting that was whiter and brighter.

I'm not a scientist myself. I don't speak the technical language of scientists. When the scientists talk, it doesn't seem they are talking my language, either. Who is going to bridge that gap?

I have created a new office, an office called the Office of Special Assistant to the President to Science and Technology.

President Eisenhower took the lead in this internal examination and formed a scientific advisory team headed by Dr. James Killian that would report directly to him. The team was charged with finding out what we were doing wrong, and with doing whatever was necessary to refocus America on the importance of science and scientists.

My scientific advisors place this problem above all other immediate tasks of producing missiles, of developing new techniques in the armed services. We need scientists. In the ten years ahead they say we need them by thousands more than we're now presently plan to go have.

Tonight I want to talk to you particularly about this business of education. When I say education, I mean the problems of education.
>> Each night on TV leaders said that it was our educational system that failed us, and that we were all responsible. Our parents, our teachers, our administrators, even our students.

>> It seems to me we've never been in a greater mess in our lives, as a nation.

>> And we adults started questioning our educational system. How come the Russians had scientists and engineers that could do these things and we didn't?

>> What we've got to do is start right in the high schools and toughen up our scientific education so that we can produce those productive, creative people that we need so badly.

>> The American people must strengthen their educational system if the safety and the security and prosperity of this country is going to be maintained.

>> We have to try at the root of the difficulty. It's about educating the whole population of 170 million people.

>> If I may put it this way, our whole hope for survival is through education.

>> We must concern ourselves much more than we ever have with the training of our children's minds.

>> And so, the finger of blame was being steadily pointed at education. President Eisenhower led this national self analysis and asked Americans to change how our young people were being educated.

>> To scrutinize your school's curriculum and standards. Then decide yourselves whether they meet the stern demands of the era we are entering.

>> Improving how and what American students learned was going to be quite a challenge for many reasons. And for one reason especially: The baby boom.

>> Babies all over the map.


>> The post-World War II rise of the middle class had produced a huge number of babies. The largest generation in world history. All of these young people had been causing a huge overcrowding before Sputnik, and schools had been straining to the breaking point.

>> Your child's school nearly doubled its enrollment. The result: Classroom shortage.

>> There weren't enough classrooms and desks. They gave my boy half a seat.

To give every student some kind of education, many schools had resorted to teaching kids in shifts students sat at their desks for just two hours and then went home. And other students replaced them at those same desks, up to four times a day.

Classes met wherever there was room, even in barber shops. The baby boomers were stressing the entire system. But this was hardest on the teachers. Overworked and underpaid, just when we needed more of them. Many teachers were quitting.

>> With deep regret I hereby submit my resignation as a teacher in the school system for the forthcoming year for reasons ...
Teachers tried to keep control of classrooms of 30 to 60 students and were forced to spend more and more of their time just being disciplinarians.

Keeping discipline had become one of the biggest chores of the crowded classroom.

Mike, Fred!

And those that persevered resorted to teaching their huge classes of students by rote.

And so to control the crowd, to hold their attention, miss Roberts was forced to return to whole group instruction, teaching the mass instead of the individual, teaching by rote.

1, 2, 3, 4, put your feet on the floor. 1, 2, 3, 4 ...

Teaching no longer stimulating to the students or the teacher.

The slow learners aren't getting the attention they need, and the bright ones are bored.

And it gets worse every day. But for the time being, we've got to live with it, doing the best job we can.

Even if it's a bad job?

All we can do for the present is try the best we know how.

To leave no stone unturned in our self-examination, leaders traveled to Russia to look at their educational system, to see what they were doing that was different.

What we found, shocked us.

30 years ago we had six times as many scientists and engineers as the Soviet Union. Now their colleges are turning out twice as many technical people this year as ours are.

In the Soviet time, the science was a priority in the society. It was not the movie star, it was not the rich man. There was no rich men there. You have to be scientist.

We learned that Russian kids went to school six days a week; that their school year was 213 days long, compared to 180 days in America; that every Russian kid, boy and girl, was required to take math and engineering. Russian students had up to four hours of homework a night, where the average in America was just 30 minutes.

The top notch minds are attracted to the physical sciences and mathematics. Their skills are so highly valued that no expense is provided in providing them with excellent technical facilities.

Take something like a Russian satellite to put the finger on what's wrong with our education.

We need scientists. We need technicians, we need mathematicians. There is no doubt about that.

The community is awake now. I think they're going to try to do something. They are all excited about science and math. It's been taken for granted for so long, now suddenly, it's back in the spotlight again.
Education was in the spotlight. And the lessons we took away from the Soviet system were plain and simple.

We've got to do something, and we need an educated population in science to be able to do this. It was like somebody slammed on the accelerator, and all of a sudden everything was open for discussion and examination.

We'd come face to face with the realization that schools and survival are inseparable.

The time has come for a change.

We have to reorganize your schools.

Within just months of the failure of vanguard, America began to do something remarkable, something that few other nations would have been capable of. We began to come together, to become unified in our determination to fix what was broken.

