

**INTERVIEW WITH IRVING GERST
DEPARTMENT OF APPLIED MATHEMATICS**

March 25, 1987

Dr. Hartzell: Interview with Irving Gerst, formerly of Applied Mathematics Department, at his condominium in Royal Palm Beach, Florida, March 25, 1987. Question number 1.

Irving Gerst: My name, Irving Gerst. Department, started out as Department of Applied Analysis, then was changed to Department of Applied Mathematics and Statistics. I came in as a full professor.

Dr. Hartzell: What year?

Irving Gerst: In 1961, actually we were still at Oyster Bay. In 1962, of course, the campus was opened at Stony Brook.

Dr. Hartzell: You were chairman?

Irving Gerst: I was chairman, and at that time our department was in the Engineering College. I guess my function was to build up the department and provide the support courses for the engineers in mathematics.

Dr. Hartzell: How old were you when you came to Stony Brook?

Irving Gerst: God, I don't know, I was about 50, I think. I came from industry. I was working for RCA at the time in an applied mathematics group, which was concerned with network theory. That was a period when RCA was trying to challenge Bell labs, so they set up this think tank in Manhattan and practically everyone there was a Ph. D. in something. But while I was there during the last two years, I think it was, I started teaching at the City College, actually City University, in the electrical engineering department. I gave some mathematics courses in the evening.

Dr. Hartzell: Who was responsible

Irving Gerst: For my coming to Stony Brook?

Dr. Hartzell: Yes.

Irving Gerst: Well, actually, about that time I had decided I would like to get into the academic world from industry, so when they announced there was going to be a college on the Island, I don't think they mentioned Stony Brook at the time, one day I took a ride out to Oyster Bay

Dr. Hartzell: It was the Long Island Center at the time.

Irving Gerst: Yeah, they didn't specify exactly where it was going to be; and I was interviewed by the guy who was in charge at the time, I've forgotten his name now.

Dr. Hartzell: Was it Leonard Olsen?

Irving Gerst: Olsen, yeah, so he looked at my resume and he said that he didn't know whether there would be any positions in mathematics, which is what I had applied for at the time. So I forgot all about it, and then I was surprised to get a phone call about a year later from Tom Irvine who was the Dean of Engineering. Evidently Olsen had passed my resume on to him when they decided that this was going to be a school whose specialty was going to be a science and in particular an engineering college. Well, he liked my resume and he got in touch with me and I went out there. He told me he was interviewing for department chairman at the time and wanted to know if I were interested in heading up an applied mathematics group to service the College of Engineering, and also to set up our own graduate program in applied mathematics. And I agree, and he hired me.

Dr. Hartzell: Good. Six.

Irving Gerst: As I say, I was always interested in college teaching, in fact I had a background of teaching, but not in college, before I went into industry. And I felt that this was a great opportunity for me because I was starting at the top and had the responsibility of building up a department in an area with which I was pretty familiar and much interested. I think I mentioned I thought the purpose and the creation was to have an institution with a specialty in science. I think it was impelled really by Sputnik.

Dr. Hartzell: There was a good deal of that I think, yes. When was Sputnik, do you remember, was it 1958 or '57 or '59?

Irving Gerst: Something like the late fifties. That really put a match under them.

Dr. Hartzell: At that time the purpose was a fairly limited one.

Irving Gerst: Yes.

Dr. Hartzell: There was no concept of one of the four comprehensive university centers, in other words you came before, you came in 1961.

Irving Gerst: Yeah.

Dr. Hartzell: All right.

Irving Gerst: Well, of course, when we first got there, this being a new institution, everybody got to know everyone else. There weren't too many on the faculty then, and there was a great camaraderie there and cooperation between people, and of course, the first president, Lee I think his name was, John Lee, to me was a very striking figure, and I thought he had great potential as a leader. But, of course, what happened to him kind of well-known now I guess. Just why he was fired I never knew, I don't know the inside story, but no sooner we had started at Oyster Bay, I think it was in 1961, when he was fired and the students went out on strike and there was a lot of turmoil there and a lot of the people in the leadership positions, the deans resigned and stepped down into their departmental positions.

Dr. Hartzell: Who were they, do you know?

