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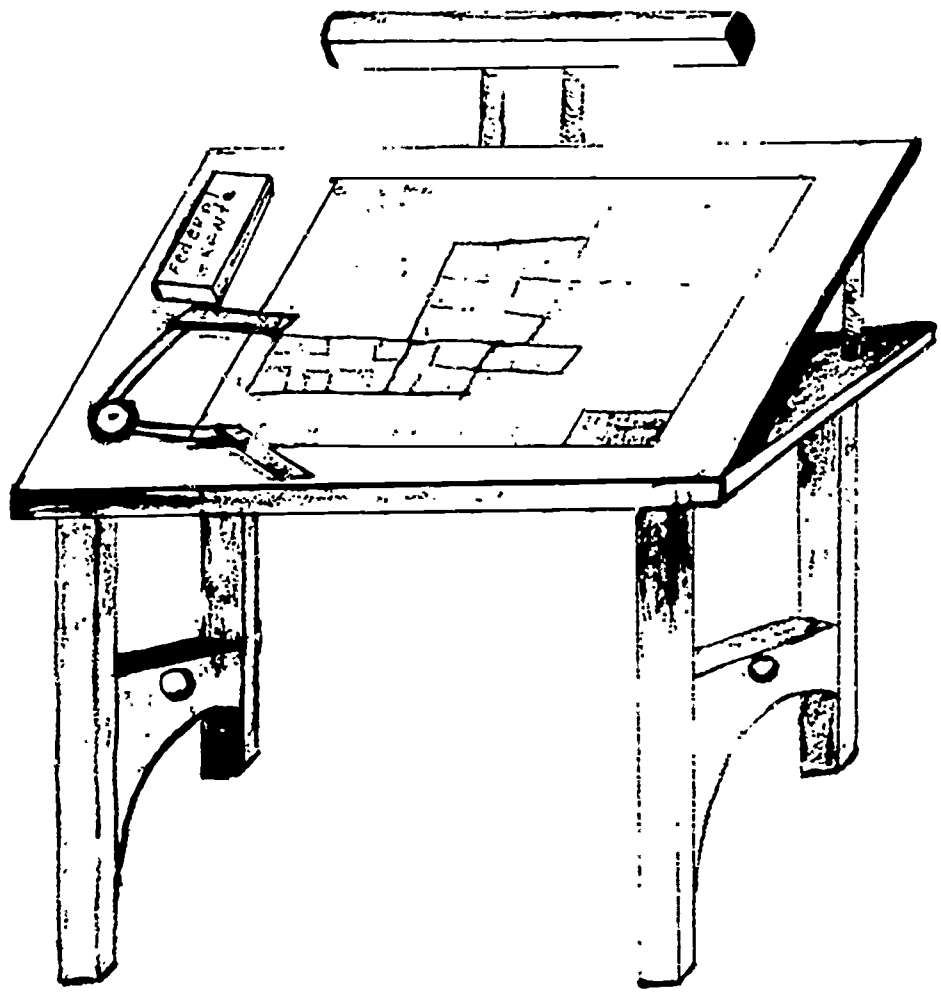
ABSTRACT

SPEECHES AT THIS WORKSHOP ON THE CONSTRUCTION AND UTILIZAIICN CF PHYSICAL FACILITIES ON THE COLLEGE CAMPUS INCLUDE THE FOLLOWING--(1) ACADEMIC PLANNING AND EDUCATIONAL SPECIFICATIONS, (2) SPACE UTILIZATION AND PLANNING FCR EXPANSION, (3) THE ROLE OF THE ARCHITECT IN FACILITY PLANNING, (4) FEDERAL PARTICIPATION IN ACADEMIC FACILITIES, AND (5) CONSTRUCTING AND ENGINEERING. PANEL DISCUSSIONS AND GENERAL QUESTIONS FROM THE FLOCR ARE INCLUDED. (FS)

Workshop on College Facilities



The West Virginia Commission on Higher Education

WEST VIRGINIA COMMISSION ON HIGHER EDUCATION

WORKSHOP ON COLLEGE FACILITIES

Morris Harvey College Campus
January 22, 1968

Morning Session

Welcome	J. Jefferson Monroe, Chairman Commission on Higher Education
Purposes and Introductions	Jerry Lee Jones Executive Secretary Commission on Higher Education
Academic Planning and Educational Specifications	Thurman White, Dean Continuing Education & Extension University of Oklahoma Norman, Oklahoma
Space Utilization and Planning for Expansion	William S. Fuller, Director Higher Educational Planning Albany, New York
The Role of the Architect in Facility Planning	Allen Green, Secretary & Treasurer Educational Facilities Laboratory New York City
Federal Participation in Academic Facilities	Campbell Snowberger Program Officer Higher Education Facilities U. S. Office of Education Region III Charlottesville, Virginia
Constructing and Engineering	Owen Johnson Regional Engineer Construction Service U. S. Office of Education Region III
Panel Discussions and General Questions from the Floor	

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J. Jefferson Monroe

We welcome you to this workshop on college facilities this morning. The Commission on Higher Education is established to serve colleges and universities within West Virginia, especially by providing information and counseling services on questions relating to construction and utilization of physical facilities on the college campus. Another aim of the Commission is to see that West Virginia receives its full share in Federal funds which are available to the State. To do this, our services are extended to those institutions who are preparing grant or loan requests for Federal agencies. Let us realize that in the future, Federal monies will provide needed help for Higher Education. In order to best use the money, the State must prepare itself. This means both short and long-range planning by both public and private colleges. Also Federal, State, and local agencies need to coordinate their activities.

As a representative of the Governor of West Virginia, I hope you will have a fruitful study here today.

Jerry Jones

Gentlemen. We are delighted with your attendance on this foggy day. As the fog clears and the airport is opened--we have just been informed that it is closed at present--perhaps other persons who have not yet arrived will join us.

The workshop is one in a series of encounters, sponsored by the Commission on Higher Education, among college officials with · the State. At these meetings, we hope to provide a context in which you can get to know each other and share ideas; and most of all, we hope to stimulate your thinking in new directions and about new concepts.

The agenda for today relates to the planning for and building of an academic facility. How does one determine need? What is space utilization of existing facilities? What can the architect contribute to the planning process? In what ways can the Federal government participate in building programs? What to watch for in constructing the facility? In short, how do we provide the best facilities at the least cost? We hope that the lectures given today, and the discussions during the coffee breaks and lunch period will provide you with positive ideas to use at your institutions.

Thurman White

Distinguished Mr. Jones:

I am delighted and pleased that you took the information which I sent to you and none of the information that an old side-kick of mine by the name of Jim Harlow might have provided you. It is always somewhat of a relief to find, you know, that the chairman is either uninformed or he is very discreet and restrained. He asked me if I thought I could do something about stimulating your thinking with respect to academic planning and educational specifications. I told him, "Sure!" Obviously, he hadn't heard about the credibility gap, and he persisted in the invitation and I came. I heard the other day that the credibility gap has become so great that when Washington admitted it, no one believed it.

I don't see President Harlow in the room; but he is one of the reasons I wanted to come over to West Virginia, in addition to the fact that I have been at one university for 30 years and it is only once in a while I do get out. But I wanted to come over and sort of check up on the Harlows and see what kind of stories they were telling and how they were getting along. When the Harlows left Oklahoma, there were a number of going away parties, and I recall that one of them was a rather massive affair. There were, you know, a few hundred people representing more than half the wealth of Oklahoma there. On that occasion George Cross, who has been President of the University of Oklahoma 25 years and is retiring June 30 of this year, took the occasion to admonish Mr. Harlow a bit, and the principal admonishment went something like this: When you are called at 2 o'clock in the morning by the Dean of Students to say that there is a panty raid or when you read in the morning paper that a graduate assistant has been sharing LSD with some of the students or when you find that an

assistant professor has sold the final examination questions to a required freshman course or when you find that the newspaper reporters have discovered that the art school is using nude models, don't blow your cool. Now I don't know that Jim Harlow, in the 20 years or so that I have sat on the Commencement platform with him, has ever blown his cool. He is really more the kind of guy to give ulcers than to get them. And I kind of want you to tell me during the course of the day some stories I can take back with me about his experiences in West Virginia.