We don't have an adequate education program in any of our schools.

Are you satisfied? Are you really satisfied that your school and your community is doing all that it can do for these youth?

Thousands of children are getting a shoddy education.

The time has come for America to realize that our Citadel now is the intelligence, imagination and curiosity of the trained mind.

The American people must improve their public schools, to make the nation strong to meet whatever threat may come.

Each citizen should do what we can to strengthen American education, to make the position and the prestige of the teach you are understood. This I think they can do and they must do.

We were on a national mission, a mission that is today referred to as the Sputnik moment.

The search for an education which will develop the full potentiality of every boy and girl. We had to find the resources to pay teachers, and we needed to enlist more of them. The number of students per class had to be reduced, more buildings had to be built, and the techniques teachers use to teach kids had to change radically, and change they did.

Yes, jack, the vacation will soon be over and you'll be going back to school.

When students returned to their schools in the fall of 1958, what they found was very different from what had been there before. The pressure was on. Americans were redesigning their entire educational system and asking students to take their studies much more seriously, for the defense of the country.

We used to laugh and say: Well, the Russians might have launched Sputnik, but the United States is launching us, because in all of these new programs that were in the school. And we all just jumped into it.

It was just like an avalanche, because the response of the United States was to institute this huge science and technology enrichment program.
In every classroom and in every course of study, a focus on science and engineering and math was being encouraged.

Science is fun. It helps you to know and to appreciate. In the study of science is found the most useful and satisfying knowledge of man.

People were encouraged to take physics and geometry and chemistry.

And there was an immense importance placed on this, almost a stigma if you were going into those things.

An atmosphere which removed the egg head stigma. Scholastic achievement is now recognized and respected by both the students and adults.

How do I get high grades? I work for them. I'm not going to school just to put in time; I want to be somebody.

And it was all heavy duty college prep mathematically based, we're going to train scientists. And the curriculum went that way, the courses became very difficult. It was a revolution, it's going to be tough.

We were just loaded down with all kind of books and new classes and homework.

For many years I'd just been able to drift through school. I never did homework until my junior year in high school and all of a sudden I was hit with this. It sort the rocked me.

It used to be I could get through chemistry and physics, you could slide through, the coach will let me through. All of a sudden this wasn't that way anymore. All of a sudden it was like they were looking for something.

What did you get in chemistry?

I had a 79.

Holy mackerel. You've got to get those grades up, if you expect to go to college. What are you going to major in?

I hope to major in science.

Science? With the grades you've been getting in science -- listen, is football interfering with your studying?

I hope not, Coach.

You must have those grades up, definitely. It's either studies and football or just studies alone.

Sports mattered less. Science mattered more.

Why study science? Study science because you and the Bettys and the Joes and Jills and Janes all over the country will find in the study of science a richer, more rewarding life.

The National Science Foundation came out with a whole science and math program. There were enrichment classes for mathematics and physics and chemistry. I was just caught up with all that.
Science had been defined with a small S. In biology this meant dissecting frogs; in mathematics, learning a series of equations; the same with physics. Now science was broadening. In every area of study, a focus on science was becoming a critical part of what students had to learn.

So that you can heal the sick, so that you can build the bridges and buildings and highways of tomorrow, so that you can teach, inspire and encourage those who come after you. All these and more require a basic knowledge of science.

A course that boys took, shop, had changed. Here's how it was.

It's fun to do things that come out right.

Here's what it became.

Here the task is to build a transformer and test its application to electromagnetic principles.

A course that girls took, home economics changed. Here is how it was.

It would be a minor tragedy.

Here's what it became.

In home economics, the girls plan nutritious and economical menus. Arranging different food budgets, they check price lists and newspaper advertisements.

Educators were changing the basic ways that students learned.

We are attempting to find out how to use teachers best in the classrooms.

Students who previously learned by repetition and memorization were being pushed to think for themselves.

Good teachers, challenging students to think for themselves.

Individualized studies now demanded work at home that took more time and concentration. Parents were telling their children that it was each student's responsibility to grow into a useful adult, to become an engineer, a scientist, a mathematician or doctor. And finally, women were being encouraged to become scientists.

Judy Messer, future lab technician. Mary Lewis, she likes science and -- who knows? Celia Mortimer, fascinated by nuclear physics and hopes to make it a career.

Now it seemed important to be a scientist and engineer and get in on all this work that was going on.

Today, students carry their interest in science lessons beyond the four walls of the classroom. They see the need to understand the complex scientific ideas of the world around them.

Teachers focused boys and girls on scientific ways to examine life, inside and also outside the classroom.

Students take part in science programs, science clubs, they go on field trips, see films about science. The wide world of science waiting for investigation.
The ultimate in do it yourself projects for the homework shop of 16-year-old Curt Golden, Arthur the robot.

Individual American kids by the thousands began to create science projects on their own.