Irving Gerst: Sidney Gelber was, I think he was in charge of the graduate school at that time. I know he stepped down. Of course, years later he became Dean of Liberal Arts, or Vice President.

Dr. Hartzell: He became Academic Vice President.

Irving Gerst: I think at that time he was one of those that resigned and there were other people.

Dr. Hartzell: Arnie Feingold

Irving Gerst: Arnie Feingold was one, yeah.

Dr. Hartzell: He resigned also as, he was first graduate dean, I believe.

Irving Gerst: He was the first graduate and, well, okay, yeah, I don't remember too well on that. They were both deans and they both stepped down.

Dr. Hartzell: Olsen was fired by Lee.

Irving Gerst: Olsen was fired?

Dr. Hartzell: Yes.

Irving Gerst: I thought that, I didn't even know that Olsen was there.

Dr. Hartzell: He interviewed you, yes.

Irving Gerst: Yeah, Olsen interviewed me, but by the time I came on which was a year later, all I know that Lee was the president, I didn't see Olsen around at all.

Irving Gerst: I think probably he had been let go.

Irving Gerst: Oh, I didn't know what happened to him or much inquire really. So we had this turmoil and for a long time we just had acting people and the idea was just to keep the place going without it sinking.

Dr. Hartzell: Did you know Dean Austill by any chance, he was Dean of Students?

Irving Gerst: Aus?

Dr. Hartzell: Austill, he preceded Dave Tilley as Dean of Students.

Irving Gerst: No, I don't think I knew him. One of the deans that didn't resign was Tom Irvine, he stayed on.

Dr. Hartzell: He had been at Raleigh under John Lee.

Irving Gerst: Yeah, right.

Dr. Hartzell: Did you know Bradfield?

Irving Gerst: Oh, sure. Bradfield was the first chairman of Mechanical Engineering.

Dr. Hartzell: I've interviewed him over in Clearwater.

Irving Gerst: You did, how's he doing?

Dr. Hartzell: Fine, he's over in Tampa actually.

Irving Gerst: Is he at a college or is he retired?

Dr. Hartzell: Yes, off somewhat, he's really doing work on his own as a consultant.

Irving Gerst: Yeah, let's see, at that time Bradfield was mechanical engineering. I recommended Sumner Levine for material science, and he became chairman of material science that first year.

Dr. Hartzell: Did you know Sumner, where did you know Sumner?

Irving Gerst: Sumner was working at RCA with me, and that's where I met Sumner. Let's see, electrical science, Sheldon Chang.

Dr. Hartzell: Yes, I don't know when Sheldon Chang came.

Irving Gerst: I think he was the first chairman.

Dr. Hartzell: He was a boyhood friend of Frank Yang's back in China.

Irving Gerst: Oh, oh, yeah, right, I know that. Let's see, who else do we have. Okay, so I guess that the firing and the aftermath really dominated the early years at Stony Brook.

Dr. Hartzell: What about the students?

Irving Gerst: We had superior students after the first year or so. I think at Oyster Bay, Olsen went out and rounded anybody he could get the first couple of years. They were there for several years, weren't they, at Oyster Bay? I got there at the tail end, at Oyster Bay. So, but once you got out to Stony Brook, they started imposing very stringent and high requirements and we started getting a very good student.

Dr. Hartzell: What expectations did you have, on 11, what expectations did you have when you came here?

Irving Gerst: Well, I wanted to form a group that would cover all the areas that were being pursued in applied math, especially those that were being used in industry. I know I had first-hand experience with. As it worked out, our growth in this particular department was rather slow. One of the reasons was that there was always a good deal of rivalry and even sanctioned acrimony, whatever you want to call it, with the pure math department. They evidently resented the formation of an applied math department, and that's one of the reasons we were stuck with this outlandish name, applied analysis, which nobody ever knew the meaning of, and they thought it was some branch of psychiatry. But they were evidently instrumental in keeping us from going to the name applied mathematics. So our growth was slow, and when we interviewed people for positions in the department, we had to kind of apologize for the name, and it was tough

getting decent people. We had to build really from the ground up, and we had to hire assistant professors that I felt would make, they certainly didn't give us too many high level positions.

Dr. Hartzell: When was the name changed?

