

**Interview with:
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and

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MIS QUARTERLY: What do you believe top executives generally expect from their information function? In the future do you, from your University's point of view, see any changes in these expectations?

MR. BIGGS: Let me approach the question from the perspective of the long range planner. Many organizations that I have worked with over the years put great emphasis on formal talking, thinking, and planning about where the organization should be in five years. This included making projections, developing models, and spending a great deal of time defining what a good result in the organization should be. When I was working for a mutual life insurance company (a "mutual" is owned by its policy holders), we

went through an exercise over a two-year period which included a substantial amount of discussion directed at identifying key performance measures for evaluating the company. What were the significant variables in assessing performance? We came up with a rather extraordinary result. Subsequently I learned that the National Income accountants have found the same statistic as being the appropriate performance measure for a mutual life insurance company. Would you care to guess what is the key measure of growth in a life company?

MIS QUARTERLY: Premiums in force?

MR. BIGGS: Premiums in force is important, but the one measure that we came down to was expenses. The company that had the fastest growth in expenses was probably doing the best job. What we are identifying is the service that a life insurance company provides. Of course, an important conditional precedent is that the company is making money, or at least breaking even. If we increase expenses but don't increase premiums, we are going to get in deep trouble. There are so many kinds of services that we offered, some of which include the premium only 1% or 2% margin for the services of the company; others include significantly more. The services of a life insurance company are what we are reimbursed for and premiums are a kind of cash flow item which are in large part only window dressing. What we wanted to capture was a measure of the part of the premiums paid for *services*. Unfortunately, such a measure may be theoretically correct but it's obviously a horrible yard stick for incentives. Accordingly, we went back to a traditional set of balanced goals, involving growth in assets, premiums and contingency reserves (for mutuals such reserves were a form of "retained earnings").

MIS QUARTERLY: How does that differ with your perspective now at a university? I am certain that you are not going to want to be measured by your increase of expenses.

MR. BIGGS: I don't care if the measure is expenses or income, *provided* they are in

balance. The case of the university is essentially the same.

MIS QUARTERLY: As the vice-chancellor of a large university, what do you expect from your information function? How do you expect it to serve you?

MR. BIGGS: In an institution such as Washington University I would like to have the information function project forward for five years the key operating data that we should be tracking. In our case we need to know more about our students than what just comes off the accounting records in the form of income year-to-year. We need to know quality measures: how many students are staying and how long? what happens to them? how do they progress in various schools? We have a very intricate system at Washington University. Bob can tell you a lot more about that. Multiple schools and students criss-cross back and forth within these schools and the information system must be able to keep track of all these people. The system must also produce useful reports to tell us how we are doing. I have been involved with some other schools that cannot generate a meaningful report on how many students they have. They can give you some kind of gross head count but they cannot tell you how many credit hours are being taught, how many full-time equivalent students there are at a certain point in time. There is a large amount of financial information in the university. It is fairly subtle and I am not sure we have it under control yet. This includes what our faculty are doing in the way of research and how their time is being allocated to research and teaching activities.

MIS QUARTERLY: Do you think that you are getting what you want and how do you view the changes and the quality of your information function for the future?

MR. BIGGS: I am not getting what I want on research, but I believe that a system can be designed. We are in the process of identifying what we want on research in this system. This information will be relatively easy to get

as long as we keep pressing from a management viewpoint to get the data.

MIS QUARTERLY: Do you think the quality of information provided is improving or getting worse?

MR. BIGGS: It is getting distinctly better. I am very optimistic that it will continue to steadily improve. I don't think that top management needs information nearly so much as they need to be concerned that the people at the operating levels are getting the right information. I would like the deans of each of our faculties to be getting the essential information. I think the quality of the information going to them ought to be more of a concern to me than the quality of the information coming to me.

MIS QUARTERLY: That is an interesting perception.

MR. BIGGS: Top management in any institution ought to be looking very carefully at what information the operating level people are getting. This is done by asking questions and seeing if they have the answers. When they do not have the answer, keep asking and eventually the answer will be provided. The resources must be available to these operating people and the computing staff so that when they come to the computing people they will not get brushed aside by some unimaginative types who really do not want more work coming to them.

