

**INTERVIEW WITH JAMES SIMONS
FORMER CHAIRMAN OF MATHEMATICS DEPARTMENT**

December 8, 1988

Dr. Hartzell: An interview with James Simons, former chairman of the Mathematics Department, December 8, 1988, in my office. All right, let's go ahead. Question 1, name, department, rank.

James Simons: Jim Simons, Mathematics Department, Professor and Chairman.

Dr. Hartzell: What year did you come to Stony Brook?

James Simons: 1968.

Dr. Hartzell: And how old were you?

James Simons: 30.

Dr. Hartzell: From what institution and position did you come?

James Simons: I came from the Institute for Defense Analyses, which was at Princeton; it was a government laboratory, and I was a researcher.

Dr. Hartzell: Okay, who was primarily responsible for your coming to Stony Brook?

James Simons: John Toll.

Dr. Hartzell: Who interviewed you for the position here?

James Simons: John Toll, Bentley Glass, and Sidney Gelber.

Dr. Hartzell: Why did you come, what factors were most important in your decision?

James Simons: Well, I came because, first of all, I was looking for a job. I had left the Institute for Defense Analyses abruptly in April of 1968 over the issue of the Vietnam War. The Director of the Institute at that time was Maxwell Taylor, who was quite a hawk, and I had publicly taken an opposite position; and in any event things reached a point where it was better that I leave, and I left. And was looking for a new challenge. I had offers from several universities to join their faculty as a professor. I was a pretty

good researcher, and then the possibility of being chairman at Stony Brook came along, and it was, I was young, and it sounded very exciting, and I thought I could do it, and that's why.

Dr. Hartzell: I see, okay. You say it came along, did John Toll meet you somewhere or did you get a simply a letter or what?

James Simons: They had been searching for a long time for a chairman of mathematics. There had been a series of acting chairman going back a number of years. As a matter of fact when I was at Harvard in my early twenties I was in a regular poker game and one of the players, who worked at Arthur D. Little, a guy named Lesley Peck, announced to us one day at the poker game, well, he's leaving A. D. Little and he's going back to academics. We all said, oh, is that so, Lesley, where are you going, and he said, well, I'm going to a place called Stony Brook to be chairman of the Mathematics Department. And that seemed fine and we got on with the game, I thought he was an odd choice, but what did I know. I think probably he didn't work out too well as chairman

Dr. Hartzell: Apparently not.

James Simons: And, but then I believe what happened was that the department had a series of acting chairman, and it was very difficult, I think, for them to find really what they were looking for, which was a senior, highly qualified person to run the department, someone who was distinguished and demonstrably able to do that sort of thing. Mathematics was very important to the administration because the Physics Department was quite strong at that time, the Mathematics Department was weak, and we had a big push, the University had a big push to develop science, and so they really wanted a star to head the Mathematics Department. By the time they reached me, I believe, they had modified their expectations; I was certainly a very good researcher, and I don't think there was a problem there, but I was young and certainly inexperienced in doing something like building a department. So, the word was out, and one day a friend of mine said to me, would you be interested in being chairman at Stony Brook, and I said maybe, and he said, well, someone asked, they are looking for people, soliciting ideas,

and I said, well, you can certainly give them my name, that would be fine. And the next thing I knew, I got a call, I think, from Toll saying they'd like to interview me for the job. I came out, I'm sure I gave a talk to the Department. I had just solved quite a famous problem in mathematics, so I had a lot of luster at that point, and

Dr. Hartzell: What was the name of the problem?

James Simons: It was called the Bernstein Conjecture in my field in differential geometry, it was an outstanding problem in an area called minimal surfaces and had been around for years, and I was lucky enough to have solved that within the previous twelve months, so that was a big result, in fact it got into the Encyclopedia Britannica, I think, the next year or whatever. So, anyway I had a lot of credence as a researcher, and, but the question was would I be able to build a department, and also was I stable because of the Vietnam business was a little bit questionable, so.