One of the things that impressed me about what's going on here and sort of teased me and intrigued me is the amount of effort which has already gone into your plan. I have 3 books here which you have probably all memorized. One of them is the report of the Committee on Higher Education, October 1966, Volumes I and II. Do you all have that with you and right handy? The other one is the report of the State Commission on Higher Education, December 1967. And I got to thinking that this preoccupation you have already had with planning and the amount of real careful and perceptive effort in this direction probably has brought you to the point where you are ready to make some small estimate on how well you are doing. So I took the time to develop a survey instrument, and what I would like to do this morning is to ask you to take this examination and then we will take up the papers at the end of the examination period, and Jerry and I and the rest of you that meet this afternoon in a small committee session will score these. And what we will do is try to find out how well you think you are doing in terms of your academic planning; and if we find some soft spots, it will indicate to us that we have some areas of further effort. And if we find some strong spots, we will try and build on strength. As you can see, I call this a rating scale for a study of effectiveness on academic planning and higher education. The instructions seem to me to be perfectly clear. Since I wrote them, of course, they would seem clear. I am tempted to talk a little bit about them because at one time

we had on our faculty a chap who said, "There is some difficult, in various disciplines commuting with one another." There seems to be a stoppage from what he called "coik." The jargon of various disciplines prevents other disciplines from understanding what is happening. And so he had the term "coik"-clear only if known. And so the words that I use here are perfectly clear to me; but I think to be sure that they are perfectly clear to you, I will let you know what I think they mean at least to some extent and for a little while. Now the way we do this is for you to decide if your state is more described by the characteristics of excellent planning on the left hand column or if they are more described in the column on the right hand side which I have entitled "risk." And if you think that you are getting better at the thing, you move the arrow to the left and if you think you are getting poorer at the thing, you move the arrow to the right, you see? Is that "coik" now?[1]

The first one comes as a great shock to you, I know. Academic planning precedes facility planning. I guess in a way this is Bill Fuller's first point. He and I have sat together on a panel of consultants for the State System of South Dakota, and I know a little bit about his way of thinking. This is his major thesis: you have your academic planning ahead of your facility planning. As a matter of fact, I have heard him say that the day you turn the key in a new building, the building is obsolete. I learned the other day that great strides are being made in the aircraft industry-that they now have a jet that can fly halfway across the United States before it is obsolete. Perhaps in thinking here, you can design facilities which will be obsolete only after they have been in use for a day or two. Obsolete and irrelevant facilities are the alternate-this is the risk. My thought is that I probably don't need both

[1]Refer to chart at the end of the speech.

of those words-obsolete and irrelevant-because if the facility is obsolete, it is irrelevant. There is no question about it. It sort of calls to mind an Irish friend who had longed to go back to the old country and the time came when he could go to the Emerald Isles for the first time and he was enjoying it, and he went into a pub in the middle of the afternoon and said, "Give me some of that wonderful Irish whiskey." And the chap sitting on the bar stool next to him said, "Sir, that is redundant." Obsolete and irrelevant, that is redundant. If you are obsolete, you are irrelevant.

And I think that I wouldn't talk any more about that except that I found in the Green Book on page 11 something about the higher education comprehensive planning study. And the sentence I refer to goes like this: "The first year of operation by the study group founded by the United States Office of Education will be restricted to (1) a quantity and quality inventory of the physical facilities in West Virginia colleges and universities, (2) a uniformed conditions evaluation of space utilization, and (3) enrollment and utilization conditions projected with resulting building needs to 1977." Now I think that inventory is either just now completed or just about to be completed. And you are going to begin to think a little bit about what you have heard in the way of data and the analysis that you will make. Utilization data is just keen and dandy. We do this sort of exercise once in a while in Oklahoma, and I find that there are 2 kinds of interpretations which we tend to make of this kind of data. One is that if you are not using the facilities you now have, why do you need more? And this comes up once in a while, you know. They find that we aren't using something 100 per cent. So the point is that you don't need any more facilities until you use those that you already have. That sort of rapid conclusion makes me wonder a little bit. If you were Clark Clifford taking over the Defense Department and you found that the Air Force is asking for an X number of new planes, but they already have 1,000 planes not in use; and if you use the same

logic which some people apply to higher education facilities, you would say, "Go use those planes that you are not using before you ask for any new ones." The fact that the 1,000 old planes are old prop planes, and it would be certain suicide for a guy to take them up now doesn't have bearing on the picture? What I am suggesting is that some of the facilities in use here (I understand that you've been at it for 100 years or so) may have become obsolete in this period of time and that if you don't take into account the purposes for which those facilities were built and the fact that they have now become irrelevant really lets you misread the data in such a way as to lead you to some hasty and irrelevant conclusions.

The other kind of conclusion that I find coming out of utilization data is that we are critically short of some kind of facility, and we need more and we need it now-like the pressure is on. So we get an architect and he draws up a plan and we put it up for bids and here comes the facilities. You don't do that in West Virginia, I know, but as nearly as I can tell if you leave it to the architects and for that matter if you leave it to some professors, what you will have reproduced are the laboratories and the classrooms that these guys learned in 20 years ago. The kind of program that doesn't get to the academic Frontiers doesn't do any great service for the youngsters.

It is a lot of fun, really, to the academic boys in touch with the architects. We built a new center for continuing education on the University of Oklahoma campus, and it is my duty to work with the architects who designed the facility. And we traveled I guess 35,000 miles or so around the country looking at all the facilities that we had been told about which might serve as prototypes of our Center. As we would look at a facility. I would talk with the architects and try to explain to them what it was about that facility which, if we changed

it a little bit, would facilitate our concept of continuing education. We knew we might have something to say about its shape now, but once built it would shape the program of contuning education for the next 50 years or so-because we tend to use buildings about that long.

On one particular trip, we got in a single-engine Bonanza, a university airplane, to fly out to Aspen, Colorado, to look at the Institute for Humanistic Studies; and I don't know whether you've been out to Aspen, Colorado, or not, but to get there from Oklahoma you have to refuel in a single-engine plane at least one time. So we stopped at the foothills of the Rockies and we took on a load of gasoline and started toward Independence Pass. The mountains really went up faster than this little single-engine plane did. But the air currents in the Rockies are such that they give you a lift and within the space of seconds. That little single-engine Bonanza plane jumped from 11,000 feet to 16,000 feet. Now those of you who fly know that a single-engine Bonanza airplane can't do that, but it did. The architects got sick, and I got a little woosy and I said to the pilot, "Frank is it like this out here in the mountains all the time," and he says, "I don't know. I've never flown in the mountains before."

You can have a variety of adventures if you start putting the academic types in contact with the architects. Eventually our architect said to me, "Now leave me alone; I know what you want." And he went to the drawing board and he came up with a center that does what we had on our minds in the planning committee very admirably. And how fortunate we were that we had an architect who would take the time and spend the trouble to work with us and to learn what purposes we wanted served.

I found in your study that you have even so many purposes you want served here in West Virginia. You want your system of higher education to prepare people for

leadership in the state and for the responsbilities of citizenship. You want your institutions of higher education to do something about the economic development of the state. You want it to do something about the preparation of people needed in the professions-technical and vocational. You want education to have something to do about raising the cultural level of the state, to provide people with the continuing opportunity to learn throughout life, to participate in the research and discovery activities of the country, and to aid in the solution of social and industrial problems. If you think that your academics and architects are pretty well together, you will check in the high value column; but if you think there is a distance or a gap that is growing between the academic plans and the architects, you will point the arrow to the right. If you think it is getting better, you will point the arrow to the left. If, on the other hand, you think that the academic planners aren't putting very much into this and that the architects have got the ball and are running with it, you will put your arrow in the alternate column. If you think that the gap is lessening a little and that the academic boys are really beginning to put some ideas into it, you will point your arrow to the left. If you think that the academic planners or academic types are beginning sort of frozen out more and more, then you will point your arrow to the right. Do you understand what I've got on my mind?

I guess I was using architects in a sort of generic sense. Let me say the facility or hardware types. Would that be better? I prefer just a "seat of the pants" estimate on how well things are going in the state. I'm not asking you to sign it. I don't want any signatures here. This may be your only chance to express your opinion on how well the rest of the boys are doing, too. I don't want you to answer too much for yourself because of the "halo" effect. As a matter of fact, this is the West Virginia edition of the survey. If that

makes you think there are other editions, that's alright but there isn't another edition. We want to get a kind of rough estimate, if you please, on how well this bunch here thinks the State of West Virginia is doing.

Next item says, "Desirable academic planning follows a definition of institutional functions." I understand that the definition of institutional functions is pretty much left within each institution maybe somewhat assisted by members of the legislature. It doesn't matter to me just now where the definition of institutional functions comes from as long as we understand that academic planning comes after you have decided, or somebody has decided, on what the functions of the institution may be.

