

The Future of Water in New Mexico

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For those of you who aren't from New Mexico, welcome. We are very, very, happy that you are in our beautiful state. My wife who is a native New Mexican is always calling New Mexico, instead of the Land of Enchantment, the Land of Entrapment, because if you are fortunate enough to spend any time here, you will get entrapped by its beauty and you'll want to stay.

We are very proud of Sam Fernald as well, because in addition to being director of our state's water resources institute, that just so happens to be located at New Mexico State University, he is a distinguished professor in the College of Agricultural, Consumer, and Environmental Sciences. We are proud of Sam and appreciate the job that he is doing for the state of New Mexico's water.

I'd like to introduce one other person that if you don't know him, you need to get to know him. He is the Associate Dean of our Agricultural Experiment Station, Dave Thompson. Dave takes care of thirteen experiment stations that are scattered around the state. Although they are called agricultural experiment stations, they are experiment stations that make sure that any research that anybody comes to us with, gets done. Dave is open to any comments and suggestions.

I'm an economist by training so I know nothing about water other than occasionally I like to put it in whiskey. I can't help you much on the technical side of water at all. I can't tell you about the future of water because I am an economist. You saw that study that came out not too long ago about when you go to graduate school in economics they always try to make you take a class called econometrics, which is nothing more

than throwing together a bunch of math, statistics, and economic data until the data gives you the answer you want. That is econometrics. When you do that, you naturally start thinking, well, I've massaged this data enough to where I think I can forecast the past, and so now I'm going to forecast the future. All econometrics professors tell us you can't forecast the future. Do not try to do it! But we cannot help ourselves, so we do it. They know we are not going to be able to help ourselves, so they always say this: If you are going to forecast the future, do not do it! But, if you are going to, and we know you will, give people a number or give them a date, but do not give them both. I think the interest rate will come to 11 percent. I'm not going to tell you when that will happen. I think something of economic significance will happen in 2013. It's not very helpful, but it's my profession, OK?

Despite that, of the whole bunch of us, there are some who gave people a number and gave them a date. The problem with that is that you can check our accuracy, and somebody had the gall and the audacity to do that. They went back for the last ten years, and found 7,000 right off the bat—7,000 forecasts where we gave people a number, and we gave people a date, and we forecasted everything from stock prices to the stock market to the unemployment rate. You name it, we forecasted it. And the accuracy rate? There were 7,000 forecasts, for ten years, and it turned out tragic—only 47 percent were correct. Do you understand what I have just told you? You can flip a coin, and beat us by 3 percent. I tend to make fun of my profession, but folks, trust me, every profession that we have checked, including healthcare, military, you name it, what do you think their accuracy rate is about

the future? We don't know. So I am going to frame the future of water just a bit differently for that reason, because we don't know the future.

I love George Patton for many reasons. One of the things I love about him was this, he said, "No plan survives contact with the enemy." You can bet that as soon as the bullets start flying, guess what? You can kiss those plans goodbye. He also said this, "No good general ever goes into a battle." This is because they found out that we cannot predict the future, but we can prepare for it. The way you prepare for it is basically you imagine it, think about it, and you work on it because, if you do, when the future comes and there is not much of a forecast, you know how to prepare for it.

Today, I want to start with energy for just a second. Energy is an interesting one. The first class I ever had in the 1960s, was science class I never will forget. The teacher had the audacity to stand up and say, "At the current rate of consumption of gasoline, there will be no gasoline in 1980." I was thinking, I don't even have my driver's license yet! So what has happened to energy consumption since 1960? [Shoots hand up.] What has happened to the proof of known reserves of fossilized fuels? [Lingers a second and then emphasizes hand still upwards.] For three years, the number one oil and gas producing state in the United States has been North Dakota. Huh? Aren't there like three people in North Dakota? There are three very rich people in North Dakota. If you take that gas and oil reserve that they are tapping out of, and overlay that on top of Saudi Arabia, the largest proof of known oil and gas supply, it is slightly larger. Isn't it interesting as well that engineers tell us that below that bulkhead is another pool that is estimated to be three times larger? Then, somebody finally came out with a forecast that said North America, including Canada, the United States, and Mexico, now have the largest proven amount of oil and gas in the world. The estimate was—get this—was one trillion barrels of oil, but it could be as high as six-and-a-half trillion barrels. What?!

