

HAWAII: LOOKING BACK FROM THE YEAR 2050

Presented to the Power Breakfast

Plaza Club

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It is a pleasure to be here on this bright sunny morning in the year of our Lord 2050. It is a special pleasure to be addressing this prestigious group in person. I know that it would have been more convenient for you to meet by VideoCam, seated comfortably in your own homes and offices. But I am old fashioned, and I still like to see people in person, rather than in holograms. So again, I thank you for the honor of your physical presence.

It is particularly appropriate to be presenting this talk here today on board the John P. Craven III, the largest and most impressive of Hawaii's floating cities. Dr. Craven carried out the first conceptual, engineering and economic studies on floating cities eighty years ago at the University of Hawaii.

It is a little-known fact that the first breakthrough in the introduction of ocean floating platform technology resulted from a severe political problem: the location of a convention center. Back in the 1980's, visitor industry officials sought the establishment of a convention center to compete better for conventioners, who spent more per person than the average visitor. Unfortunately, every possible site on land had strong opponents or problems. The military would not give up Fort DeRussy; the City would not give up the Zoo; thousands of golfers would not allow the use of the Ala Wai Golf Course; and the State would not give up the piers or planned park space at Fort Armstrong. A small convention center was built at the International Market Place, and another at the old Aloha Motors site, but both of them were too small and the demand for a large one still remained.

That is how the Richard Kelly-Mary Jane McMurdo Ocean Floating Convention Center became a reality. For nearly thirty years, it floated a few miles offshore Waikiki. Some of you here today may remember seeing it as a child. It was easily accessible by semi-submersible ferries, which could carry 500 or a thousand

people from their hotels to the ocean floating convention center in only ten minutes.

We might still have only one floating platform—the Kelly-McMurdo Ocean Floating Convention Center— had it not been for several factors. Those factors include the Great Tsunami of 1998, the Drivers Revolt of 2009, and the rise in sea level which resulted from the greenhouse effect.

As for the Great Tsunami, it severely damaged the Waikiki and Honolulu shorelines on Oahu. After the tsunami passed, it was noticed that the Kelly-McMurdo Ocean Floating Convention Center was virtually unaffected. A tsunami is a wave which rolls through the ocean and wreaks no damage until it reaches shallow water and runs up on land. The Great Tsunami caused the Kelly-McMurdo Ocean Floating Convention Center to merely rise up on a small swell, and then settle back into the ocean. This lesson was not lost on the owners of shoreside property which was destroyed by the tsunami. They began to seriously discuss plans for ocean floating hotels, homes, and office buildings.

The second factor was the Drivers Revolt of 2009, one of the least attractive events in our history. Traffic jams increased in the 1980's and 1990's, even with the addition of H-3, carpooling, vanpooling, high occupancy vehicle lanes, fixed rail, staggered working hours, the establishment of a second city at Kapolei, ferries from Hawaii Kai and Ewa Beach, and an increase in the number of people working at home with computers and later Videocam. Even with all these important efforts, at the time of the Drivers Revolt in 2009, commuting time was an average two hours each way, or four hours per day.

As you know, on March 3, 2009, Pat "Big Boy" Smith, who had been stalled in traffic for three hours that morning, turned off his engine, got out of his car, and persuaded approximately 40,000 other drivers to do the same. Having turned the freeway into the world's largest parking lot, they marched on the capitol, and demanded a solution to the transportation problem. It was several days before the drivers could be persuaded to return to their cars, so that traffic could move again.

One of the solutions to the traffic problem was the introduction of hovercraft. Hovercraft ride on air jets, a foot or two off the ground. They do not require smoothly surfaced highways, but can travel over anything roughly horizontal. Soon after the Drivers Revolt, hovercraft were used on highway shoulders, old cane roads, and designated open fields. Later, the complete conversion from gasoline automobiles to hydrogen-powered hovercraft was accomplished. Roads rarely need to be repaired, because hovercraft can sail over bumps and potholes without the slightest

disturbance. We've saved several billion dollars in road repairs over the last 40 years due to this change in vehicles.

The other traffic solution, of course, was to move more of our people out on the water on floating cities, so that they could use the ocean as a highway, and approach the downtown district by water instead of by land.

The third factor in the migration to the sea was the greenhouse effect. The carbon dioxide from fossil fuel combustion was trapping heat within the atmosphere, preventing it from radiating back into space. This was causing the temperature on Earth to rise, and the increased temperature was melting portions of the ice caps. This threatened to flood the world's coastal cities.