And I found a sort of interesting thing here in your October 1966 report- "It is our view that in West Virginia there is no need at this time to establish additional two-year institutions. So long as the existing institutions in the state are provided with the necessary funds to perform vocational and technical functions and the continuing educational functions of comprehensive community colleges, there appears to be no compelling need to open additional two-year institutions in the state." Well, I guess that takes care of those secondary boys. And I looked pretty well (they do the same thing in Oklahoma) through here to see if it said the same thing about the four-year state institutions, but I didn't see anything that said you shouldn't have anymore four-year state institutions. And I looked to see if it said the same thing about universities, and I didn't see anything in there, particularly, that said we shouldn't have anymore universities except at the doctoral level. There was something in there about the doctoral level.

In Oklahoma it runs something like this. We have a junior college going

pretty well, and then the Chamber of Commerce or somebody gets kind of ambitious about the thing and there is a little bit of pressure-a good deal of pressure-what the heck. We just had it happen this past year. A junior college went to a four-year school. And the four-year school, it begins to think about graduate programs and there is a good deal of resistance on the part of the universities to have more graduate programs, so they come in with a Master of Teaching because universities don't have Masters of Teaching. So we get a Master of Teaching in a four-year institution and then pretty soon we get the next story. So why shouldn't we have more universities? Now I don't find this kind of function questioned too clearly in the documents in West Virginia today, but I could be wrong. It could be that you are doing it. If you think you are doing it pretty well, you check in the left hand column; and if you think you may have some way to go on that, you check in the right hand column and in which ever way you think things are moving. Is this kind of agonizing? It would be in our state, I'll tell you.

Academic planning is concerned with the discovery, distribution, and the deposit of truth. What truth is West Virginia interested in? How much of the truth? And in what manner will the institutions of higher education go about it? Now I found the books pretty well set out here on page 14 on baccalaureate programs. Baccalaureate programs, well, they seem pretty universal. Agriculture, archaeology, biological science, business and commerce, teacher education and engineering, English and journalism, applied arts, foreign languages, religion, forestry, health professions, law, library sciences, math, physical science, philosophy and literature and then, I think quite appropriately following philosophy and literature, military science, social sciences, and psychology. And then the dinger: that work for the Master's Degree be offered in all general areas listed above, except military science.

Chaps at medical school tell me that they now have 37 curricula in the applied health professions alone-37. You are going to be concerned, as far as I can tell, with the discovery of, distribution and deposit of truth all across the board, up and down the line. So how are you doing in your planning for this kind of thing? If you think you are doing pretty well, you check on the left hand side, and if you think there may be some dissapation of institutional resources, you check over in the right hand. I have a friend who tells me that he defines a fanatic as a guy, who having lost sight of his goals, redoubles his efforts. That is what I've got in mind on this one. Have you got a fairly sharp notion about what you mean about the truths represented in these various schools?

Number four requires the systematic input of all concerned students, faculty, administration, boards of controls, vested interests, publics, professional consultants, and daydreamers. On page 41 of this, I find a good bit of reference to student personnel services. I find absolutely no reference to students' serving. And I don't know quite yet, in what little chance I have had to read about it, how you are getting the input of student thinking. But it may be something you have thought about and already have worked out. I did notice as I looked at page 75 in Volume II a number of pressures and priorities that you were concerned about, and some of them I don't have on this list and I would invite you to add to this: The federal government, the state and local government, accrediting and prefessional groups, (I didn't have that down, but you might think of that as a vested interest. They kick us around a little bit once in a while.) education for disadvantaged groups (and Jeff Monroe, I'm sorry I left that one out), and educational opportunities for women. And then there is one on this list that isn't on my list and that is the alumni. The Dean of Engineering

at Texas one time started out to revise his curriculum, and he said, "I thought the best way to do this was to ask the alumni. I could depend on them. Wouldn't need to worry about the students or the faculty. I could just ask these guys who had gone out from our school and had hit the hard rocks of the profession what they had needed that we hadn't taught them, and I could revise the curriculum on what the alumni had to say. It didn't work. If an alumnus walks in my office and I can guess how long he's been out of school, I can tell you right now what he is going to tell me. If he's been out five years, he is going to say, "Why didn't you teach me more mathematics and physics? If he's been out ten years, he is going to say, "Why didn't you teach me more technical report writing? I am in charge of a section now and I've got to write reports upstairs." If he's been out fifteen years, he is going to say, "Why didn't you teach me more public relations? They're putting me on the Chamber of Commerce Committee downtown now and wanting me to run for the school board." If he's been out for twenty years, he's going to say, "Why didn't you teach me more management skills? I'm about to become vice-president of the company and I don't know anything about becoming an executive." If he's been out twenty-five years, he is going to say, "Why didn't you teach me more cultural and aestetic things. My wife's dragging me off to the museums and opera, and I don't know anything about what's down there." And I think that the point of the story is that if you depend on any one input, you get a lopsided picture of what is needed in the area of academic planning. So I just ask you if you have worried a little bit about getting the input of all these concerns in the development and planning for higher education in West Virginia; and if you think you are getting a pretty good input from these various sources, you go over on the left hand side, and if you think you are tasking the fury of outraged dissidents, then go back

over on the other side and the arrow pointing which way you think you are going.

Number five includes both long and short-range requirements. On page 39 of the first volume, it has got a real dinger of a sentence- "The state needs a real master plan for higher education." There it is. I think that probably means both long and short-range. don't you suppose? I read some place else, as a matter of fact, it's on page 147 of this one, that you think you are going to need about 50 per cent more faculty. I think you are modest. I learned the other day that there are twice as many kids in the sixth grade today as were in the sixth grade ten years ago. Now that means in ten years from now the sophomore classes in your colleges and universities is going to be twice what it is today. Your estimate, 50 per cent (you may be right because I don't know West Virginia), but it could be that that is a very modest kind of estimate. Now ten years-I think it's sort of a short-range kind of problem. What you are building for in the long-range, it seems to me, is for the kids that are being born today; and stuff that you put up today is going to be used by those kids that are being born today. It would be in Oklahoma, believe me. Now what you risk if you don't do that is the pandemonium of eternal crisis. And I like that word-pandemonium-because pandemonium means "the hall of the demons", and that means if you don't do long and short-range planning, you are in a hell of a mess.

Number six is continuous activity, and I sort of like what I read over here on page 97 of the second book.- "It seems safe to say that a number of the programs appear to have quite low enrollments, low enough to suggest the need for a reappraisal of the value of the conditions. Specific examples are agriculture, bio-chemisty, agronomy and genetics, anatomy, animal husbandry and vetinarian medicine, English, physiology, political science, and possibly

biology. Programs having five or fewer enrollees after five years of operation should certainly be reviewed. On the other hand, there are some Master's programs such as mathematics, and business administration which have enrollments large enough to provide the basis for strong doctoral programs. "That is to look continuously at the student inputs in terms of the kinds of majors which become attractive."

Another factor, of course, is what you think in terms of the long-range needs of the state. I was sort of interested to know that when the boys in vocational and technical education were writing about the new technology, they encouraged you not to think just in the needs of West Virginia but in the needs of the region and nation; then in another section complain about the high-out migration of your brain power. Well, of course what is meant I am sure, is that as you take into consideration regional and national needs; then develop the manpower and skills so that industry will come to you. We take the same approach in my state too. But there is another point even beyond that. There comes out of a document that you have quoted in your studies here-"The Emerging Patterns in American Higher Education"-this sentence: "One takes no risk in predicting that the 50-minute hour, the 3-hour course, the 2-semester year, and the 4-year degree will have become old-fashioned before the end of the decade." That shakes us up when we read that kind of stuff. In some parts of the country, it seems to me, we are almost irresponsible as we become slaves to a once and for all master plan; the master plan we talked about a moment ago. If you think you are doing pretty well about continuous planning, check to the left. You have a pretty good record, you know, as indicated in the '66 report and the '67 report.

Number seven is reasonable forecast of changes in the world of ideas. I

don't find too much in this report about changes in the world of ideas, except on page 63- "Changing technology is producing a revolution in the world of work. Occupationally oriented curriculums at the college level, especially at the technical level, are becoming to be imperative. Although West Virginia has little emphasized such work in the past, it shows signs of explosion in this area at the present. Physical demands dictate that this explosion should be carefully planned and adequately coordinated." Now all up and down the line is the explosion and change in the area of knowledge.

Did you see the front page of the morning paper? There is a whole new science- exobiology, exogeology, exo this, that, and the other thing. And I dare say, this takes a different kind of a classroom, a different kind of a laboratory, and a different kind of a faculty than you would have in the prototypes of the buildings put up 20 years ago. There is a whole brand new thing coming along in the way of teaching techniques. Did you know about the learned worms, where they ground up worms which had been trained and then fed them to other worms and those worms that ate the trained worms learned faster? And these chaps who are working in the area of the psychology of learning are coming in with all kinds of new chemical inputs. But it is not just in these areas either. In the area of the social sciences, the urban scientists are beginning to find all kinds of new and interesting approaches to the study of urban problems and the development of certain kinds of laboratories that we have never heard of before. Computer-assisted system learning, the whole bit, there is a new world of ideas all up and down the line. And you can read about the predictions, and I am sure you have. I guess all I'm asking is how well you think you are getting along in forecasting changes in the world of ideas as you plan for your facilities. That's it.