Irving Gerst: Well, that's another story in itself.

Dr. Hartzell: You might bring it in now.

Irving Gerst: Okay. Jim Simons was appointed chairman of the math department somewhere along the line. I forget what year it was. And at the time John Toll was already President. So, I mean we had more than just an acting president. He was very sympathetic to the math department and its aims and goals. Somehow I felt that he didn't push engineering as much as some of the other sciences, including pure math. Anyway, he gave Jim Simons lots of money to get good people, which Jim Simons proceeded to do. However, Jim Simons was still unhappy with the fact that there was a separate math department. And furthermore, along the way we had gathered some computer people. The goal being that eventually they were going to form their own department, which they did. They had a small nucleus, and they felt it was time.

Dr. Hartzell: Did you bring in Aaron Finerman?

Irving Gerst: Yes, Aaron Finerman came in at the very beginning, he's been a long time. It was actually sort of a joint decision. Aaron Finerman was hired really to run the computer center originally, however, he didn't want to take that position, I believe, unless he got an academic position as well, so the most logical place seemed to be in the department of applied analysis, and so with my consent, I mean, he was hired for that department, but he really was, I think, a mechanical engineer by background or something.

Dr. Hartzell: I don't know.

Irving Gerst: Yeah, I think he had done something in mechanical engineering. Anyway to get back to this other story, so at this time there was a computer science department, there was our department in the College of Engineering, and Jim Simons sold

John Toll on the idea of setting up a division of mathematics, which would consist of these three departments: pure math, applied math, and computer science. Well, it would mean that we would have to get out of the Engineering College. And just to backtrack a moment, as soon as I started hiring people way back in 1961 and 1962 for the department, we applied to set up a graduate program in applied mathematics, and we got the okay very soon, I think it was something like 1964 or 1965, it was a very short period before we started on the graduate program. So we always had a graduate program in applied math leading up to the doctorate, but we didn't have an undergraduate program leading to a bachelor's degree in applied math. Well, when Jim sold this idea of division of mathematics to John Toll, we got together, had several conferences on it, and there was a lot of horse trading that went on there. Now we got several items, number one, we got our name changed to applied mathematics; number two, we got our own undergraduate program leading to a bachelor's degree in applied mathematics; and

Dr. Hartzell: In the College of Engineering?

Irving Gerst: No, no, this was now in the College of Liberal Arts, it was liberal arts. And number three, we agreed on a division of courses, that is, we were to teach certain courses and they were to teach certain courses. For example, we were supposed to teach all the courses in differential equations and in probability and statistics, except for rather advanced theoretical courses in these areas. We were supposed to get all the finite mathematics, now that's something that I introduced, which was an up and coming area which is now a very substantial part of any applied mathematics program, and that's finite math, which includes combinatronics. I had started to introduce these courses in applied math, and they legitimized this thing, and said, yes, you can have the finite math courses, so we came to this agreement and the division was set up. We got out of the Engineering College, I don't remember exact dates. I may have some memos back at the office, but it was certainly about ten years after we started. It must have 1971 or something like that.

Dr. Hartzell: When you get back if you have time, go through the files and if you have no further use for them, let Evert Volkersz have them, or copy anything that you want to keep, you keep the originals and let the archives have the copies.

Irving Gerst: Well, you can have, if I still have them, see, I don't know, for a while our department was notorious as a repository for all literature, all memos, whenever anyone in the College of Engineering wanted to certain, they always called us up, because we had it. But I don't know if I kept all those things when I retired. I cleaned out the office. anyway, to bring this story to an ending, we set up the division, and it lasted about one year. It foundered on a battle we had on promotion. I had recommended that certain people be promoted to full professor; by the way, right after the division was set up; is when I stepped down as chairman, I was chairman for 11 years, so let's see 1972, so it's around 1971, 1972, so I am right about the dates. And Armen Zemanian took over as chairman. So the previous year I recommended these people for promotion to full professor, I believe. Well, now that we were a division, they had to get approval of representatives from each department. First they were approved by our department, then it went to this higher committee, so called, and what happened is the math people balked at these promotions. They said that these people didn't deserve to be full professors and so and so forth. It was just impossible to do business with them. The reasons we felt were specious, and it was just a matter of snob appeal, if anything. They had different criteria than we had. We both had criteria of excellence, but their definition of it was a little different than ours in this context. So Armen Zemanian, I think, sent a memo to Toll saying he was taking his department out of the division. And, of course, the computer science department went out along with us. And what happened was that Armen, I think, applied to Engineering. I don't remember who the dean was there, it might have been Truxal at the time. I'm not sure.