It was advisable, therefore, to drastically reduce the use of fossil fuels for energy generation. The first push was toward nuclear fission. After the Three Mile Island incident in the United States in 1979 and the disaster at Chernobyl in the Soviet Union in 1986, it was clear that the risks of nuclear fission were high.

This focused world attention on conservation, as well as a more rapid shift to renewable energy sources. Conservation methods and technologies were marketed with great effectiveness in Hawaii, where a State government official, Howard Wiig, became a sort of energy guru, and sold tens of thousands of copies of his book on conservation, titled *The Wiig Way*. Hawaii exercised substantial world leadership in renewable energy development at the end of the last century. Hawaii was electrical energy self-sufficient by the year 2005, and with major advances in the manufacturing and handling of hydrogen, had achieved liquid fuel self-sufficiency by the year 2020.

Liquid fuel self-sufficiency helped us in another way. It is hard to believe, but in the 1980's and 1990's, there were island-wide electrical blackouts on Oahu. Nearly two-thirds of all the electricity used on the island was generated at a single oil-powered plant at Kahe. If something went wrong at the plant, or something happened to the power lines coming out of the plant, the whole islandwide system could fail.

This risk was virtually eliminated at the turn of the century by the commercialization of hydrogen fuel cell technology by the researchers at the Dudley Pratt Alternate Energy Institute. As you know, fuel cells convert chemical energy directly into electrical energy. Hydrogen fuel cells are quiet and safe, take up little space, and emit only water as a waste product. There are now hundreds of them

throughout our neighborhoods, civic centers, hotels, industrial parks and farms, providing half of our electrical energy needs. The system is so decentralized now that a problem with one plant, or one power line, has little or no effect on any other plant or power line. We have not had an islandwide blackout since 1991.

Even with a reduction in fossil fuels, by 2015, the sea level had risen one foot, and the trend was ominous. Public and private planners were faced with major shoreline stabilization projects to protect Waikiki, Honolulu Harbor, and other coastal areas. These projects became so expensive that it was decided to move more and more coastal facilities out on to the sea instead.

This move virtually solved a major social crisis of the late 20th century: the high cost and short supply of housing. By the turn of the century, it was clear that homes and apartments on floating cities would cost only half as much as those on land, for the simple reason that no land had to be purchased, and ocean leases were less expensive than land leases. In addition, the modular construction of floating cities made them cost-competitive per square foot of built space.

Today our ocean floating cities support most of our hotels, and nearly one fourth of our current population of 2 million citizens. We have 30 floating cities, each powered by OTEC, each with a desalination plant, each growing vegetables and harvesting fish, and each with a vibrant business and residential community.

I would be remiss if I did not mention another floating city with its vibrant community, and that is The Lou Herman. Lou was a scientist at the Marine Mammal Laboratory in Honolulu 65 years ago. He developed special languages for communicating with dolphins. As this communication was perfected, specially tutored dolphins were moved to the open ocean, where they assisted scientists in their marine research. These trained dolphins reported to the scientists on the objects and events they encountered in the underwater world.

To the amazement of the scientists, untrained dolphins from the open ocean began appearing and assisting the trained dolphins with their tasks. The scientists discovered that the trained dolphins were recruiting other dolphins and then whales, and were acting as interpreters between the scientists and the untrained animals. It was then, in 2012, that the scientists obtained funding from Blue Peace, launched a large ocean floating platform they called *The Lou Herman*, and moved into international waters around Hawaii to expand their research on dolphins and whales in an ongoing community of interacting scientists, whales, and dolphins.

Over the next twenty years, the scientists established communications with hundreds of whales and dolphins, giving them names, and placing transponders and communications devices in their backs for satellite tracking and signaling. The talking chief of each pod of whales adopted the name of a 19th century figure such as Gladstone, Disraeli, Bismarck, Webster, Clay, Lincoln, and Meiji, or the names of local 20th century heroes of internationalism such as Sumida and Smyser. Clicking and singing, the whales and dolphins communicated with scientists on *The Lou Herman* as they swam throughout the Pacific. One thing they communicated was the movement of all vessels, including military vessels, especially submarines.

When they were ready, the scientists approached world leaders, disclosed a portion of their information about the location of intelligence devices and their ability to track vessel movements, and presented their demands. This brought all the superpowers to the table to sign the Honolulu Humpback Treaty of 2031. This treaty has resulted in far more safety at sea for both humans and whales.

