

**American Meteorological Society**  
**TAPE RECORDED INTERVIEW PROJECT**

**Interview of Werner Baum**

**Interviewer: Earl Droessler**

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**[AMS 50]**

Droessler: Werner, let's talk about your term as president of the American Meteorological Society, and your recollection of some of the events and affairs that were carried out by AMS when you were involved in helping the top position of the Society move forward.

Baum: As I'm sure you know, from your own experience, the one-year term really can be viewed in a different perspective. I think it was Vern Suomi who had one of the early one-year terms. That was before Pat McTaggart-Cowan's reorganization; the terms were two years. But it was Vern Suomi who pointed out that the one-year term is like the Hokkaido Express. You can't get much done in that time.

It really has to be viewed at least as a three-year-period: the president-elect year, the president's year, and year's past president, all three of which the individual sits on the executive committee. There really isn't all that much distinction between the president [year] and the other two. Your program really has to cover the whole three-year span. Furthermore, I think it should be clearly understood that I never thought that from a functional point of view, the president was really the senior officer. Certainly he was from a ceremonial point of view, but Ken Spengler was the one who really was the senior officer at that time. And he was the continuing stabilizing influence and who knew his business thoroughly, and was completely dedicated to his position, and who was probably more important—I'm sure he was more important—than any single president was or could have been.

Now, despite that, of course, presidents had some influence. But I think that influence depended in good bit upon the environment which existed at the time.

As I think back, the ballots were counted in December of 1975, so I became president-elect at the meeting in Philadelphia in January of '76, became president at the meeting in Tucson, 1977, and became past-president in a meeting in 1978 in Savannah, Georgia. The most significant phenomenon I think of those three years was that we were in the midst of the development of individual working stations, the bringing of the computer to the level of the individual, and the interactive process between man and machine as applied in meteorology. That had some profound implications that caused the Weather Service to be changing its mode of transmission of information. It caused the individuals to have

different requirements and it caused universities to have large cost expenditures for equipment.

The first McIDAS systems—an acronym for Man Computer Interactive Data Access System [Man Communication Interactive Data System-ed.], or something like that. The McIDAS system was coming into its own at that time. So it became necessary to have greater collaboration on the one hand among the universities, and on the other hand, we had problems about relationships between government and other users of meteorological information, particularly the academic community and the radio/television community. And a great deal of time and energy in my time as president went into that particular problem area. I initiated what are now biannual meetings of the department chairman and heads of Meteorology and Atmospheric Sciences, which are a joint venture of UCAR and of the AMS, which are held in Boulder, in October, every two years. The universities collaborate constructively and thereby save themselves big headaches and big expense. For example, UCAR now operates the so-called UNIDATA program, under which universities can pick up their data from satellites and process them, and the software is standardized and all kinds of things become possible that were undreamt of, as I say, twenty years ago.

Arrangements had to be worked out for the private sector to have access to the new method that the Weather Bureau was developing for the dissemination of information. Instead of the old teletype network, the Weather Bureau was looking forward to installation of electronic techniques, which has now been done. And I think that the interests of the various parties have been preserved. The AMS had to play sort of a catalyst role in all of this. I think that was the single-most consequential activity during that period of time.

Droessler: The American Meteorological Society was an important asset in the development of private meteorology in our country. I always thought it acted as a catalyst, as a mediation, and as a neutral ground on which the universities, the government and the private sector entrepreneurs could come together and work out some kind of reasonable practices and structures, and ways of promoting all three of these sectors. I remember during your period the difficulty that the broadcast meteorologist presented, you see, because they wanted to take off and take over everything the U.S. Weather Bureau had been doing for some time in radio. In the beginning of weather broadcasts on TV, don't you think the AMS played a very vital role there in helping the Weather Bureau ease itself into another framework, helping private meteorology get on and develop as a—?

Baum: Yes, absolutely. I think there was a potential there for some serious friction, political problems and kind of an open warfare between the government and the private sector. I think we were a significant factor in avoiding that, and in creating a system in which they're symbiotic. The National Weather Service now accepts as its primary responsibility the provision of severe storm warnings, hazards of various types, and of the general public weather forecast. I think the private sector accepts the responsibility of the specialized forecast and the TV people are another element to it;

they've accepted not modifying the Weather Bureau severe storm forecasts so as not to produce public confusion. I think they've reached an accommodation, which at this point appears to be a reasonable accommodation that everybody can live with, at least until there's some major changes of one sort or another.

I think the catalyst role of the AMS has been a very, very important one. As a matter of fact, a highly appropriate one. A lot of organizations like the AMS either become pure scientific organizations. That's not possible in the case of the AMS, because it's a mixed professional and scientific organization, and while a component of the membership has purely scientific interests, there's a component of the membership that has purely professional interests and they both need to be accommodated, so it can't be a pure scientific organization, like some that you can name.