PLAN AHEA d

MAKE NO SMALL plans

Rating Scale For A Study of The Effectiveness of ACADEMIC PLANNING IN HIGHER EDUCATION

Instruction: For each item below, decide if your state is described by the characteristic of excellent planning or if your state is inclined toward risk; then decide which direction your state is moving. Place an arrow in the appropriate box, pointing in the direction of your choice.

Desirable academic planning:	High Value	Aversion	The alternative is to risk:
1. precedes facility planning			obsolete and irrelevent facilities
2. follows a definition of institutional functions			wasteful duplication and competition
3. is concerned with the discovery, distribution, and deposit of truth - who, what, how much, and in what manner			the dissipation of institutional resources
4. requires the systematic input of all concerned - students, faculties, administration, boards of control, vested interests, various publics, professional consultants, daydreamers			the crippling fury of outraged dissidents
5. includes both long and short range requirements			the pandemonium of eternal crisis
6. is a continuous activity			the tyranny of anti-intellectual control
7. is a reasonable forecast of changes in the world of ideas			bankruptcy in the knowledge industry

Thurman J. White
West Virginia edition: 1968

William S. Fuller

Thank you, Mr. Jones. If I didn't know you better, I would say that introduction is an introduction that laid me wide open, because it looked to me as though you were looking for somebody to blame this whole mess on. Maybe I did have a little part in that and maybe there is a scapegoat and maybe I should play that roll, and that's another story. We talk about planning and Doctor White has chalienged us, I think, with planning this morning; but I would recommend that the airlines do as good a job of planning as we in higher education. I am standing before you in the same suit of clothes that I had on when I left Albany. There is some hope that my bag will catch up with me this afternoon. So if you have to stand a couple of feet further away from me than normal, I will try and keep a cigar lit to keep the smell down; and perhaps I can check to see if the bags got here, and I can get a change this afternoon.

The area that I am to talk about is space utilization. This is something that scares everybody. I guess that a space utilization specialist is a combination of a past-accountant, editor, and any of those other characters which people do not like. That is the approach that we have taken to space utilization. I hope to change that concept a little, and I hope to challenge you in the same way that Doctor White was able to challenge you this morning. He was not presenting answers: he was presenting questions. Unfortunately, I am the type of guy who has the answer to everything, you know, but I am beginning to think that those answers aren't as important as the questions. Why is space utilization and allocation of any use at all? I would like to give you two short stories which some

of you might have heard before about why it might be of some use.

First of all, when you are planning a new facility, I would like to ask some questions to the faculty, the dean, the department head, or even sometimes to the president. How much is this space going to cost you? Say you have to add ten square feet onto a classroom. What's this going to cost? The answer is simply $20 a square foot, $22 a square foot, $25 a square foot--this is the answer that I always get. Now this is the cost of construction of a gross foot of this building, but is it really the cost? If you take the square foot of classroom space and realize that it takes another square foot of space to serve that building, the cost is no longer $20 or $25 a square foot until you add the total costs and decide to pay the architect's fee; but it is double that cost, possibly $50. Alright, let's amortize this space ove a 30-year period. At present costs of amortization--and a 30-year period is fairly common--it is no longer $50 a square foot but $100 a square foot. Now let us use this space just half the time, whatever time limit that is. This is a normal situation--so it is no longer $100 a square foot; it is $200 a square foot. When the cost gets up to $200 a square foot, ask your faculty member, ask your department head, ask your dean, ask your president, "Do you really need that additional space?" Does this space really have to be there or can we get along with less space? Now that is one way to look at space. There are many fallacies in my argument, and you all have ten different ways right now to tear that argument down; but let me give you another approach.

One of the great needs in higher education whenever we have a study of facilities is for more faculty space. The faculty members used to think

it a privilege to have an office; they now consider it an absolute necessity. So let us look at this faculty office space. Let us look at two offices. One of them has 100 square feet in it; the other one has 140 square feet. The faculty member, I am sure, would prefer the one with 140 square feet rather than the one with 100 square feet because of prestige. Let's take this office with 100 square feet in it and put a carpet on the floor, air-condition it, a good wall finish on it, an accoustical set in it, a fluorescent recessed light, drapes at the window, and the best contemporary furnishings.

Then let's take this office with 140 square feet in it. Let's put asphalt title on the floor, paint the concrete block walls and the concrete ceiling, hang an incandescent bulb up there or maybe a little bit better fixture than that, maybe give it some mechanical ventilation (certainly no refrigeration or air-conditioning as we sometimes speak of it), give them a shade at the window, and the best war surplus furniture that you have. Now where's the prestige? What office would you choose? I think that you would find that you could get along with the 100 square foot office as well as you could with the office that has 140 square feet. <u>And yet these two offices cost identically the same</u>. Where do we do our cost accounting? Not on the provision of an office but on how much a square foot that building costs. The one that has 100 square feet in it costs a whale of a lot more per gross square foot than the one with 140 square feet. So maybe we need to look for our prestige in another way, and maybe we shouldn't do our cost accounting on the square foot cost per building but on the provision of a facility. Now that is a challenge. What do we have to do so that we are

able to make such policy terms or policy decisions?

My first point (you know you've got three points and you've got three subpoints--that's the rule. Who is it that gives that rule?): Study what you have; know what you have. This is where you are now. You are making studies of what you have. You have just finished an inventory, and are cussing it and discussing it at the present time and wondering, "Why in the hell did we have to go through all this trouble and all this nuisance?" For two reasons--First, to determine what your space relationships are on campus. What is the allocation of space? Not the utilization of space, but the allocation of space. How is space allocated? I think one of the first things you will find is that you will probably have less classroom space than you thought you had and that the classroom space is a very small proportion of the total amount of space on campus. And yet that is the space that we all talk about where we talk about utilization.

Utilization is not the same as allocation. Utilization is the use of those facilities which are allocated. The best utilization studies I have ever made was the picture of a library at midnight and the picture of a science building at midnight, and this midnight appeared to be Christmas Eve. The photograph showed the windows bright with light. The implication was that students were in there on Christmas Eve just working like the devil (of course there were a few custodians in there too, I'm afraid). But this picture gave the best presentation of the utilization of the facilities that we had on that campus. However, we do such things with studies--regular studies--of space utilization and space allocation by putting all our utilization on classrooms and laboratories. This is a small

proportion of our total amount of space. We don't want people in our clientele, alumni, etc., to think that we use a faculty office, and certainly not the President's office, in the same way that we use classrooms for the same number of hours a week. So why don't we make a study of what other space we have besides classroom space? What are your space relationships? What are your space uses? What is your utilization; and please, let's not look into utilization in terms of percent, because whenever you have a percentage you have a numerator and a denominator. And what we should be comparing is what is in that numerator, not what's in that denominator. How many hours a week are you using certain facilities? We talk about a 44-hour week, a 40-hour week, a 36-hour week, a 48-hour week; but if you turn that into percentage, you do yourself a little disservice because you may be operating on a 44, 48, 84, 60-hour week (as some institutions in New York State are); and if you report it on a percentage basis, the normal public is thinking about that 40-hour week or that 36-hour week or that $37\frac{1}{2}$-hour week that they have to work. So why not give them the hourse and let them make the percent conversion since they always assume that it is possible to get 100 percent utilization.

What should you have if you know how your space is allocated now and if you know how the space is being used? The next study you must make is what should you have. You've got to ask those questions of yourself. So, we've got 10,000 square feet or 90,000 square feet of classroom space. What should we have and what relationship should we have? What should we have in terms of physical education space, research space, library space, office space? Now there is only one person who can determine what you should have and that is the institution, and perhaps you need to make some studies

on this. For example, I know of one study being made that says that it is possible (and this is the danger of giving out any figures) to place a faculty member in a space of 55 square feet and give him everything he needs. Now the study says it is possible to do it, it doesn't say that it is probable.

I have a document here that scares the death out of me. This is an institution in my state--it happens to be a public institution--and they've got a master plan (and I don't have any judgment to pass on it). But I looked through it, and they've got every single room in every single building listed as to what they are going to build. And I look out here and I see a division chairman gets 240 square feet, a department chairman gets 180 square feet, and a secretary gets 120 square feet, and all faculty members get 120 square feet, and so a secretary gets the same amount of space as the faculty member. If you are a department chairman or a division chairman, you get 180-240 feet. I think that we have a little connotation here that might have its privileges; but I am not sure that the faculty in many institutions want to be ranked with secretaries, and I am not sure that the divisional chairman or the departmental chairman needs that much more space. In fact, some people would say that the division chairman probably does less work than many people on his faculty. Now I will let you argue that one out.