Dr. Hartzell: All right. Why did you come, in other words, why did you come to Stony Brook?

James Simons: It was just the most interesting offer that I had, the offer that was competing was to go to, that I thought was also interesting, was to take a position at the IBM Laboratories up in Yorktown Heights and be a professor at Columbia, a tentative arrangement had been worked out where I could be both at both places, and that seemed interesting. But I wanted the challenge of administration frankly, I thought that would be something new for me to do, and so it was just the best offer I had, as simple as that.

Dr. Hartzell: Uh, what was your understanding of the purposes behind the creation of Stony Brook? What did you know about the place?

James Simons: Not much, except that they had developed some excellent faculty in areas relating to mathematics, that they were committed, at least as John Toll expressed it, to developing excellence generally as a University. I felt that the setting and the commitment on the part of the administration would make it an exciting place to be, but I certainly didn't know very much of the past history, you know, all the complications associated with a state university and this one in particular and so on and so forth, so.

Dr. Hartzell: What were your impressions of the University when you first came, the campus, the people, the department, the leadership, the spirit and so on?

James Simons: Well, it was certainly a kaleidoscope of impressions.

Dr. Hartzell: You came what date?

James Simons: I came, well, I came during the summer of 1968, twenty years ago. I think different aspects of the operation impressed me in different ways, for example, the, my first day on the job in the department one of our faculty members, our only female faculty member, in fact, Elvira Rappaport in the Department, a Professor, came in and said, well, now that we have a chairman, what are you going to do about the bill from Tootsie Taxi? And I said, what bill from Tootsie Taxi, and she said, well, there's a \$50 bill from Tootsie Taxi that I incurred to go into the city to attend a conference, and I've been trying to get reimbursed for that for two years, and everyone tells me there's no money, and I'm entitled to it and so on and so forth, what are you going to do about that? So, I said, I made a few quick inquiries and determined that yes, there was no money to reimburse her, and yes, she certainly felt entitled. Fortunately, it was things that were so late in the department that salaries for the year that was about to begin hadn't yet been set; so I said, Elvira, I'll tell you what I'm going to do, I'm going to make an adjustment upward in your salary to cover not only the Tootsie Taxi bill but the tAxS on the Tootsie Taxi bill, so I think we increased her salary \$100 for the upcoming year in lieu of my being able to make any, well, she thought that was just wonderful, she said, well, you're a genius. So that was my first success in administration. As far as the campus goes, I think the first night my wife and I were here, we went to a demonstration against tripling in one of the dormitories and stood around in a great deal of mud in the evening with a lot of apparently angry students and mollifying faculty, and I just stood there amazed and watched and listened and got my feet dirty and went home. I thought John Toll was wonderful; I felt that he was dedicated to doing what, to excellence on the side of the faculty, and he and the rest of the administration, Alec Pond and so on, certainly

supported me those first couple of years. So, it was a very mixed picture, but a very exciting one.

Dr. Hartzell: You have the reputation of having been the one to either turn the Department around or put it on its feet and make it, bring it up to standards, so to speak, what was your estimate of the Department when you came, what were its needs, and how did you go about changing the situation?

James Simons: Well, first of all, before I came the more experienced people advised me not to do it, that building a new Mathematics Department from scratch or from close to scratch was a very, very difficult job, and it really hadn't been done in years, and advised me that it would be very difficult to do. I didn't see why, so I paid no attention to that. When I came, the Department was a little bit better than I had been led to believe or than its reputation, let's put it that way. There were a handful of perfectly competent, older mathematicians, two or three or four of which had decent research reputations

Dr. Hartzell: Barcus.

James Simons: Not Barcus so much, Barcus was a very earnest guy, and competent guy. I think Doss was a strong mathematician, Szusz was not too bad, well, even Elvira Rappaport was not without redeeming features. Let me see, who else, Alfred Adler was a complicated guy who was in the Department, but he was not really ever committed to the Department and was really not too strong anyway.

Dr. Hartzell: Lister.