On the other hand, it can't be a trade organization, nor a lobbying type of professional organization, if for no other reason that such a high proportion of its membership comes from the United States government, and various agencies in the United States government, that tend to be in competition with one another. It's very, very difficult for the AMS ever to take a position on any issue which is controversial in the political or bureaucratic world, so it has to operate as a catalyst. That's the role it can play productively. And I think it has played it productively.

Droessler: Again, has the ethical practice subject come up during your administration—was that an important task at that time, as the broadcast meteorologists started taking off?

Baum: Well, ethics as you know, Earl, has been an issue for at least as long as I can remember. I mean, I can remember I was on the council at the time ethics charges were brought against Irving Krick in the 1950's. Ethics has been a problem—it is a problem—which actually the Society has essentially abandoned—and it has had to abandon it because in the intervening years, the courts had put such severe constraints on what societies can do. Because they're afraid that things are done in restraint of trade, for example, rather than reading on ethical grounds.

So ethics has been a diminishing consideration within the Society. I think we all have our fingers crossed that people will remain ethical, and of course they're urged to, they sign a statement that they will when they apply for membership, but certainly in no sense can the Society, or hasn't been able to for some decades now, enforce anything in the ethics area.

Droessler: Werner, I think we may have finished with our discussion of the American Meteorological Society, and the activities surrounding your term as president of the Society.

I would like you to comment on some of the government agencies that were very instrumental in the affairs of meteorology. Let's begin with the Air Force Geophysics Research Directorate.

Baum: Okay, but before I get into that, maybe I should make some personal biases clear so that if anybody ever hears this or reads it in transcribed form, they can make due the allowances for the biases.

First of all, I am greatly indebted to the United States by virtue of the fact that they accepted me as a foreigner, and provided me with incredible opportunities and has provided me with a life that one could hardly have hoped for. So I'm strongly in favor of the United States government as a concept.

On the other hand, from a period of service in the government, as deputy administrator to Bob White of the Environmental Science Services Administration—which was the intermediate stage between the Weather Bureau and the National Oceanic and Atmospheric Administration—from that experience, and from having served on various advisory bodies and so on, I've become very negative about bureaucracy, and it has certainly mushroomed incredibly in our lifetime. So I have a prejudice against bureaucracy, and that may show in whatever I say.

Now, things were different in the 1950's, let's say, than they are now. Vastly, vastly different. GRD [Geophysical Research Directorate] was there at a very critical time in terms of the evolution of academic meteorology in the United States, and it supplemented, if you will, ONR [Office of Naval Research], in a very positive and constructive fashion. It also had the advantage of having a relatively non-military orientation. I don't know how that came about in the Air Force at the time. But while it certainly was never as "pure" as ONR was, it certainly was not an applied military operation, and there was a great deal of freedom available to individual investigators in terms of how they pursued the project once it had been approved.

The thing that bothered me about GRD—which was later confirmed when I was in the government myself—is that, generally speaking, I don't believe that internal government laboratories are the best places to carry out scientific research. Now I obviously exclude classified research. Classified research is a different matter. But unclassified, basic research, in my opinion, is not best carried out in government installations. And in meteorology, by far most of those government laboratories have been mediocre operations and the internal work that was done at GRD wasn't all that great. As a matter of fact, if I think back, the only one, absolutely the only one I can think of that I would call a really first-rate scientific operation started in the Weather Bureau. That was Joe Smagorinsky's laboratory in geophysical fluid dynamics, which settled down in Princeton, New Jersey. They did first-rate work.

But by and large, the government laboratories just haven't done that. They can't attract the very best people, for one thing, because they don't have the kind of freedom that the very best people typically want.

Droessler: After awhile, the scientists in the Geophysical Research Directorate became the monitors of the contract work, and that then tied in with their own vision and abilities within their laboratories. I think [that] had some opportunities anyway for

inhibiting and crippling some of the work that was going on under them that they monitored in the universities as they had tried to fit it in with their own abilities and vision and progress within their laboratories. Whereas ONR avoided that by not having a laboratory and having program managers whose sole responsibility was to support good, basic research in the universities, and that was its goal. I think it set the pattern then for the legislation that created the National Science Foundation...

Baum: Yes.

Droessler: You were very familiar with the National Science Foundation and its work, and I'd like you to comment on its activities, especially in the atmospheric sciences area?

Baum: Well, of course NSF is a good example of how the aging process produces arterial sclerosis, not only in human beings but in organizations as well, I guess. There is no doubt the original NSF—which was of course a translation of Alan Waterman's ONR—was a fantastic effort on the part of the United States government. It did a first-rate job for a long, long time. And it was left undisturbed by the political powers.