Victor Scheinman, 16, the idea, a device for printing a spoken letter. A challenging idea. He went to his science teacher to outline his theories, his plans and his problems.

Tom Delaney, wants to be an electronics engineer. Right now he's building his own rocket.

More and more teenagers are passing up rock-n-roll for a rocket roll.

At Camp A.P. Hill, Virginia the Army plays host to some guest rocket experts, amateurs, teenagers all. More than 100 high school boys showed up on the firing range with rockets designed and built by themselves.

Rocket boys, as they were called, to beat the Russians, were going to try and build and launch homemade rockets.

I started mixing my own homemade rocket fuel. My mother was very supportive of my experiments. She gave me a piece of her vacuum cleaner extension, and I had some fins that I cut out of sheet metal welded to these things. I made nozzles out of plaster of Paris and would take them out into the desert and launch these things.

They were not rockets, they were pipe bombs with fins. It's amazing I didn't kill myself. They were very, very dangerous, but I was completely fascinated and was doing my best to get rock either as high as I possibly could. I had two-stage rockets. My goal was to get a rocket into the stratosphere, if I could.

This is one of my early rocket experiments. Notice the plaster of Paris bulkhead, welded steel fins, plaster of Paris nozzle.

I gathered in some friends that had been friends all my whole life, and we decided we were going to form a club called the big creek missile agency, and we were going to build rockets. We had absolutely no clue on how to do this. We started to research rockets, we read everything we possibly could. Our teacher, Miss Riley, got involved and she got us a book called principles of guided missile design, which required a working knowledge of calculus and deferential equations. And I was having trouble with algebra at the time.

We blew up a lot of things. We dodged a lot of shrapnel. Ultimately we ended up building professional style rockets that were flying literally miles into the sky. We just felt someday what we were doing was going to help the United States to be number one in space. We wanted our country to catch up with the Russians, and we wanted to just keep on going forever.

The Sputnik moment was provoking amazing changes. And one of the most important changes took place when Congress, pushed by Americans of all stripes, provided a massive increase in funding. Science, math and engineering education would receive an infusion of more than a billion dollars, with huge amounts of financial aid provided for scholarships so students could attend colleges and graduate schools.

The government put tremendous amount of money into revamping the physics and chemistry and the new texts came out, the new courses came out, lab manuals, all paid for by the government.
And a whole series of national scholarships were announced, and money was flowing into the universities for the purpose of getting kids into that arena. I was one of the fortunate ones.

The new law was called the National Defense Education Act. The name made clear the connection that everyone felt: Education was critical to our national defense.

We can no longer depend on air power, whether it be bombers or guided missiles. We must depend on brain power. We must depend on the ability of our educational institutions to cultivate that brain power so that it maybe used as well as it possibly can be.

Through the years we've taken education for granted, even grown neglectful. All around us things have been changing. And now suddenly schools have a lot to do with national security and our survival. Now there is trouble and we realize that the trouble is with brains and training and technology.

If this nation should, unfortunately, be called upon to defend itself, the real front line soldier would be the scientists with the test tube and the Geiger counter.

The National Defense Education Act created thousands of high school science laboratories with tools that went way beyond the traditional microscope.

The use of a videotape recorder and a kinescope, we are able to provide many film clips, many kinds of materials that are just not available to the classroom teacher.

New funding brought television to the classroom, and television brought the world to students and connected students to the world.

Involvement? Interest? Judge for yourself. These boys are at Cape Canaveral helping with the countdown of another rocket. The excitement heightens, but a clever science teacher has turned this program into a lesson in propulsion, gravity and atmospherics.

Language labs, utilizing electronic apparatus and minor theories of learning, are especially important.

Gone were the studies of Latin and Greek. In addition to French and German, new language laboratories now taught Russian and Chinese.

The universities who never taught Russian before were encouraged to institute Russian courses. And in that first year, after 1957, there were more people applying to learn Russian in this country than I'd ever seen before.

The Sputnik moment had provoked an amazing time in America. Thanks to the National Defense Education Act scholarships, millions of men and women went to college to study scientific and technical courses. They went on to attack problems and uncover opportunities in every area of life. And they initiated American-led revolutions in electronics, computer science, psychology, environmental and Earth sciences, and they created and built the Internet.

The idea of building this network and being able to share resources and to interact with each other and get programs to talk to each other was enormously fascinating. It was very exciting.

Newspapers, magazines, mail and messages will be sent through the air at lightning speed, and reproduced in the home.
The space race that began with Sputnik ended in July 1969, when Neal Armstrong and Buzz Aldrin landed on the moon.

One small step for man, one giant leap for mankind. This has to be the proudest day of our lives.

America had caught up and won. That race was now over. But what about today, and more importantly, tomorrow? Is there another Sputnik waiting for us ahead? Perhaps just around the corner? Or perhaps is it already here? Today in many ways America again leads the world. But as the old saying goes, those who do not remember history are bound to repeat its mistakes.

It pays for us to reconsider the Sputnik moment and how every American felt a need to take personal responsibility and to act.