What should you have? This has to be determined in terms of something, because, when we project space (and this is my second point), we must develop a policy. That policy may be as simple as developing the policy that every student and every faculty member and every staff member of an institution should have a work place when he or she is required to be in

that work place. That is a pretty good policy when you think about it. That we must provide everybody with a place to work when he is required to work, whether it be a student, or faculty or staff member. The only problem comes in implementing this policy because you will have a faculty member who has 2 work places or 3 work places. Have you ever found out on your campus how many faculty members have more than one office? It will happen. So we have to then develop further policies, and we have to develop policies on the allocation of space. How is space to be allocated to the chemistry vs. the English department--and I hope it is the same policy (I am not sure that it is). We have to develop a policy on the assignment of space. I am talking about the assignment of classrooms and laboratories and other teaching areas. We have to have a policy on planning, and we have to have a policy on projections.

What I am recommending at the present time is that these policies be determined in parameters rather than in set standards. The standards approach has become very prevalent: you give somebody a job title and you give him so much square feet. In the New York State system, the particular office space that I work in depends on your rank and on the number of windows that you have. Now it does not make any difference what the square footage of the office is. It is a very contemporary building, all set up so that so much space is allotted. But it is all allotted in windows. I am allotted 4 windows, and I have only $3\frac{1}{2}$ because I have a large pillar there and I am very concerned about this. The other factor is that my boss has a better window to look out of than I do. He looks out over a nice park. In the summer he can see the secretaries and the other people out in the park

loafing around feeding the squirrels. My window doesn't do so good. Mine looks out over a parking lot and an inner courtyard, and I can't hardly tell whether it is raining or snowing outside. Worst of all, I look in the windows of the library on the other side and there are no pretty girls to look at. So this is "the window policy."

You probably have some other kind of policy, but I prefer to talk about parameters. Let me give you just one example. If you set up a standard for faculty office space, for example, that says that every faculty member should receive 120 square feet, then every faculty member determines that he is entitled to 120 square feet. And he goes and counts the square feet in his office and he counts the square feet in his neighbor's and he lets you know when somebody else has 122 square feet when he himself has only 119. On top of that, we love to play games with this. We say, "Alright, every faculty member is entitled to 120 square feet." So, we are planning a department here and we have 10 people in the department that need 10 offices at 120 square feet. We need a conference room. A seminar. Someplace to put the coffee pot (that we generally call the mimeograph room). Some small divisional library. Etc. We start with our 120 square feet standard, but we find that there is no standard for conference rooms. There is no standard on seminar rooms or these other work places that we are talking about. We end up with more of these places than we had in our 120 square feet. I would rather operate on a parameter basis and tell the department, for example (and I don't suggest that these are magic figures at all), that it might establish a parameter of 140 square feet per full-time equivalent faculty and staff and this might entitle the department with 10 full-time

equivalent faculty and staff to 1,400 square feet. Now how they divide that square feet is up to them. And it puts it right back on the department head: he is the one who has to divide it up. Now whether he wants to divide it up in terms of function or in terms of rank or in terms of the size of collection that a person may have--this is up to him. Whether they can, out of that 1,400 square feet, find enough space for a conference room or work room or library or research center or whatever is up to them. It allows them some ingenuity of operation. I am suggesting that there is a set of parameters which can be established in planning which will give the academic personnel an opportunity to do a good job of planning.

The other thing that I am worried about in projecting space is this business of ownership. We are building for one client. So many times we find that the client is a (pardon me, Doctor White) faculty member in the institution. The faculty member owns that space. If you don't believe it, ask him! I think our policy has to be that it is the institution's space. The faculty member has a right to his proportion of institutional space, but first of all, it must be the institution's space. We must project space in terms of that need.

I am trying to give ideas, not answers, at this time. But this question of ownership applies to just about every bit of space on campus. The student thinks that he owns that room he lives in.

How can space utilization and allocation help in space planning? First of all, we have to determine what the function of the space is to be. This is the most difficult problem that we have: to get the academic planner to talk in terms of function. I worked with a Nobel Prize winner

one time who had two more years left on the faculty. He was planning a field station. I walked into his office--I did not have any trouble planning--he had it all planned for me. In fact, he had the little charts all drawn up, and he had drawn the building to scale, and he had every piece of furniture marked. Every piece of furniture was labelled with the company and the number so that the purchasing department would have no trouble buying the furniture for him. This was fine, but he would have worked in that space for one year.

So one of the first questions I had to ask him was, "Who will be operating this field station after you have left the faculty?" He replied, "I don't know." I said, "Well, maybe we'd better start thinking about a program here. Maybe we'd better start thinking about function, because the next fellow might not think about it in the same way that you do." Of course, he thought that was impossible, but he admitted that I might have a point. Secondly, I said to him, "Why is this table here? Why is this laboratory table number so and so from Hamilton?" And he said, "I've used one of these tables here for 20 years, and it's the best table on the market." So I suggested that there were a few other questions that we needed to ask. What was the academic program? What type of (in this case) research was involved? What type of instruction? Were they working with one student, two students, twenty students? Four students at a time, one student at a time? What was the largest piece of equipment used in their lab? What was the smallest piece of equipment? Where did the lighting sources have to b_? How much light did you have to have? Could the light be on the tabletop? Could it be on the ceiling? Could it be from behind?

Did it have to be in front? Did it have to shaded? Did it have to be a certain color? Where did the light sources come from? What equipment was being used? Is there a microscope in this room? Alright, did every student have to have a microscope? Did that microscope have to be stored on this tabletop? Could it be stored in another place within the room? Could it be stored outside the room? These are the questions.

So we started to develop this program and the use of equipment and the type of instruction and the type of research that was going on. Can we find some magic number or some magic way to interpret this program to the architect so that the architect can design the space which will meet the function of this program? And I say to you this morning, after visiting many campuses during the last ten years, that I see very little indication that there is any new thought in terms of building design to meet the function of the programs offered. There is very, very little. Some magic words appear all the time--medium is one, interdisciplinary is another (that they both have their own side of the room). You get the magic words and you put these magic words together, but there is very little real findings on what the functions should be. This is where we need the involvement of all these people that Doctor White was talking about.

The second point within space planning: there are many ways to achieve good utilization. For example, in classroom space, you can achieve better utilization by scheduling more hours a week, by cutting down on the square feet per station, or by relating your room size to the class size. In other words, you can build a room which will have 30 seats in it for a class of 30, rather than 60 seats in it for a class of 30 (which is the standard

practice). In terms of faculty offices, you may improve utilization by cutting down on the size of faculty offices, as I gave you an illustration a while ago. To cut down on size, you may have to cut up on the appointments that you put in that space. There are many ways to achieve better utilization. We haven't found all these ways yet. We need to look at them.

In New York State I have a problem--you know you make these standard reports on space utilization to pick out the number of hours during which a state institution should operate. Well, you tell me how many hours an institution should operate when you have some institutions in upper New York State that are as far back and deep into the country as any place in West Virginia. There are 100 per cent residential students. Then you go back down into that isle of Manhattan and see an institution like Pace College which has an early-bird session for the people who go to school before they go to work, and which has a special session for the noon hour to serve those people who can take an hour-and-a-half noon hour. And then they have another session immediately following the work day (this is down in the Wall Street area), and then they have the evening sessions so that the classrooms are open from 6:30 in the morning to midnight. Now should I take that schedule of Pace College, downtown Manhattan--Wall Street--and apply it to that institution that is up in the boondocks in New York State with a captive audience? Can we do it? Should we do it? There are many ways to achieve utilization. They are not the same ways for all. What is your policy? How can you develop that policy?

The last thing I have to say here before I overstay my time is that we have to plan in terms of ability. That ability includes flexibility,

adaptability, and any one of the other magic word-abilities that you can name. As Doctor White intimated also this morning, we do not know what our program is going to be 10 years from now. We do not know. The worst thing you can do is ask a president of a college what his academic program is going to be 10 years from now. That is a horrible question to ask him. He doesn't know; the faculty does not know; the students do not know. Therefore, you have to be able to plan these buildings which we hope will not become obsolete.

Just last week, I was reviewing the plan of a research and development center in another state, which will remain nameless. I do not know whether to blame it on the center or the institution or, in this case, the United States Office of Education which was thinking about providing funds for the center; but they had the most awful--god-awful--collection of ticky-tacky boxes ever seen. They had taken every single function they could find and boxed it up. They had beautiful 460-page educational specifications for that building <u>but not one word about the program</u>! Not one word about the fact that by the time that building would be constructed, the program would bear no recognition to the existing program. And of all things, they were studying cognitive learning. Can we box up education?