MIS QUARTERLY: Many top executives tell us that their major information is not likely to be produced by computers. Describe your principle sources for useful information.

MR. BIGGS: Much of mine comes from computers. Certainly all the financial reporting is computer generated. Our financial reporting is very good. It is much more comprehensive in my view than it was when I worked for a life insurance company in terms of expense control data. There is a good reason for this; the control of run-away department heads is a real problem for schools. We have a comprehensive system that produces a monthly statement for all the management people

giving them the kind of data they need, and I can get summaries of that. Bob manages this function for us. He also runs the Center for the Study of Data Processing, manages planning and budgeting for Washington University, acts as the program chairman for ASM, and does a little consulting. He also teaches a number of courses in the engineering school.

MIS QUARTERLY: Because the information services area impacts upon and is impacted by all parts of an organization, are these information services areas represented in the planning process at its inception or are they the recipients of the end product?

MR. BIGGS: Probably the best answer to this question relates to our biggest new information system for student records. We have been quite successful in involving all the operational people in the planning and design of that system.

MIS QUARTERLY: Is the information services function a participant at the inception of the entire University planning process?

MR. BIGGS: That is difficult to answer simply because information services report to the Chief Planning Officer at the University. For lack of anyone else with the function, I suppose I am the "Chief Planning Officer."

MIS QUARTERLY: That is interesting. One of my assertions is that the information officer and the planning officer must work closely together. In the future I anticipate it is going to be the same person. I am glad to see it is already happening here.

MR. BIGGS: At many of the universities I am familiar with, it is common for a computer center director to be involved in the budget and planning function. We have begun a large new project on the future of the University. We have a number of task forces working on this now. Bob will be very much involved.

MR. BENSON: It might be helpful to characterize the degrees of freedom that top management has at a university, compared to top management in life insurance com-

panies. It seems to me that your questions about the role of information systems would relate to those degrees of freedom at the top management level. What flexibilities does the Chancellor have and what should the information function support, versus what initiatives can the President of an insurance company make?

MR. BIGGS: From my two experiences, the life insurance company was highly centralized with all the reins pulled together very tightly at the President's level. All information was available to him and he was also the center of the planning system. It is quite different at Washington University. The individual schools have very key senior management people at the top level because we operate under a decentralized school system. In our situation, the Dean of our Law School has a great deal of flexibility which would not be given at many universities.

MIS QUARTERLY: What criteria or methods do you employ in evaluating the information services lead executive in the performance of his responsibilities? How and what do you measure as it relates to the function he heads?

MR. BIGGS: The things that I think are important are creativity, responsiveness to the institution, and understanding of the institution. I do not want an information officer whose primary focus is on the machine and building systems to answer questions that nobody will ask. I want somebody who is deeply involved and senses the political questions that are going to be coming up throughout the institution. I think Bob's career path in many ways was the wrong one. I believe the top information officer should come out of the user side. At General American I was very pleased to place a guy who had no computer experience in charge of the EDP division which was the same as an information services division. He saw his job as information services oriented and he saw the need to deliver those services. He had to learn a lot about EDP in a hurry, of course.

MR. BENSON: It is interesting that of the 12 companies we have as Corporate Affiliates

of the Center, I believe 8 of the top executives in the data processing area are from non-data processing background.

MIS QUARTERLY: Do you have an understanding of the incremental benefits that the University may get from the fact that you may have superior information?

MR. BIGGS: There are two levels of benefits. One is satisfaction — when the board asks us a question we can answer it. We had a board of trustees retreat for a planning session. Bob provided future projections of data for the institution that was absolutely top-notch and focused on the kinds of problems that the planning had to focus on, despite other concerns of the institution.

The other benefit is that I would like to think that our information system is highlighting our problems soon enough so that we know what we ought to be working on and that we go after those areas before they become serious. Our system does that as well as any system can. We can, for instance, identify rather quickly an enrollment problem or financial problems.