Dr. Hartzell: Who succeeded Tom?

Irving Gerst: The next dean?

Dr. Hartzell: Was it Truxal?

Irving Gerst: It could have been Truxal, and then we had Bilello.

Dr. Hartzell: Yes, I remember that name, but that's about all.

Irving Gerst: I've forgotten what the succession was there, but I think it was when Truxal was around. Zemanian, I think, asked that the department be put back into the College of Engineering, and Computer Science, I think, went along too. So, Engineering was very happy to get us back. But when we got back there, we kept all of the gains that we had gotten when we formed this division. In other words, we kept our undergraduate degree, it was now in limbo as to where it was, liberal arts or engineering, but it didn't make any difference really. We kept our new name and we kept the courses, but of course later on mathematics started encroaching on the courses too, especially with finite math combinatronics. They hired an individual who was an expert in this area, and he was the only one in the department, and he started I think giving some courses there. I don't think they ever developed much in that area. So we wound up back in the College of Engineering, which is where they are now.

Dr. Hartzell: Well, how did things work out for you, personally, for the institution?

Irving Gerst: Well, for me, I was very happy being there. I found, of course, that during the 11 years that I was chairman put a crimp into my research activities. But after that I sort of drifted into new areas and started doing research again.

Dr. Hartzell: What had been your research?

Irving Gerst: Well, I had started in pure math. I had a degree in pure math, and this is the reason I was hired on my first industrial job. They were designing a control system, so-called, for a navy gun, in the Brazilian navy no less. One of the components of the control system was a network, an electrical network. And electrical network theory is based to a large extent on complex variable in pure math, which was my specialty. So that's how I got into the field in the first place. I wrote quite a few papers in the area, so when I came to Stony Brook I thought that I might set up at least a sub-group in this area. And I hired some fellow who got his doctorate in impart theory at Case Institute, I think. I hired somebody else from Brooklyn Poly. For some reason it never worked out. And I

guess the network courses are now taught in electrical engineering. And as I say, when I was chairman, I didn't have too much time to devote to the research in the area myself. When I stepped down after 11 years, my interests had changed.

Dr. Hartzell: That happens.

Irving Gerst: Yes, I went into other areas and I pursued those and somehow I found upon in combinatronics. This is what I will be doing out there.

Dr. Hartzell: Out in Arizona.

Irving Gerst: Yeah, right.

Dr. Hartzell: How do you spell that term?

Irving Gerst: C-0-M-B-I-N-A-T-R-O-N-I-C-S.

Dr. Hartzell: I see, can you describe it or define it.

Irving Gerst: Well, yeah, you remember in your old high school days when you took intermediate algebra, permutations or combinations, well, that's the basis of it. But it's really finite math. Okay, what else would you like to know?

Dr. Hartzell: Well, let's check the questions, 13, were your activities confined to the Stony Brook campus or did you have relations off campus.

Irving Gerst: Oh, I would say mostly at Stony Brook. I did a little consulting.

Dr. Hartzell: With industry?

Irving Gerst: Yes, I consulted with Sperry for one year, I believe, and that was it.

Dr. Hartzell: Right, okay.

Irving Gerst: I had no relations with the central office in Albany.

Dr. Hartzell: Did you feel that you got support from the local administration, this is John Toll and the deans, what about Alec Pond, did you have anything to do with Pond?

Irving Gerst: No, not really. I certainly was supported by the Dean of Engineering.

Dr. Hartzell: Irvine and then

Irving Gerst: Yeah, whoever came in after Truxal, there may have been someone else there, I may have forgotten. Well, I indicated I didn't think that engineering was sort of number one on the list when it came to hand out money and positions.

Dr. Hartzell: The hard sciences were tops.