The situation now, I think, is significantly different than it was in those earlier days. The organization has become highly bureaucratized, in part because that's the way government agencies tend to go. Apparently inevitably, they bureaucratize themselves, in part because the Congress has stuck its finger in the pie at a level of detail that would have been unimaginable—I can't imagine that Alan Waterman would have put up with the kind of Congressional interference that Mr. Bloch, the current director, gets from time to time. And the kind of line item budgeting which takes place. And the kind of thing which says you must give the field of oceanography at least so and so much money, no matter where you have to take it from. Or numerous other examples that one could cite. The most recent being the geographical distribution of resources rather than resources on the basis of where the ability happens to be. So I don't think that the NSF of 1989 can be viewed as the same way as the NSF that Harry Truman authorized a long time back.

Droessler: Do you think that we could have a National Center for Atmospheric Research established by the National Science Foundation in the 1989-1990's?

Baum: I don't think there's the slightest chance of that. As a matter of fact, I think that we couldn't even get our own computing center, much less the whole NCAR. The chemists tried to get a dedicated computing facility about four or five years ago at ONR, and they couldn't pull it off.

Droessler: The support that NSF gave to astronomy, the field of astronomy, I think that the great bulk of that is behind them now, because that was a very special kind of support to a rather small but very bright part of our population called the astronomers.

Baum: Of course, astronomy always has a special thing going for it. There's something, I don't purport to understand it, but there's something in the human makeup that makes the question of origins and the question of the nature of the universe something special to most people. I mean a lot of people [who] have no interest in any other science, they do wonder about matters of astronomy. And students tend to flock to the introductory astronomy courses. It's not only because they're non-mathematical and relatively easy, it's because there's a real curiosity in the human mind about astronomy.

Droessler: Well, not a government agency, nonetheless it is Washington-based, and that is the National Academy of Sciences. I believe you've been involved in the National Academy of Sciences' studies and activities for some time. How do you see the Academy as having influenced our field?

Baum: Clearly the Academy on occasion has had major, major influence. The single most important item without a doubt was the Academy committee report which came out in, I guess it would have been 1958—

Droessler: January.

Baum: January, 1958, urging the establishment of the National Institute For Atmospheric Research, I think is what they wanted to call it, which didn't sell, because it was "RAIN" spelled backwards. People were too embarrassed to do that. But which led them to the National Center for Atmospheric Research, and I'm sure no more important document emanated in our area in atmospheric sciences in our lifetime from the Academy, so that was an enormous influence.

There's been other times when they've been influential in terms of—for example, briefing of the president and very close staff people on the important problems facing humankind. And certainly the atmospheric sciences problem has been featured in that on a number of occasions and then there's been a goodly number of detailed reports.

I think the one thing that can be said for the National Academy of Sciences, National Research Council, is that it has been less affected by the bureaucracy process of our time than has almost any government agency in Washington. It too has become somewhat more bureaucratic, but only very slightly so compared to what has happened, generally speaking, and I think it is the most objective and the least driven by self-interest of the various forces working in Washington. They're not pure, but they come as close to purity as human beings probably can.

The big disappointment in the National Academy, and perhaps it's inevitable, is that it has been absolutely impossible to prioritize scientific endeavors across disciplinary lines. As a result of that the decision as to whether we go for a space station or whether we go for a superconducting super collider or a major inventory of genetic materials, those things are all left to politicians to decide, because we can't get our own ducks in a row. And that's unfortunate, but maybe it's just impossible for the Academy to, or anybody, to

do that, and so it's left to the political process and it'll be sheer coincidence if the political process comes up with the same answer that the scientific process would.

Droessler: The oldest federal agency in the weather business, of course, is the U.S. Weather Bureau. That went through the stages of ESSA, then NOAA, and National Weather Service, and the National Weather Service has certainly had a major impact on the development of atmospheric sciences these last forty years. I'd like to have your comments on the U.S. Weather Bureau, ESSA, NOAA?

Baum: I should also preface that by saying that I may be prejudiced. Bob White is a very close personal friend of mine. I was his deputy for a year-and-a-half, I lived in his home for several months while my family was in New York, and I have an enormous respect and regard for Bob's talents. I'm not sure he did the atmospheric sciences a great deal of good, however, by raising the Weather Bureau in effect to the level of NOAA, so that the person who was the director, the chief of the Weather Bureau, would now be an Undersecretary of Commerce.

I remember with some fondness the fact that Francis Reichelderfer on occasion would visit the president. And especially in the case of Harry Truman, who had a great interest in meteorology, but at least the Chief of the Weather Bureau had entrée to the White House.