MIS QUARTERLY: You appear to be talking about problem areas in a quantifiable, measurable sense. What about a university's product? Isn't your bottom line, so to speak, not profit and loss, but your students?

MR. BIGGS: Yes, one flip answer is to use alumni giving as the bottom line; it says a good deal about what your most knowledgeable customers think of you.

MR. BENSON: That is not inconsequential.

MR. BIGGS: This varies with the quality of the institution.

MIS QUARTERLY: But isn't there a long lead time in the sense that it may take ten or fifteen years for your students to get out into the marketplace to feed back those dollars?

MR. BIGGS: There is a more immediate measure — the quality of the people who want to come here.

MIS QUARTERLY: How do you measure that using your computer?

MR. BIGGS: We now have historical data on all types of quality measures of the admitted freshman class — SAT scores, where they ranked in their high school class, various kinds of tests, number of national merit finalists, etc.

MIS QUARTERLY: You can make a qualitative comparison of the caliber of students to the fact that the reputation of the school may be such that it is improving and one of the ways of showing that is that the SAT's and the ranking in the class, etc., may be improving?

MR. BENSON: Yes, and there is one other area that we track. We monitor where those students go who apply and choose not to come here. This analysis becomes a competitive analysis of the crossover applicants. If the student applies here and at Northwestern, we know who goes to Northwestern and who comes here, and we can track those results over a period of years. We must know who our competitors are and how well we are doing in the marketplace.

MIS QUARTERLY: How about keeping track of your students once they graduate?

MR. BENSON: We have about 9 people who do nothing but keep track of the alumni and other friends of the University. We received contributions from twenty-six percent of our alumni last year. We know where every one of those people is. For most of those, we know information about employment and career.

MIS QUARTERLY: What about the 74% who did not contribute?

MR. BENSON: We are working on that.

MR. BIGGS: I suspect that you are suggesting that we find out what our graduates have done in their careers. I do not know if the fact that they went to school here or at any prestigious school has anything to do with their successes; many people argue

that the enrollment filtering process predestines such excellence.

MIS QUARTERLY: There is an interesting other side of that measure. For example, the University of Chicago has had more of its graduates become university presidents or college presidents than any other university. An interesting question would be is that more important than having more people become presidents of companies? That depends on a lot of values.

MR. BENSON: Those kinds of measures are selected by 1) availability, and 2) by those that tell a good story. I have been on the selection side of those measures and one can choose measures that will tell the story one wants to tell. It is quite another thing to decide on some arbitrary or some non-institutionally selected measures.

MR. BIGGS: We have one very specific measure that is quite meaningful. That is the percentage of our graduates that apply to and are accepted into medical school. We do very well on that and watch it very carefully.

MIS QUARTERLY: What about the law schools, the graduate schools of business, etc.? Are those considered too?

MR. BIGGS: I do not think we watch that. I do not know if we even have that data.

MR. BENSON: No, we do not.

MR. BIGGS: Before coming here I was a member of the state coordinating board for higher education. We had a formula for allocating money to a system of about ten schools in the state of Missouri. An issue that came up at every meeting was that funding cannot be allocated according to numbers of students enrolled. We have to bring in new quality measures. What is going on in the classroom? I said that if anybody could tell us how to measure that in a way that would be considered fair, we would be glad to pay for it. There is a study being done which is funded by the Fund for the Improvement of Post-secondary Education (FIPSE). One million two hundred thousand dollars was granted to the coordinating board of the

State of Tennessee to study how to measure quality outcomes of the college experience. I kept track of how that study was going for a while and my prediction was that nothing unusual was going to come out of it, except that they were going to spend a lot of money on researchers.

MIS QUARTERLY: Do you believe that different universities might have different qualitative feelings of what their business is? For instance, some universities might feel that they are in business to turn out additional university professors, some to produce businesspeople, some to produce doctors, and so forth.

MR. BIGGS: We do not. Medicine is certainly a priority with Washington University, because we have a great medical school and great training for pre-med students. But we also have a first rate arts and science faculty, engineering school, and other fine schools.