James Simons: Bill Lister was not an active researcher at that point and hadn't been. Neither was Bill Fox, neither was Paul Kumpel. They were all willing and able to do a lot of work in the Department and did, in some cases I guess still do, I don't know, that's twenty years later, but there were three or four people of research competence. Also, there was a very good man named Pincus, who had been an adjunct until the previous year, he's been at Brookhaven and was just joining the Department or had just joined the Department, he was a first-class mathematician of the age, he was probably in his late thirties at that time. So, we started with not a terrible base, secondly, the year that I came,

Barcus had been chairman, and of course, was part of the process in which I was hired. I say John Toll hired me, but I think Barcus must have been a leader in the Department to push for that appointment, and a few pretty good people came that year. Irwin Kra came that year; a man named John Thorpe came that year; Tony Phillips came that year. I believe those three are still in the Department, they all received tenure and deserved it.

Dr. Hartzell: What about the structure of the Department, was it top heavy with tenure at that point.

James Simons: It was medium heavy with tenure, yes, but the good thing was that at that time there was a tremendous demand for mathematics amongst the undergraduates. The reason for that was probably to do with the fact that if you were a teacher of mathematics you got a deferment from the war. But whatever reason it was, the year that I came 10% of the undergraduates were majoring in mathematics, majoring in mathematics, never mind the big service load of the calculus that other departments take and so on, so that we were given, and that was part of the deal, I was given a lot of new resources. And I used that. We hired ten new people in the first year, and ten new people in the second year, and of course, we let people go as well. People whose contracts were ending and so on. But we made a significant expansion in the number of lines, and that was enough room to bring in enough really talented people, because we were very successful to really tip the scale.

Dr. Hartzell: Why were you successful?

James Simons: Well, I felt it was an easy sell. It was a sales job, but we started with, well, the first appointment that we made was someone whom I had known, well, many of these people I had known for a long time, but we brought a guy named Leonard Shawlap from Penn, who was a professor, I guess he was an Associate Professor at that time at Penn, he was fairly good, not star quality, but he was pretty good and was a signal to the community that people of reasonable stature would move to Stony Brook. Now the guy I was angling for was a fellow named Jim Ax, who was a very big star, he was at Cornell and had recently won the Coll Prize in number theory and was an outstanding

mathematician, and we offered Ax a very attractive package, including a lot of summer support and an extra one-ninth and whatever we could do, and I spent a lot of time recruiting Ax, and he came. He liked the waterfront, he liked the money, he liked the environment, he and I had known each other for a long time. Now once Ax accepted, then it was clear that this was, we were going to be big-time or at least what passes for big-time in the mathematics world, so that we got Ronald Douglas from Michigan, we got a guy named Jeff Cheeger, who had been a student of mine

Dr. Hartzell: Where?

James Simons: Jeff had been my student while I was working in Princeton, he was a graduate student at Princeton, while I was working at the Institute, I was his thesis advisor and I had taught him at Harvard when I was teaching at Harvard, he was an undergraduate. He has turned out to be an extraordinarily good mathematician, as has Douglas. We brought another, we went to Germany and brought two other outstanding geometers, one of whom, Detlef Gromoll, is still on the faculty, and his associate, Wolfgang Meyer, who has subsequently gone back to Münster in Germany. And Cheeger and Gromoll were collaborators, and Meyer and Gromoll were collaborators, and I was also a geometer, so four of us were geometers, and that made us in a year a real center in geometry comparable, let's say, to Berkeley. Geometry was a subject which at that time didn't have nearly the appeal that it does today in mathematics, it's since become more central. So at that time it was relatively easy to become an important center because there were only three or four departments where that would be very strong. And then, in fact we brought out a fifth fellow from UCLA in that area or a fourth fellow. Anyway we hired ten people, we hired another number theorist to accompany Ax, the idea was, well, you come and then you can bring so and so in the usual way I guess departments get built. And in the second year I think our appointments weren't as good as they were in the first year, but we made some very good ones. So that by the end of the second year that I was there, we really had put together a first-rate department, not the best in the United States, but a first-rate department.