Irving Gerst: Yeah, that's what I felt when Toll came in. He hired people like Glass, Bentley Glass, Yang set up this Institute, so maybe he had a plan whereby you first build up the hard sciences, then go to the applied sciences, but I felt that the growth in the applied sciences was very slow.

Dr. Hartzell: Did you have anything to do with Earth and Space Science?

Irving Gerst: No. They never asked us for any service courses. I don't know if their requirements required any mathematics.

Dr. Hartzell: Did you know anybody in Earth and Space?

Irving Gerst: Well, I knew but

Dr. Hartzell: Toby Owen for instance.

Irving Gerst: Who?

Dr. Hartzell: Tobias Owen.

Irving Gerst: No, I didn't know him. I knew some people, I met them socially, I suppose, but we really didn't have anything to do with them from a technical point of view, as far as I recall. Now, of course, later on, when we set up our statistics program

Dr. Hartzell: Do you remember when that was, approximately?

Irving Gerst: I think we started soon after, maybe even before the division, so it was around 1970, but we set up a course, when we set up the division, we set up a couple of more courses and finally they now have a whole section devoted to statistics, and we have a whole group of statisticians, including the fellow from Columbia, who is there on a part-time basis, Robins. We hired him and that was the first big name we had, I think, in statistics. But he's only there on a part-time basis as far as I know. I think he is still at Columbia, I think he still maintains some relationship with them. But he, I believe, got us some younger people that were very good. Anyway, the point I am trying to make is once we set up the statistics department, then the statisticians worked with people all over the campus, with the med school, biology and so on, wherever there was a statistical component in these other areas, they would on occasion come to us to discuss some

questions and we would wind up with a cooperative arrangement, someone in our department would work with them. So, for all I know, there may have been somebody working with Earth and Space, but at that time I was no longer chairman, and I didn't really keep track of all the relations. But I know that the statisticians were working with people in other departments.

Dr. Hartzell: Well, 14, as you look back, what do you feel you accomplished?

Irving Gerst: Well, by 1971 I had set up the department, not to the extent that I wanted to, but to the extent that the funds were available. We were starting to be recognized, and furthermore, we had set up a curriculum for applied mathematics which was one of the first. Soon thereafter all the other places set up curricula in applied math., MIT and so on and they all went into finite math; we had started but we didn't have the manpower really to pursue this to the extent that I would have liked. But I had, from my experience in industry, had seen what was needed and set up a curriculum, a lot of it was a paper curriculum, because we didn't have the money to hire the people to fill these spots. But now it's a commonplace all over.

Dr. Hartzell: Is there a disciplinary organization, an organization within the discipline on a national basis that does any kind of accrediting of applied math, you know there's one in chemistry, for instance, there's one in engineering?

Irving Gerst: There must be, because I remember some sort of listing of the various departments, now, wait a minute, not in applied math, no, pure math. Applied math I don't know of any such.

Dr. Hartzell: Well, how do you feel about the present stature of Stony Brook and about the relative speed with which the University has been developed in the last thirty years?

Irving Gerst: Thirty years. Well, I'd say it's been remarkable for the short time. The name is well known now all over the country. There are certain areas that are stronger than others, I suppose, but I feel that the applied math department is a fairly strong one in comparison with other programs of the same kind. Alan Tucker, who is now our

chairman, is on lots of committees concerned with curriculum of mathematics, particularly of applied math, finite math and so on, so somehow I think it's in part due to the fact that we were giving these particular courses long before the other big universities had considered them as legitimate.

Dr. Hartzell: I think Alan went out to the west coast a year or so ago, was at Stanford for a year, was that during his sabbatical?

Irving Gerst: Yeah.

Dr. Hartzell: Then he came back. How long has he been chairman?

Irving Gerst: I think he's had at least two terms, six years.

Dr. Hartzell: Two three-year terms.

Irving Gerst: Yeah, let's see now. When I stepped down, Armen Zemanian took over; I think he was only there for one term, that's like 1975, then Srivastav came in, I don't know how many terms he had, from 1978 to 1981, he may have had two terms, or it may have been someone else in there, I don't remember. Maybe Beltrami, was Beltrami chairman? Could be that Beltrami was chairman. Srivastav one time, Beltrami one time, so that brings us up to 1981, so that means that 1981 and 6, 1987, so Alan's probably been in there for two full terms.