Here is the takeaway: go back ten years, and look at the annual reports by all the major gas and oil companies in the United States, and see if they had imagined a scenario that the United States would ever be energy independent again. You will find zero. They didn't even for the sake of the shareholders imagine that the world would ever be that way again. Wait a minute though, while they

were saying that, they invented horizontal drilling, and they invented parabolic drilling. They were taking drilling platforms and going from sixty people that operated them to smart systems and robotics with only fifteen people operating them, while drilling three times deeper. They did this all within the last decade. Not a single scenario had said we would ever be energy independent again. We just can't do it. Hmm. Pick those reports up today and you will find that every one of them now has a scenario that says we will one day be energy independent again. They differ by days. Oh, and if you count net energy value, we reached that two years ago. The United States exported more net energy value than we imported.

What I am trying to tell you is, do not feel constrained by your thinking of what water is. I think we should remove from our vocabulary grey water and wastewater. Gee, can it be treated? There is physical scarcity, and there is economic scarcity. Gee, under most of New Mexico, certainly under where the Ogallala is by the Great Plains, is the Triassic aquifer that has how much slightly saline brackish water in it? We have no idea! Gee, you think we could be able to do molecular genetics and make some crops through agricultural experiment stations that use some slightly saline brackish water and then guess what? If we have almost an unlimited amount of it—is water an issue anymore?

All that I am trying to say is, don't be an oil company and be constrained by water. Fifteen years ago I gave a presentation called, "Energy, Energy, Everywhere." Do not be constrained because there is going to be a bunch of it, there already is. Now let's figured out what the hell we're going to do with it.

The second thing that I want you to take away is this, and it happened in 2010. I had the opportunity to be in New York, at the New York Agricultural Historical Society, which was basically the premier event in New York for the meeting of agricultural people. The Secretary of Agriculture stood before the audience in 2010 at the New York Agricultural Historical Society and said, "Do you remember in 1980 when we were at this conference, and we were told that the number one agricultural producing area of New York is Long Island? This was because Long Island produced a large and significant number of geese, turkey, poultry, and a large number of potatoes. We were very proud of that. In 1980, however, guess what? There was

a whole bunch of people who wanted to buy mansions. So, all of a sudden, all of this prime agricultural real estate was being taken over for homes, and agriculture said, well, had to give it up. The highest value crop to grow is houses."

The Secretary continued, "I am very happy to stand before you as the Secretary of Agriculture of New York thirty years later in 2010 and tell you that the number one agricultural producing region of the state of New York is Long Island. No, we don't just produce a large number of common potatoes. We produce some very high value Inca Golds and Aztec Blues. We have a good wine industry, too. Yeah, we raise some geese, but it is for *foie gras*. Most of our turkeys are now free range." Agriculture did not only not vanish, it flourished when people understood that there were different markets and different ways to deal with it. All that I am saying about the future of water is, let's be creative. Let's not be constrained, and let's make it abundant.

I'll leave you with this, because it is one of the most memorable things that ever happened to me while I was at graduate school: An economist, a very famous economist from Boulder, Colorado named Kenneth Boulding—maybe you have read his works—I will never forget when I was a graduate student at Iowa State University and he was a visiting professor. He was this large man with glowing white hair and, well, just had a lot of stage presence. He got up there, and he got all of our professors that we thought were gods—because they have control of our lives—and he starts picking on all of these world class professors in economics and agriculture. He says, "I know what they are all telling you! I guarantee what they are telling you! The factors of production, the things that run an economy are land, labor, and capital. That is all there is, and they have big models to show it to you. They preach it every day, and they are wrong as hell! The only factors of production are two things: creativity and the persistence to get it done. That is all that has ever driven any society on the planet."

We do not have a water problem. We may have a creativity problem, but we damn sure don't have a water problem. Let's go make the future creative, and then let us as New Mexicans have the perseverance, and know that the world will come to be a little different, maybe even a little weird.

Thanks for coming to New Mexico, and thanks for being a part of this gathering.