MR. BENSON: One major point is that for some purposes there is no "university," but rather a collection of widely diverse academic programs. Some of these questions about which you are speaking are major concerns to the academic administrators. The Dean of the School of Business, for example, is very concerned about the career successes of his graduate students, but his measure is substantially different from that of the chairman of the English Department or the chairman of the History Department might have.

MIS QUARTERLY: Do you have the chairmen of the various departments of totally diverse groups fight for allocation of funds?

MR. BENSON: There are two parts to that. One is the way it is really done, and the other is how we convince those who are a part of the process that it is being done on their behalf, with fairness. The way it is really done is by trying to focus attention on the incentives within each department; in particular, we try to draw the diverse departments together into some sense of forward motion for the institution as a whole. I think that is a vital concept.

MR. BIGGS: One of the hardest things to do in a university is attempt to determine what is a satisfactory level of quality for an individual department or even an entire school. This is the job of the chief academic officers. These decisions make a great university in the long run and involve a lot of value judgment and a lot of non-quantitative measures. Certainly the ability to manage the budget would be a minimal requirement for the head of one of our big departments or schools.

MIS QUARTERLY: So information management really does not play a role in that?

MR. BIGGS: I do not think it does. I think it does in the sense that when the chairmen do the right things for the university I would like to have the information system highlight that.

MIS QUARTERLY: But you have to take an intuitive leap of faith that they are doing the right thing so that five and ten years from now what they are doing will have been the right thing.

MR. BENSON: My current vision of future information functions at the university is to better focus on the needs of decentralized academic administrators. We do not do a very good job of supporting the large department chairmen or the medium-sized school dean. I do not think that we have a very clear view of what will be useful to those managers; I think we do have a clear view of what is useful to us as central management. But I do not think we have an information support role clearly in mind for the management of, say, the School of Business. It may be that the diversities are so much that it is not possible to do that in any systematic way.

MIS QUARTERLY: I am getting an intriguing picture of the management difficulties that you have. Let me go back to another question in a different way. If you were looking for a head information services executive, what qualities would you look for?

MR. BIGGS: You already hinted at one of these. We need someone who has the sym-

pathy for, the understanding of, and the willingness to get to know the complexities of this university; someone who can work fast on his feet, and absorb all kinds of problems that are going to come up. This person must adapt the EDP and information systems to help with these problems. I do not think I would put an enormous stress on the EDP knowledge of the person. It helps if he knows that as well, but I think knowledge of the university and the capacity to understand it is more crucial.

MIS QUARTERLY: How are priorities set within the University for the allocation of the resources of the information function? How do you decide how much to spend, for example?

MR. BIGGS: Well, we try not to spend too much more than last year. Actually this is not a terribly political process. I think it is more so in most corporations. To a great extent this is determined by the amount all the entities are willing to pay. The charge out system in the University pretty much determines how much we are going to spend on computers because if the Medical School does not want to use computer services or the Engineering School does not want to use computer services, they are not forced to.

MIS QUARTERLY: Let us assume that there is a greater demand for Bob's services than he is able to respond to. How do you decide on the allocation of priorities within that budget? Is there an EDP committee of some sort?

MR. BIGGS: No, Bob and I make the allocations. We have several kinds of payers here in the University for computer services. We have real payers, and then the ones that we, in effect, need to worry about. The real payers, if they want to double their demand, have the money to pay for their increased services. We do not spend any time deliberating their requests at all. The Medical School is a separate financial entity and if they say they want an extra million dollars of computer services and will pay for it, that is a financial decision they make.

MR. BENSON: About half of our resources are allocated that way.

MIS QUARTERLY: What about the other half, the fiction payers?

MR. BIGGS: The other half is the judgment Bob and I are hired to make. Are the services what they should be? Are we doing the right things with computers? Are the demands reasonable? We do end up with an incremental kind of a judgment every year on how much we are going to change.

MR. BENSON: I find it useful to put a real price on some aspect of the proposed incremental, add-on service. For example, the Department of Economics wants more computer services. An approach to this is to put a price not on the computer time, but on the terminals, that is to say an aspect of the services; this will force the users to put an economic value on what they are getting. It may not be the real economic value, but it is an economic value chosen with regard to their particular setting.