We need to look at the terms--space utilization and space allocation and policy development--in regard to space in a newer way than we have looked at them before, but we still have to remember our original purpose to be able to provide a work place for each person when he needs a work place, but we must do that within the limitations of the institutional policy. Thank you.

Alan C. Green

Roles for the Architect in College Planning

Originally the program called for me to talk about the role of the architect in facility planning. I would like to enlarge on that theme and discuss the roles of the architect in college planning because I think there are several roles for the architect - roles he is more and more trained and ready to undertake.

But before I do that I ought to put myself and Educational Facilities Laboratories in perspective so you can see from what viewpoint and background I speak. First, let me say a word about EFL because I think there are some things we have done and can do which may be of help to each of you in your planning of college facilities.

EFL was established ten years ago by the Ford Foundation as an independent foundation to zero in on the physical problems of education — on the development and planning of facilities at all levels of education. We are concerned with sites, buildings, furniture, equipment, and how they are achieved through the processes of programming, planning, design, construction, and evaluation. We support efforts that are innovative or experimental and that have a chance of achieving a significant improvement in the housing of education. We can support projects that

may be risky because if we don't support them, the ideas won't be tested. We try to support efforts that are nonduplicative and that cannot be supported through normal channels such as the Office of Education, the various state education departments, or the like. We are very concerned about transmittability - supporting those projects which by solving problems in one location or with one institution will also contribute to solving problems at other institutions. We try to help the other institutions primarily through a program of dissemination - through the development of reports and materials which summarize experience or report on case studies and significant facilities.

Also, over the years (I speak as though I'm an old-timer, but I've only been with EFL six months) we have worked with a variety of consultants active in the development of educational facilities. These specialists can be made available to schools and colleges if they would be helpful in resolving problems that can be tackled on a per diem basis.

That's enough about EFL; let me mention how I fit into all of this.

I am trained as an architect, but have never practiced extensively. After finishing graduate work, I went into

architectural research at the Rensselaer Polytechnic Institute in Troy, New York. It just happened that the RPI School of Architecture was one of the first interested in architectural research, so I came in on the ground floor. Our research efforts expanded steadily and finally led to the establishment of the Center for Architectural Research, a department within the School of Architecture. Fortunately a large proportion of our work was in the educational facilities field and, in fact, several projects were conducted with EFL sponsorship.

I would like to state one premise and everything else revolves around that. It is simply this - I think truly fine, truly successful buildings result when good architects get together with good clients. That seems simple enough, but it also implies that each has responsibilities. Each brings certain talents and information to the planning, design, and construction process; each play roles which must be well-defined — roles which can change from institution to institution and from building project to building project. Also, both as clients and architects we have our limitations. These we must recognize and respect.

Let us look at who this architect is. First of all, most curricula for a baccalaureate degree in architecture

require five years. Some architects in practice have also gone on for a masters degree, but the field of architecture does not now have a well-defined doctoral program.

Most states now require at least three years of apprenticeship upon the completion of the architectural degree before registration. Most of these three years is spent in offices learning the day-by-day operation of architectural practice.

From active practice, the architect brings experience and insight, as well as basic knowledge in a number of areas. He is concerned about philosophy — what the man-made environment is and could be and the role he can take in framing that environment. He is also concerned with the aesthetics of planning and design, the practical requirements of structures, construction, materials, and mechanical equipment, and the administration of his office. From client relations and programming to contracting, bidding, site development, landscaping, interior design, furniture and equipment selection, and job supervision, there are many needs for which the architect has gained practical experience as well as basic knowledge.

To be an architect requires proficiency in three broad skill categories. The first is in design; the second includes technical and mechanical areas; and a third is in analysis and

evaluation in problem-solving. The architect does much more than apply cosmetics or, as some people say, draw blueprints. Stress in the past has been laid on the aesthetic and technical aspects of the job. We haven't exhibited and applied our analytical, problem-solving skills extensively enough in the creation of man-made environment.

I think it is fair to say that the architect of today is prepared to be involved throughout the entire building process; let us look at that total process that results in building and some of the roles the architect can play. I think of the process as having stages something like this - determination of building need; building programming; planning and design; and construction and equipping. Finally, I will talk about the architect as evaluator and researcher.

Role of the architect in determining building need

At some point somewhere out of the grand design of the institution comes the notion that a building is required, a conversion must be accomplished, some new physical forms will be created. (By the way, I think it is important to realize that the unique characteristic of the architect is his eventual commitment to creating physical form utilized by man.) The need may be generated by a long-range master plan — a master

plan which is something more than a static plan on paper. Master planning is more a process of determining needs and requires constant evaluation and up-grading as the building program moves forward.

The other day, we had the administrator of a college come in seeking some help in the planning of a science building. According to their planner's concept of a master plant, that science building was to be hexagonal, because this was the way it was shown on the original master plan. This is not what I mean by master planning.

A master plan is the process of developing a framework for physical development; the need for building can arise out of this physical master plan. It can also arise out of utilization studies, or it can evolve out of the normal process of institutional planning. Sometimes the need for a building develops because of the availability of funds. I know that on a number of campuses (and I'm sure Parkinson has developed a law for this) the building need moves in the direction of available funding and e pressure of programs with support potential.

The architect can play a variety of different roles in determining need. He may be the master planner for an institution or the consultant who advises on building feasibility based

on utilization, projections and construction economies. One of the significant trends in architectural practice is that architects aren't brought in just to do single buildings (and now I'm talking about private practitioners) but function in a continuing consultive role like the family doctor, available and on call when assistance is necessary.

Role of the architect in building programming

Let us look for a minute at the roles for the architect in programming. By programming, I mean the definition of what the building is to be and what functions and facilties it should contain.

At R.P.I., one of the first conferences for which I was responsible dealt with educational facilities and brought together a small group of architects and a small group of educators. It so happened that in arranging the room, the architects were on one side of the table and the educators on the other. Before long educators were shaking their fingers at the architects and saying, "Why don't you people ever give us what we really want and really need?" and the architects were shaking their fingers right back at the educators, saying, "But you people never tell us what you really want and really need." The building program is the means of communicating

these needs between client and architect.

You are each concerned with programming, but I hope you are not concerned with programming only because it is required to apply for building funds. There is a lot more to the programming process than that. It should describe what a building is to be, what functions, people, and programs it must house, and what services, relationsips, and facilities are required. The program should include hopes and aspirations for the building and how this building relates to the rest of the campus and to the rest of the program.

Sometimes we provide too much information in the building program; the architect's hands are tied, and he has no freedom to maneuver. Somewhere between a lack of information and information overload lies the appropriate program for a building project.

Who does the building programming? It can be done by the institution's professional planning staff, by faculty committees, by consultants or by various combinations of talent. We also see more and more architects in the programming phase as part of the comprehensive services which can be provided by the architectural profession. Whether his role is major or minor, I do believe it is important to involve the architect in process

so he can contribute his analytical skills. Often the building program is a thick document with a spiral binding which the architect never sees until it is dropped on the table in front of him. When this happens, the architect must retrace the programming process to understand how and why decisions were made and by whom. This information is as important in many cases as the data provided in the document.

Role of the architect in planning and design

Planning and design are the traditional activities identified with the architect. Here he applies his knowledge and skills in translating the building program into design and eventually into contract documents.

There is no need to elaborate, except to say that I think it is important that you have complete confidence in the architect who is performing these services. This, of course, goes back to the process by which you selected him. I can't stress too much the need to know and to understand the architects among whom you are choosing. See their work, talk with their clients, thoroughly explore your project with them so that when you have made your decision it is a good one and one which will create a productive architect-client relationship.

As you are interviewing and working towards selecting an architect, particularly if you are dealing with a large office, identify the individual who will be responsible for the project. I think it is safe to say that some firms bring in their first team during the selection process and they are never seen again. You, as a potential client, have a right to know and approve those people with whom you will be dealing as the job moves forward.

It is important, too, that you identify the person from your institution who will be responsible for liaison with the architect during design. Who is the spokesman for the building committee and administration; to whom will the architect turn for decisions? Productive relationships between architect and client necessitate a great deal of rapport and mutual respect. It starts with the identification of the people who will be the major points of contact.

Please give the architect the time necessary to get his job done. Give him the acess to information that will affect the planning process and see that decisions are made in time so the architect can maintain the schedule.

Often the architect can carry out more detailed design than we realize. Not only can he plan the basic building, but he can

also design special equipment, furniture, landscaping, and interiors. More and more, the architect is assuming responsibility for total design.