Under the terms of the treaty the whales agreed to provide aid to human beings in peril on the sea, and to provide information on ocean conditions such as storms or tsunamis which might hurt human beings on either land or sea. Furthermore, they agreed to systematically map the ocean floor, by carrying sonar scanning devices back and forth through established matrices, recorded by *The Lou Herman*.

In return, it was agreed by the superpowers that whales and dolphins would be left alone. The intentional killing of a whale or dolphin by any human being would be punishable in human courts of law as murder. Furthermore, any vessel which attacked a whale or dolphin would be arrested, and if it refused arrest, the vessel would be destroyed. Finally, it was agreed by all parties that *The Lou Herman* would henceforth be an independent nation, with full diplomatic recognition for its own government and sovereignty over its own property, so long as it remained on the high seas in international waters. And so, it carved another niche in history as the first floating city to become an independent State.

It is interesting to compare the economy of our State today with our economy 65 or 75 years ago. In 1985, for example, tourism accounted for one third of our Gross State Product, the military was about one sixth, and agriculture was about one twelfth.

Today, the "experience industries" account for about 50 percent of our economy. These industries include tourism, entertainment and education. Energy, including renewable energy and liquid fuels production, is about eight percent. The

military establishment accounts for about seven percent of our economy. Research and technology industries, including biotechnology and ocean technology, are about six percent. The media industry, located mostly on Kauai— known as "Hollywood, Hawaii"— is about four percent. Marine mineral mining is about three percent; agriculture is about three percent; space launching is about two percent; and aquaculture is about one percent. These industries total 84 percent of the Gross State Product. Most of our business is international, and is conducted by small firms.

Agriculture has survived, with premium sugars, pineapple, guava, papaya, Kona coffee, macadamia nuts, square watermelon, aloe, jojoba seeds, kukui nut oil products, and so forth. Sugar has been written off every decade or two since 1835 when the first plantation was established at Koloa on Kauai. While total sugar production has declined, the production of energy, liquid fuels, chemicals, and by-products from sugar has kept the industry going.

Probably nobody here today would recall that orange juice was the accepted breakfast drink of the 20th century. Now, of course, guava juice is the international breakfast drink of choice. Guava juice, guava concentrate, guava crystals, guava popsicles— the world has fallen in love with guava. The "I Get Up with Guava" campaign, which was run in 1996, featured President Cuomo serving guava juice for breakfast at the White House.

I don't believe we would have become so successful economically, had it not been for major changes in our educational system. These changes have supported our innovative economic growth.

By the 1980's it was clear that education was the foundation of success in our economy. In a knowledge economy, we needed creative thinkers. Many people believed that our schools simply were not producing creative thinkers.

Two major camps debated this one for a decade. I shall call one camp the traditionalists, and the other camp, the individualists. The traditionalists maintained that students needed to learn discipline in school; their talents and abilities should be identified early, so they could be sorted out in advance for future employers; and they should be tested regularly on standard information which all must learn to graduate and be certified for work.

The individualists disagreed. They argued that the classroom, where students sit in rows and face forward to listen to the teacher, was good training for the 19th century, when students were being prepared to go sit in rows at factories and do

boring, repetitive work. By the end of the 20th century, however, factories were no longer the major workplace of our people, and economic growth and social success depended not on uniformity, but on creativity, innovation, individual responsibility, and effective cooperation. For that, each student needed individual attention, the freedom to grow at his or her own pace, the opportunity to learn by doing, and the challenge of accomplishing desired goals through group activities.

The first major breakthrough in the debate came in the 1990's at Mid-Pacific Institute, which was the first high school in the nation to shift from a focus on courses to a focus on integrated research projects. Mid-Pac was the first to establish a tutorial system which provided each student with a private tutorial each week. Mid-Pac was the first to give credit for what was ironically called "extra-curricular activities"—group activities such as drama, student government, service clubs, and team sports—which help young people learn cooperation and coordination to achieve as groups those things which cannot be achieved as individuals. Mid-Pac was also the first to train and provide to each student a mentor, usually an older person from off-campus, who had some wisdom and a hobby or project to share with each student.

As fortune would have it, Mid-Pac was the only secondary school prepared for the impact of the armstrap cellular computer/telephone. With an armstrap compuphone, any student anywhere in the world could dial anybody, or could dial into any information system, and talk to people or to computers, and get any auditory or visual response to specific questions, at any time, day or night. There were already international networks of information, such as EduComp, EduCalc, InstaLibrary, and SpeedFact. This meant that anybody with a compuphone could track down any information available to anybody in the world, usually within a few seconds.