Dr. Hartzell: Just for my information, what are the major branches of mathematics that a university department should have.

James Simons: Well, I would say there are three major, four branches of mathematics, three of them are more major than the fourth, well even that's not true, the major branches of mathematics are what's analysis, which is things that grow out of calculus -- the study of functions, differential equations, ordinary differential equations and all that kind of stuff is analysis. Typically, that is the largest component of mathematics. Algebra is the second branch of mathematics and that's abstract algebra, group theory, ring theory, field theory, theory of equations; it gets very, obviously, complex. The third major area of mathematics is geometry, but geometry in the most general sense, that includes topology, it includes differential geometry, anything to do with shape and size and that sort of thing is geometry. Now, when I say that geometry has not been so popular in those days I meant what's differential geometry, which is at the core of geometry but what really popular in those days was topology, which is a much more abstract area of geometry. Then the fourth branch I would say is logic, mathematical logic and that gets you also into the street mathematics and things that today are quite important, maybe not central in a mathematics department but things that relate to computer science, computational complexity, algorithms and all that sort of thing which is sort of on the cusp of mathematics, computer science and applied mathematics. But mathematical logic is really a fourth area of mathematics. We were never strong in logic, in fact, I don't think we ever had more than one person in that field. Algebra, of course, Ax was a tower, but we didn't have too much strength in algebra either, because he wasn't someone, as it turned out, who attracted a lot of people. He was kind of a loner. His being there was a terrific inducement in general for people to come, but he wasn't a person who a lot of people wanted to come and work with, at least as far as we could tell, that wasn't the case. Where we were particularly strong was in geometry, as I said, and in analysis. Between Pincus and Douglas and some people who came to work with them we had a very good group in that area, and also in complex analysis, which Irwin Kra is a

leading person in. So between real and complex analysis we had a pretty good group and in geometry.

Dr. Hartzell: For mathematics, was the proximity to Brookhaven or to New York City of any advantage?

James Simons: Certainly not to Brookhaven. To New York City, not really. I would say it was good that NYU, Courant Institute and Columbia were there, but I would say that it was of marginal advantage.

Dr. Hartzell: The characteristics of the Island as a place to live, where they an advantage?

James Simons: Well, I tried to make it an advantage. I think it was an advantage to people who liked the seashore. I would always take people to the beach. I had all my favorite cliffs and overlooks and so on. I had gotten a house in Old Field, in the Crane Neck area, which

Dr. Hartzell: In Crane Neck, before the Kenyon house?

James Simons: Before the Kenyon house, I had a house in Crane Neck on a little street called Laurel Lane, it's a little dead end street, cul-de-sac, you know, in the woods. In the winter you could see the sea, and for some people it was very attractive. For other people that didn't mean too much to them. But you would try to sell the positives, and downplay the negatives.

Dr. Hartzell: Okay, I see. Uh, were your activities confined to the Stony Brook campus or did you have relations with the Central Office or, you obviously have relations within the discipline?

James Simons: A lot of relations within the discipline, I had not relation with SUNY Central, if that's what you mean, no, I didn't.

Dr. Hartzell: What about the life of a faculty member at Stony Brook, what are the characteristics of the faculty at Stony Brook? I'll get to the students next.

James Simons: Well, perhaps like most departments, the social life amongst the mathematicians revolved mostly around the mathematicians. And I think it was very

good because most of us in those years, most of the new people were roughly the same age or younger. I don't think I hired anyone who was particularly older than myself. Ax was maybe a year older, but basically we brought in a lot of young people, very good people, but young people. So we all had kind of a good time together. In fact I think we probably had too good a time together, there were some divorces and there was, you know, maybe a little too much socializing, but those early years were really very exciting. We had big conferences out here, we had many, many visitors.

Dr. Hartzell: Name a conference or two. That's one of the things that I haven't got a good picture of, the extent to which the departments were centers or served as centers for the activities of their own discipline.