MIS QUARTERLY: What is the approximate budget of this university?

MR. BIGGS: The total expenditures are about \$150 million. \$50 million is mostly federal money that comes to us through research.

MIS QUARTERLY: Is that average for universities?

MR. BIGGS: No, we rank very high. We are a research university. We are probably in the top 20 universities in the country for research dollars received.

MIS QUARTERLY: Do you people have a chart room or information room of some sort where you keep track of all this with audio visual displays?

MR. BIGGS: No, we have no plans for such a room nor displays. It would not be useful here.

MR. BENSON: It would represent a standard of living that would be hard to square with some other problems. The incoming president of a southern school I'm familiar with

built himself a large structure about 18 stories high with his offices at the top. He put in 20 foot ceilings, floor to ceiling windows, and luxurious fittings. It is said at that school that the single greatest disaster to befall that institution is the president's office, because he cannot afford to meet anyone there. He cannot afford to meet disgruntled alumni, prospective donors, faculty, the governor, or any of the legislators. He did not understand the problem and that is what I mean about the differential standard of living.

MR. BIGGS: General American had a chart room, but it was not a very "razzle dazzle" one. There was no EDP gear, but we did keep charts of the company's key financial measures posted. We had about 20 of them identified, and we updated those every quarter.

MIS QUARTERLY: As you look at the 1980's, what would you consider the one, two, or three key problems facing universities in general and to what extent can information services help solve them?

MR. BIGGS: There is one obvious problem that I am sure you are well aware of, and that is enrollment. The demographics for the U.S. are changing so that there will be fewer students at the typical college going age. This is predicted to drop by about 20% by 1985. It is a very sudden and steep drop.

MR. BENSON: It is going to be a buyer's market.

MR. BIGGS: We do not think it will be a big concern for us. The rate that we will have to discount our tuition will be determined by how difficult it is to attract students. If we cut the price of Washington University down to \$1,000, we will have no trouble reaching maximum enrollment 3 and 4 times over. But we must consider our financial problems, because our tuition next year is \$4750.

MIS QUARTERLY: What you are saying is that if you lower the price officially there might be a substantial increase in demand?

MR. BIGGS: Lowering the price comes in the form of discounting. If we stay with \$4750,

how much of the financial aid package is going to have to be provided?

MIS QUARTERLY: Where would you get the balance of the funding you need?

MR. BIGGS: That is the problem. If we cannot get it, then that is the dilemma of how to deal with the decline in the number of students: we can get the students, but can we get enough revenue?

MIS QUARTERLY: Is there a way to increase demand other than by lowering the price?

MR. BIGGS: Sure, we are pretty liberal, right now about what we will spend in our admissions office. We do extensive recruiting at all the high schools. We try to get Washington University better known, and we think we have some things going for us. We have become a national university just in the last two decades, and so we are now known coast to coast. We are steadily getting to be better known.

I would say that of the three problems, demographics would be one of them. The second problem is how are we going to cope with declining federal research contracts and grants? The federal dollars are drying up steadily. They go up an absolute amount, but real dollars are declining. The whole relationship with the Federal Government is getting

to be a very difficult one for us. Some hostility to universities is beginning to surface in Congress.

MR. BENSON: An irony is that information systems have made it possible for us to more accurately identify the costs of doing federally sponsored research. The result has produced antagonism, because the credibility of this better information is a question in the minds of the Congress. "It cannot possibly cost that much to do federally sponsored research;" but it does and we have the data to support it.

MR. BIGGS: There is a third problem that is the most acute for Washington University and applies to most private universities, but is not the problem for state universities. The secret of our past success is that during the '40's, '50's, and '60's large endowments were built into the private institutions. These endowments provided us with enough revenue, along with tuition, to offer something distinctly superior to what could be provided in the state institutions. Inflation and the securities market have devastated us in the last decade. What is going to happen in the next decade? Are we going to have inflation, are we going to get the rewards on our stocks? That is the critical problem we have to face now and be prepared to deal with in the future if we are to preserve our historic excellence.