This drastically changed the role of the teacher and educational institutions. Teachers were no longer needed to provide information. They became Masters, or counselors, coaching and encouraging and guiding the research and learning of their students. Masters share their wisdom, ethics, values, and philosophy. They focus on the ability to think critically about information and how to make constructive decisions.

Our schools and universities are still important, because that is where students interact with Master teachers. Also, human beings are social by nature, and the formal curriculum today is focused more on human relations skills and social cooperation. Our schools and universities provide places for group activities such as sports, drama, clubs, joint projects, and the like. Schools also provide special equipment and laboratories too expensive for each student to have at home.

The work of the Chaminade Leadership Institute, beginning in the 1990's, promoted the concept of the servant leader, as the leader who focuses on identifying the needs of others and helping them to meet those needs. Chaminade University's emphasis on family and the building of authentic human communities has had a number of favorable impacts. The most important impact has been the dramatic increase in happy marriages, and the steady increase in the number of extended families. As the work week has dropped to 25 hours, spouses have had more time to spend with each other, and with their children and relatives.

The vast increase in the number of people trained in negotiation and mediation at the Chaminade Leadership Institute and elsewhere has also enhanced the community's ability to solve problems in a "win-win" fashion. The polling of all community members on current issues, which takes place each Monday by computer, has also kept our political leaders closer to the mood and desires of the people.

Our health has improved, largely due to the spread of knowledge about nutrition, and the use of NutriScan. It is painful to note that millions of birth defects, heart attacks, and deaths by cancer could have been avoided 75 years ago, if more people had studied nutrition and acted on available information. Now, of course, with NutriScan, it is possible to analyze each individual's unique genetic code and nutritional requirements, so it is possible to overcome the effects of genetic deficiencies, avoid food which the body does not handle well, and take the precise nutritional supplements which are needed. While people do not always act upon their NutriScan results, we have greatly improved our health. Life expectancy is now up to 106 for Hawaii and 103 for the nation.

Before I conclude today, it is perhaps a good idea to look forward for a moment, to the year 2100. There are, of course, new problems to be solved.

For example, concern has been expressed that the space launching business is threatened by new technology. It is true that planning has begun on the space elevator, first proposed in the 1960's by Soviet engineer, Yuri Artsutanov, and popularized in the 1970's by the writer Arthur C. Clarke. It appears that a space elevator would make rocket launching obsolete. Perhaps by the year 2100 there will be an orbiting band around the equator, like one continuous space station, with cables reaching down to Earth. If so, we will be able to ride up and down on these cables in spacecars powered by electricity. This would certainly be much cheaper than rocket fuel. It has been predicted that millions of people per year would use such a system.

This is of obvious concern, since space launching is now one of our largest industries. However, the demise of rocket launching has been predicted before, and I say we shouldn't panic. Instead, we should lobby heavily in Washington and at the United Nations so that one of the space elevators will be located at Ka'u on the Island of Hawaii. The supporting infrastructure and supply systems are already there.

There is also concern that our marvelous observatories on Mauna Kea and Haleakala will soon be put out of business by the major telescopes being planned for the Moon. It is obvious that telescopes on the Moon will be far superior, because the atmosphere of the Moon is a vacuum and there is no atmospheric distortion such as we have on Earth. However, I am not the least bit worried about our observatories. Telescopes on the Moon can study planets; ours could be more fully devoted to the search for extra-terrestrial life.

In that regard, I would like to know just exactly what is happening at SS 433, a star in the constellation Aquila. SS 433 is ejecting in opposite directions two narrow jets of gas at a speed hundreds of times faster than anything else in our galaxy. The energy required to power these jets is estimated to be a million times the output of our own sun. Are these gas jets natural, or artificial? If they are artificial, what is the nature of the alien intelligence which created them? And most important, why is SS 433 moving in our direction?

In conclusion, we have grown and changed over the past 75 years. We have accomplished much, and we can be proud of those accomplishments. And yet, our accomplishments have only opened our eyes to the potential of the human organism and the life and resources of our planet. Our agenda for action is still full, and the items on the agenda are of great importance. I hope that a historian speaking to this group in 2125 will be able to say as many good things about the next 75 years, as we are able to say about the last 75 years.

Thank you.