James Simons: Well, the first summer that I was here we had two conferences, one a national conference and one an international conference. One was in a field called rieman surfaces, which Irwin Kra organized, and brought people from around the country. It was a relatively small conference, maybe 30 or 40 people, and it was very successful. The second conference, which is one of the things that brought Jim Ax to the University was the promise, and the arrangement, that we would have the International Congress on Number Theory on the campus was quite a different matter. We had that in the summer of '69 as well, in other words after I had been there one year. Ax was just in the process of joining the faculty. People came from all over the world, maybe 200. They were housed on the campus, every problem you could imagine occurred, you know, you can't, and some that you can't imagine. Plus the fact that during those two or three weeks, we had a real hot spell, and of course the dormitories aren't air conditioned and it was terribly humid and so on. Still and all, there were lectures every day, you know, barbecues at night and I guess as though those things go, it probably was a perfectly adequate conference. As far as I was concerned it was a tremendous headache, but you know, that was fine. After that I'm sure we've had many, many, although I don't think any on that scale. But as the years have gone by the Department, being established and so on, has had many different, many conferences and that sort of activity.

Dr. Hartzell: Has the quality kept up since you left?

James Simons: Oh, yes. I think it has. I think we lost a few, we gained a few. I was only chairman actually for the first two years I was there. Then in the third year I became Provost of Mathematical Sciences; we made an effort, and we succeeded for a year, in uniting the three departments -- Mathematics, Applied Mathematics and Computer Science -- into a larger unit. It was my idea that a great deal of the future growth was going to come on the applied side, in particular in computer science; and this bubble of interest in pure mathematics, as evidenced by the 10% enrollments, so on and so forth, was going to diminish. And that we wouldn't have the halcyon days of the administration throwing money at us in order to build, which was perfectly correct as it turned out. But, so I thought, well, if we could unite these three departments and get one group, then I will be Provost, and we would have a chairman of each department, and we could try to upgrade the quality of those two departments, which was far below our own at that point in time. That failed, part of the failure was my own fault. I was going through a lot of personal problems at the end of that third year that I was there, in the process of getting a divorce, under a great deal of strain, and resigned at the end of that third year as Provost and returned to the Mathematics Department. Now the Division carried on, the Division of Mathematical Sciences carried on for another few years, but it never had the kind of leadership that might have made that organization succeed, although for all I know it was a poorly designed organization in the first place, maybe nothing would have made it succeed in that structure. So, I went back to being a professor, but then was asked again to be chairman, which I did for only one year in the early '70's; I don't remember '73, '74 or something like that. And we hired some good people that year as well. That's what I like to do is hire people. Then I went off to Europe, spent a year in Geneva '75-'76, and when I returned I became half-time in the Mathematics Department and then resigned altogether because I was going into business and was taking, leaving academic, which I did. So that was twelve years or so ago, okay.

Dr. Hartzell: Anything else that you, what about the quality of students?

James Simons: Well, the quality of students when I arrived among the undergraduates was not bad. At that time Stony Brook had a pretty bright level of undergraduates. Harvard it wasn't, but it wasn't bad. The graduate students, at least in our department, were unbelievably bad. They were so bad that some of them were not allowed to teach calculus to the freshmen in sections because they didn't know calculus.

Dr. Hartzell: Where did you get the graduate students?