Droessler: He was a very distinguished person in Washington, as a member of the Academy of Sciences.

Baum: Yes.

If you consider the comparable individual now, the director of the National Weather Service, he's umpteen echelons down. And I can't imagine that Joe Friday, the current director of the National Weather Service, could ever get into the Oval Office, except maybe when the Secretary of Commerce is sworn in or something like that.

So part of that is undoubtedly attributable to the general bureaucracy. I mean, after all at the time "Reich" became chief, or even in the later stages, the government was modest-sized compared to what it is now. So part of this would have happened anyhow. But part of it is due to the fact that this supposed integration of the oceans and the atmospheres has created these enormous organizations, or this enormous organization, NOAA, which of course has its pluses, but it sure has its minuses. I disagreed with Bob, I do still disagree with Bob, on commonality between the oceans and the atmosphere.

Now it is true that the oceans and the atmosphere are both fluids in motion on a rotating Earth, and the only basic differences between them is compressibility or non-compressibility, but that makes for some kind of a common theoretical base up to a point. That's a far cry from saying that oceanography and atmospheric sciences should be integrated. And from a functional point of view, I don't think that that integration has really produced very much.

I think it has, however, negatively impacted the stature and perhaps the quality of service that's provided by the Weather Service to the American public. I'm by no means convinced that what Bob White did in this particular case was in the best long-range interests of either meteorology or the American public.

Droessler: The last subject that I would like you to reflect on is the expansion of the international area, and the international connections that we meteorologists have now and enjoy. Has this has been developed particularly over the last four decades?

Baum: Well, it has and it hasn't, Earl, we mustn't—I don't think we should lose sight of the fact that the first meeting of the directors of weather services took place sometime in the 1890's. (I don't remember exactly when these people had to take long ocean voyages in order to get to the meeting.) It was a major undertaking. I don't remember whether the first meeting was in Brussels, or somewhere in that area, and it was no easy thing for the director, the chief of the U.S. Weather Bureau, to go over to Brussels.

They voluntarily formed an international organization because it was absolutely necessary. You can't get along in meteorology without international cooperation. One only wishes it were so in some other areas of human endeavor. But there is this long history and it's a lot easier now for us to get aboard a jet airplane and go to Brussels, if that's where it was, than it would have been to get aboard a ship and go over there.

Now it's true that we've had to increase even further the degree of international cooperation, but it's in part like that matter I talked to about universities cooperating. Things have become so complex and so expensive that we have to cooperate. Take satellite networks, for example. Not every country can afford, or would, even if it could afford to set up its own satellite system. We have to have some kind of a coordinated effort on the part of, in that case, major nations, to provide some systematic basis for the whole world to benefit at a reasonable outlay of resources.

So it has certainly accelerated, and it's accelerated on the scientific front, because it's a lot easier for scientists to get around. We have a great deal more in the way of international meetings, and we have a great deal more in the way of international visit exchanges, and that has certainly helped the development of the science and the profession.

Baum: Well, we're here in Tallahassee, in part for the celebration of the 40<sup>th</sup> anniversary of the Department of Meteorology at FSU, and this is the closing day for that celebration, and it's been a magnificent success. The numbers of old grads from the school that have come back and are beaming as they reconnect with their faculty and with themselves. I would like you to just comment on this celebration and how it's going, from that point of view?

Droessler: It's been a very exhilarating experience for me personally. As I told Shirley last night as we were driving to the banquet, forty years ago when I was driving

down here from Maryland, in an old red Kaiser, I certainly never, never could have imagined that something like this would ever take place. Professors and academicians derive by far most of their satisfaction from the endeavors of their students, and it's very, very encouraging to see a sizeable group of students making very substantial contributions to the science and to the profession, and you can't help but feel good about that.

Droessler: Yesterday morning when you gave the introductory talk, you were filled with emotion and joy and sharing with all of the people in that room. I think it was a great tribute to you and what you've done here to have that whole group rise up as one and give you an ovation at the end of your talk. This was a moment that I'll never forget.

Baum: Neither will I.

Droessler: And you're one of my best friends and it's been a great joy for me over these several decades to have walked with you many, many times in many, many places and shared some of your and my work, you see, as we tried to advance our common field here, meteorology. And let me tell you how much I appreciate coming here and being with you, and thank you very much for this interview.

Baum: Well, thank you. And you know it's a two-way street. You have meant a great deal to me, and thank you, Earl.

Droessler: This is Earl Droessler, on December 1, 1989, in Tallahassee, Florida, at the Florida State University, closing the interview with Dr. Werner Baum.

**END OF INTERVIEW**