In the makeup of the architectural team during planning and design, many people must be involved - engineers, draftsmen, designers, landscapers, specification writers - many kinds of special skills. A client's first reaction is that it must take a big office to provide this range of skills and talents. There are some very big offices and they do a great deal of work, but some 80 percent of the offices in this country have fewer than eight professional people. These offices are capable of doing large commissions because they assemble teams of consultant specialists as necessary to carry out a particular project.

There is also the joint venture approach with a local firm handling the administration, inspection, and day-by-day progression of a project in conjunction with a larger, more experienced firm concerned primarily with planning and design.

Role of the architect during construction

Here the architects' roles are again quite traditional -- preparation of contract documents, acting as counselor during

bidding and contracting, and job supervision. During construction, the architect must establish clear lines of communication and responsibility among owner, contractor, suppliers, and himself. This is needed to expedite the work and to hold down costs. If the contractor suspects that clear lines of responsibility for decision-making will not exist, additional costs to cover contingencies are apt to be added.

Role of the architect in evaluation and research

I would like to comment on the matter of environmental evaluation and research. These are new roles for the architect, but increasingly important ones. Can we go back and take a critical look at completed buildings? Can we learn from our successes and failures? Can we feed the results of evaluation back into the process and thereby constantly refine the planning and design of educational facilities?

I think the answers are "yes." For instance, here is a report by the University of California called An Environmental Analysis of Dormitories at Berkeley. From this has come information and insight which has helped in the refinement and improvement of dormitory facilities for the University. One architectural firm in the Boston area has formal procedures for

going back and looking at college buildings that they have created so they may learn from this experience and constantly improve upon design and construction.

Let me give you a couple of examples of the architect as researcher. A study staffed in part by architects at Duke University is searching for appropriate ways in which computer technology can be applied to university master planning. Again in the area of computer technology, a team of architects has developed programs whereby decisions during design and planning can be tested in terms of their effect on cost. As the computer is fed information about the building - definition of perimeter, number of stories, building materials, and so on - alternatives can be evaluated immediately in terms of current construction cost.

Another significant project involving architects as researchers concerns the development of building components for schools. This is the EFL-sponsored School Construction Systems Development project. Working with a group of school districts in California acting as a consortium, an architectural team developed performance specifications for pre-fabricated, compatible building components which were produced by industry.

These building systems create large volumes of enclosed space with total climate control in which are placed a system of demountable and operable partitions. Space can be redivided as the buildings' needs and functions change.

This research is being carried into college building. One project is called U.R.B.S. (University Residential Building Systems) and another is A.B.S. (Academic Building Systems).

In terms of the architect as researcher, I would leave one thought by virtue of the institutions represented here today - institutions throughout West Virginia which present opportunity for collaborative efforts in research. If you have common facility problems which lend themselves to research, maybe in cooperation you can begin to develop information and guidance that would then be appropriate and useful to all of you as a system of institutions within the State.

Conclusion

In winding up, let me say again that fine architecture comes with a good client knowing his responsibilities, working with a good architect who has at his disposal all of the necessary skills and abilities. I think it is safe to say that a good thing can happen when we get this good client and this good architect together; unfortunate things can happen otherwise. I hope that some of these thoughts today will lead

us toward a lot more of the first and less and less of the second.

Thanks again.

* * * * *

Dr. Campbell Snowberger

It is always delightful to visit your state of West Virginia. Dr. Church and I have visited every campus in this state except Shepherd College. I had been there several times before and have a pretty good mental picture of their campus. This is a lovely state, and I salute you who have done so much to bring your colleges along, as you will certainly admit, under difficult conditions. The Higher Education Facilities Act of 1963 has been a relief to you as it has been in other states. One of our presidents in a private college in West Virginia has reported that with the Higher Education Facilities Act funds he was able to accomplish in three to four years what the administration had planned to cover in a ten year period.

Several years ago when Mr. Robert Bennett, Dr. Church and I talked about a meeting such as we have in session now, we were talking about a meeting of architects only. When Jerry Jones came upon the scene when Dr. Church retired, I suggested that Jerry carry out the plan and get on with such a conference. As you can see, Jerry has included many different interested persons from the campus as well as the architects in West Virginia. This is a very necessary meeting and will pay dividends for us all. We have had an excellent example of a going partnership between the colleges and my office, and we can maintain this excellent relationship if we can maintain an understanding of the responsibilities we each have.

Permit me to explain the route that your applications follow as they are being processed prior to your receiving a grant or loan. The Title I grant applications will all be processed first in the office of your state commission, represented by Mr. Jerry Jones, the Executive Secretary. It is from this

office that the application is recommended to us for a grant. The state commission office in Charleston sends the applications to the Higher Education Facilities Staff in Charlottesville where they are processed by both a program officer and our architectual and engineering staff. Following a very careful processing procedure by our office in Charlottesville, if the applications are found to be eligible, they will receive grants bearing the signature of our Director, Dr. M. Howard Bryant. The Title III loans follow a slightly different route. The institutions submit the loan applications directly to the Charlottesville Office where we partially review them. The processing of the more technical aspects of the loans is accomplished in the office of Royall Webster in Washington, D. C. The Title II, or graduate grants, are submitted by the institutions to the graduate office headed by Olaf Stamberg in the Washington, D. C., office; and the complete processing is done at this level. Let me summarize--if you are contemplating applying for a Title I grant, your first contact is with Mr. Jerry Jones, who in many cases will be in coordination with my office in Charlottesville. If you are interested in the Title II grant, your first contact would be with Mr. Stamberg in our central office in Washington, D. C. Mr. Stamberg's telephone number is 202-963-7936. If you are interested in a Title III loan, under our present working relationship it is just as well that you contact my office or Mr. Webster's office in Washington, D. C. We will send the application blank for Title III loan with instructions from either office. Mr. Webster's telephone number is 202-963-7774, and our telephone number in Charlottesville is 703-296-5171, Ext. 314. Please keep in mind my telephone number because it is incorrectly given on Page 4 of our newest application.

Applications

The applications for Title I grants and Title III loans with instructions that were revised in July, 1967, are a great improvement over the applications you have used in the past. Those, of course, were proper for that time, but this is an application that is understandable, requires minimum information and has excellent instructions. Surely you realize that in the future we will improve on this one. There are several things that I want to emphasize to you--mainly the causes for holding up the processing of your applications. Page three of the application, Part D, must be carefully completed. These exhibits are terribly important to us, and we will require a professional job done on them. They are self-explanatory. On Part DI (E) we get too many drawings which do not follow details on Page 19 of the instructions. We must have elevations and other information as is spelled out on Page 19. If they are not supplied, we only have to return the materials to you and thus delay processing. The suggested color code on the same page of the instructions will be followed on all sketches. I urge you to follow these instructions carefully; and if there are any questions in the preparation of your application, be in touch with Mr. Jones, Dr. Shires and/or myself. Let me emphasize another area of the application to which we are giving additional emphasis--that is your exhibit of built-in equipment. This listing of equipment must be presented in good detail with good cost estimates, the purpose here being that I want that line of the budget, which is Part G8, to be a better estimate than we have had in the past. The purpose need not be explained at this time. In summary, I want you to know that when you do use these applications with instructions, which are pink in color, you will agree that Gayle Norris and his staff have done another excellent job to make this task, if you want to call it that, for applying for grants and loans as simple, as easy, as possible.

Payment Request

I want to say a few things about payment requests. Most of you know we disburse these funds at the time the construction reaches the completion phase of 10%, 25%, 50%, 75%, and 95%. You submit the payment request to me in the Charlottesville office. SENDING IT TO ANY OTHER OFFICE JUST DELAYS YOUR MUCH NEEDED PAYMENT. We have a bulletin (Bulletin 11, Revision 1) which provides excellent details for you to refer to when applying for a grant payment. Let me emphasize that with the first payment, if you do not send a copy of the OE 1038 and/or a Letter to Proceed from our Regional Engineer, Owen Johnson, the original and one copy of the OE form 1027 and the OE form 1026 completed with three copies and correctly filled out, the processing is only delayed. Also, if the Special Terms and Conditions are not satisfied, if they must be met before disbursement of funds, the processing will be delayed.

At the same time we send the 1026 to Washington for the processing of your check, you will receive a letter from us indicating that we have done so and that you should receive your check, under normal conditions, in about three weeks. If we have made changes in the figures you sent us on the 1026, we will indicate what type of changes have been made in this letter of transmittal. Permit me to remind you that in the Grant Program we do not list "cents" but round off to the nearest dollar downward. Percentages are carried two places to the right of the decimal point, and you must use the figures found in the most recent Project Summary. If the Facilities Staff in Charlottesville finds that the amount of money due you is less than the figure you indicated, you will receive the lesser amount. You need not be concerned about this, because eventually you will get the total amount of the grant.