James Simons: Well, of course we got them, I don't know where they were gotten before, but it was, there were a certain amount of fellowships and so on to give out, and I guess there was pressure to accept a certain number, and they did. But graduate students, you know, the good graduate students like to go to places which have big reputations and so, and we certainly didn't. So, it was a real problem for this high-class faculty that we were bringing in to have to deal with low-class graduate students. And of course the problem gradually corrected itself as the reputation of the department spread; but there's quite a long lag, my experience is that it was five or six years before the reputation of the department caught up with the people who were applying to graduate school. Now, twenty years later as far as I can tell the department has excellent graduate students, and in fact some of my friends complain that they have too many good students and running too many theses and don't have enough time for their own work. And I point out, well, isn't this the problem that you always dreamed of having, and they say, yes; well, now we have it, and it's a real problem. But I'll never forget the first month I was there, the graduate students invited my wife and me to a party somewhere in Lake Ronkonkoma given by the graduate students, I think we were the only faculty members there, I was the only faculty member there, and it was a lot of fun, and I liked some of the people, and there were, we had one from Portugal, God knows how she got there, but she was quite good, in fact she became a student of Ax, and there may have been one or two other, but it was really terrible. Now, over the years, I think what happened was that while the graduate students have really gotten to a fine level, from what I can gather, the undergraduates at Stony Brook are, I think, on the average are not as good as they were in

1968, at least the average student is not as good, there are more of them of course. What else can I tell you.

Dr. Hartzell: I think I've probably run out of questions, Jim.

James Simons: Fine, well, let me see.

Dr. Hartzell: Any individuals in the University who stood out as

James Simons: Can I have a cigarette, do you have

Dr. Hartzell: By all means, yes, yes.

James Simons: A wastebasket or something I could use for an ashtray.

Dr. Hartzell: Can you use that as an ashtray?

James Simons: Oh, yes, that will be fine. Well, of course, there were people in the Department who I thought really contributed a great deal from the first instance. Probably the most constructive, consistently constructive faculty member was Irwin Kra, who subsequently became chairman and was chairman for a long time, and I think probably still is, or sometimes is and sometimes isn't, but mostly is.

Dr. Hartzell: Did you recruit Tucker by any chance?

James Simons: No, I didn't recruit Tucker, Tucker was in Applied Mathematics, and Alan Tucker came into Applied Mathematics. See, the problems in Applied Mathematics were a *leitmotif* of all my time at Stony Brook; it was never a department that managed to get out of its own way somehow and really take off. In fact, now they have appointed this year a very, very well known and strong guy, Mr. Glimm, to be its chairman and that may be the beginning of a new birth for Applied Mathematics. Other people, oh, I don't know

Dr. Hartzell: Did you have any relations with people in the humanities or the social sciences?

James Simons: Well, I was very fond of the Graduate Dean, who at that time was Herb Weisinger, who had been, I believe, chairman of the English Department, and I found him intelligent and supportive. Other people in the humanities, not really, certainly in those early years I just didn't too many people even out of Mathematics, people in

Physics, of course, Frank Yang was stimulating to be around, and a few of the other people in the Physics Department who were interested in mathematics and vice versa was the genesis of something which today is very important at the University, there is a very strong interaction between mathematics and physics in exactly the area of geometry, which I mentioned at the beginning, was a relatively modest area of mathematics, has blossomed to being a central area, and it's central in part because it interacts so strongly with modern physics, so there is a very strong interplay between the kind of physics that Frank Yang does and the kinds of geometry that I did and that others in the department do today, so, that interaction was very good. Stanley Ross, now that I recall, was the Dean at the time that I came, but he was on his way out, so I guess that Gelber didn't interview me when I came, Ross interviewed me, but Ross was going, I believe to Texas or someplace, and Gelber was taking his place, if I'm not mistaken, so that my boss, I suppose, was Sid Gelber, but really, most of the, I brought my problems to Toll, and I didn't have too many problems, I must say, or at least I didn't have many that I brought to Toll, but mostly about how can we get more money to pay so and so, that kind of thing. And Toll and Pond were very helpful. Other people, not really, but maybe I'm just not, Bentley Glass, of course, maybe I'm not remembering; it's a long time ago.

Dr. Hartzell: Right, twenty years. Okay, I think you've filled in a part of the picture that's been missing.

James Simons: Good.

Dr. Hartzell: I appreciate you taking the time, I know you're busy.

James Simons: Good.

Dr. Hartzell: I enjoyed the, I'll turn this off now, I guess, unless you have something

James Simons: No, I don't.

[end of interview]