Dr. Hartzell: I see. Okay. Well, can you think of anything else for the good of the order?

Irving Gerst: Let's see.

Dr. Hartzell: Relations with other faculty members outside your department, was there much in the way of give and take intellectually? We didn't really have a faculty club.

Irving Gerst: I just mentioned this relation of the statisticians to other departments, that's one. Well, at one point I remember, well, of course, this was within engineering, I worked with Sumner on a research, we had a joint paper on DNA and RNA replication.

Dr. Hartzell: Oh, really.

Irving Gerst: Yeah, which, I'll never forget that paper because we must have gotten about 600 requests for reprints on that one.

Dr. Hartzell: Is that right.

Irving Gerst: Considering that, well, I think one of the reasons is that it was probably the first and only paper for a while to apply physical chemistry and mathematics to the problem and in that sense, it was novel. Everybody from M. D.'s to you name it thought that this was the goal, the key to understanding, so it really generated a lot of interest. But let's see, working with other departments, I don't remember anything else. I'm trying to think of joint papers between faculty members; I can't think of anything else offhand, but there might be something. We have in the department lists of papers that were published and the one to get that information from is Esther Weitzman, the administrative assistant. She's the one that would have that information; she would know what papers were published, and you could easily see from the authors whether there was any cooperation. Of course, from time to time somebody else, someone from another department would drop in. I remember, for example, Bob Schneider from Chemistry, came in to see me about some problem; he had a problem which involved some mathematics, and I helped him out with it. But it never appeared as a formal paper with two names. I don't know what he used it for, whether he published anything on it or it was just a side result or something like that. And people from other departments would come in to see me personally. I remember Bob Cess, mechanical engineering, came in and I solved a problem for him. So this may have been going on with other people in the department, but unless there is something officially published, most of the time you don't even know that is happening. It's hard to really specify.

Dr. Hartzell: Well, thanks, thanks very much.

Irving Gerst: Well, look, if I, this is off the top of my head, so

Dr. Hartzell: If you get any idea about something that should be included ultimately in a history of the early years, jot it down on paper. It would be very helpful.

Irving Gerst: You know the early years was the, when we had the acting president, well, you were one yourself, weren't you?

Dr. Hartzell: Sure, I was acting for three years from 1962 to 1965.

Irving Gerst: It was a period of I would say relatively slow growth. I mean some positions were doled out, I think, but it was very slow compared to the period when John Toll came in. The University took a big leap forward then because the budget was there to hire people. As a matter of fact, that's what happened.

Dr. Hartzell: I think that's a fair statement. We had some positions. See, I was only supposed to be there for a year. Then I was to go back to Albany. I was appointed Executive Dean in the Albany office on detail immediately, before I could get any feel of the Albany office, down to Stony Brook.

Irving Gerst: Well, I remember you kept things on an even keel.

Dr. Hartzell: Yes, right.

Irving Gerst: I don't if anyone you interviewed mentioned the great battle between the group, the Chicago group in education and the science group.

Dr. Hartzell: There has been mention of that, right. Also, my experience as dean at Bucknell made it quite clear to me that scientists, particularly engineers and philosophers, were poles apart in the way they approached things. And here you had in Olsen, a man trained in philosophy.

Irving Gerst: He brought in the group from Chicago, didn't he?

Dr. Hartzell: Yes.

Irving Gerst: He's the one that

Dr. Hartzell: But Olsen, as I understand it, also recommended Lee initially for Dean of the Graduate School, and he wound up as president, and Lee is an engineer.

Irving Gerst: Yeah.

Dr. Hartzell: Engineers and philosophers don't mix.

Irving Gerst: Yeah, well, I don't know if that was the cause of Lee's downfall or not.

Dr. Hartzell: I don't think that had much to do with it, there were other factors.

Irving Gerst: I still don't know why they conspired

Dr. Hartzell: A lot of that goes back to Albany.

Irving Gerst: They said he went ahead on his own with the budget with his own definition, he just went ahead with a lot of moneys to certain projects and so on. But that's very vague.

Dr. Hartzell: He asked for more money than he could spend, and you know what happens if you don't spend money, you lose it. All right.

[end of interview]