You can be sure that your payment request form will be processed in our office the day we receive it from you; and, if found to be correct, will be sent to Washington, D. C., where your check will be processed. Let me strongly emphasize that if you do not receive your check in three weeks, call my office and we will attempt to expedite the procedure.

Close-out

How do you get your final five percent? After Owen Johnson gets the Final Completion Report from his district engineer, he will so inform me, and I will begin the final close-out procedure. My staff will send you forms to complete. We will specify certain exhibits we must have. On receipt of these materials from you, we will begin the final close-out of your project, at which time you will receive your final check.

Project Summary Revision

Project Summary Revisions cause some delays. Might I suggest as you come up with the project summary revision and it calls for an increase in the applicant's cash funds, please submit a letter to me to indicate the availability of these additional funds. I cannot approve a project summary revision without this information.

Let me make one final comment. It is difficult for me to understand all of the changes that are made after the application is submitted to us. In a great majority of cases this is necessitated by a lack of planning. It seems to me that if our buildings were planned well in advance, and plans for the utilization were well firmed up, there would be little need for some of the gross changes that are requested from my office. I have always, when I was in the position that you are in, expected the staff who was going to use the building help plan this building; and when they did they were also expected

to come up with a plan for a complete utilization. I realize that the staff usually will expect a building which is twice as large and expensive as the money available would permit; however, this is where top leadership on your staff comes into play. In utilizing this leadership and their powers of persuasion, the building will be cut down to realistic size and cost and within the realm for which the top administration plans to use it in the future.

Thank you for permitting me to speak with you.

Ower Johnson

This is my first visit to Charleston so I'm sorry that it wasn't a better day and I couldn't see more of it; but I couldn't even see the Morris Harvey institution from the other side of the highway when we drove in here this morning.

The Office of Construction Service, as an organization, was developed in the Office of Education shortly less than a year ago. The responsibilities it is charged with were formerly those delegated by the Commissioner of Education to the Department of Housing and Urban Development. This is why a number of the people from this department were transferred to the Office of Education to administer the rules, policies and regulations of the Commissioner in connection with construction and related activities; and the Office of Construction Service serves this purpose. It is the intent, I believe, of the Office of Education to use this change of administration as an instrument to devise better and more effective relationships especially as we have opportunities for an improved in-house relationship. Working right next to the Office of Education, program officers and we can work out our own methods, and we can improve and speed up solutions to the problem areas as they arise. As we develop, we'll see a more effective and further streamlining of procedures so that there will be less duplication amongst us. These problems do exist as you read in the report from Congresswoman Edith Greene and indicated in some unflattering remarks, that were made by some of the program people. I think we can eliminate some of these problem areas, and we propose to do this. In fact, it is the intent of our central office in Washington that we do this as quickly as practicable.

In the Office of Construction Service in Region III, we have the staff of the regional office in Charlottesville, and we also have four district offices. I think that West Virginia is served by two of them; Mr. Goetzman who has an office

in Louisville, Kentucly, who I'm sure some of you know. We also have Mr. Thierry who has his office in Richmond, Virginia; a number of you are familiar with him.

I think I'll review briefly the purpose and the function of OCS first, and then we can review briefly the procedures followed as we progress through a typical application.

Construction Service's responsibilities begin immediately after the approval of the application and continue through to the completion of the project. As we review the procedures I hope you will note the relationships and rules. I may rush through them a little; but as you come back, we will discuss these things at later meetings, especially if you have any particular problems. But if you have questions that arise up at any time during this discussion, just raise the question and we'll certainly attempt to give you the answer.

First, as Mr. Snowberger indicated, there is an application review that we make in Construction Service and this is more than just a little review. It is a study of the project described in the application, and we find that when the application is properly prepared, we can make this a one-man day operation. We have spent more than a one-man week in reviewing a single application, and then because the application was so poorly submitted, the result was that it was almost rejected. We have had a hard time convincing ourselves that we should even accept this project for review.

After the notice of the approval is forwarded to the applicant (and we get a copy of the grant agreement from the program officer) Construction Service sends a letter to the institution and the architect which forwards guides and instructions to be followed during the course of the project. We are revising our guides, and you will find that these guides will be submitted in a set; a guide to the applicant, a guide to the architect, and when construction starts there will be a guide for the contractor. In the former guides all the information was lumped into one

preconstruction information bulletin and what was pertinent to the applicant was not particuarly pertinent to the architect, or the contractor, so the functions of each party have been set forth in the pertinent guide. These will be printed around the first of March or the 15th of March and circulated shortly thereafter. We anticipate that this will start the new procedures, causing some changes in operation. Until this time, we will have to use the guides now available. Also, you will find that these guides will contain a number of the forms that we anticipate the architect would use in his preparation of his plans and specifications-- sample bidding documents and such other information that we think necessary.

After completing the plans and specifications, the architect would send them to us through the applicant for our review. We would make our review, ask for wage rates, request bid clearance, and then send a letter to the owner with our comments. After being assured that requested changes have been made, wage rates received and included, and other items cleared, we will authorize the project to be advertised for bids. This may seem unimportant to many architects; but to people releasing funds, it is very important. It is the best way that the Department found to exercise control on its own budget.

It is our intent that from this point until construction is complete, you would have very little dealings with Regional Office in Charlottesville. Your contact will be, from this point, on the District Engineer serving you, either Mr. Earl Thierry or Mr. Goetzman. After advertising for and receiving bids you would forward the prescribed information to the District Engineer. He will concur in the awards if possible, and the institution can then enter into contracts with the contractor. Copies of the executed contracts and other information necessary for approval of these contracts should be sent to the District Engineer. Mr. Goetzman or Mr. Thierry will then review them and if acceptable will inform the owner and the Regional Office that the contracts have been approved and authorize the owner to request his first payment of funds.

The District Engineer has an increasingly important role to play. Construction Service had to disperse this responsibility to reduce the amount of paperwork that comes into the Regional Office. We are not staffed to absorb this, and perform effectively in an increasingly demanding operation. We're actually descentralizing just as a central office decentralized to disperse a good deal of their responsbiility; now we're dispersing some of ours. During the course of construction of the project, the District Engineer will perform whatever inspections are necessary. If you ask him to be there, I am sure he will be able to make himself available with ample notice. He may not even be at the project from the time of a preconstruction conference (which he will hold with the contractors, architects, applicant's representatives, and other people) until the final inspection. The final inspection, with all principals present, would initiate the closing procedures. A final report would be prepared, and Construction Service will take such steps as necessary to close out the project.

And this, briefly, outlines the forthcoming procedures that Construction Service has developed to work with you in these projects now under review. Throughout the development of these procedures, you will find that there will be a constant flow of prepared guides. We are earnestly trying to keep them as simple as possible; but if you find them difficult to understand, please advise us. We want them to be clear to everyone. We will welcome your comments and questions.

Are there any questions as to the role of the Office of Construction Service, its policies or its functions? If not, I will close her and await the submission of your projects.

Panel Discussion[1]

May I start something off here, Mr. Jones? I had hoped that we would be able to get in a couple of broadsides here. I would like to challenge each other a little bit because if you can get us off arguing here, I think it helps you out there. So I am going to start with a couple of arguments to see what I can stir up here. Now you can already see that I am at a disadvantage. You know what they think of space people because, you see, I am over here by myself and they are sitting over there as a group. I am out on a limb by myself.

There's one point that I would like to make since Mr. Green is not here to defend the architects. I want to defend the architects a little first with one remark, and I am sure that when Mr. Green gets here, he will go to a much greater extreme than I will. The greatest concern that I have in working with educational institutions is that the institutions depend upon the architects to make educational decisions. The biggest complaint that I hear from the architects is, "How in the hell am i suppose to design a facility when I don't have a program? What I get from the president or somebody from the board is a statement that says 'I want about ten classrooms to hold so many people and maybe we are going to have twenty-five faculty members.'" Then he, in turn, must determine what the program for the facility is before he has to worry about the design. I think it is the responsibility of the institution to develop the program for the facility, giving the architect enough flexibility with that program so that he can design a building to meet. Do not overdesign for him. I see so many

[1]Extra spacing between paragraphs indicates a change of speaker.

educational specifications in which each faculty member has his room, and many architects take the easy way out, I must admit, they group these rooms together as a building.

But now let me go back to Dr. White over here and say, "All right, so I say you should have a program--what does this mean? What should the architect do? Should he determine the furniture? Should he determine the size and shape of the room?"

Well, I'm glad you asked me. I enjoy telling my troubles with architects to an impartial jury. I am going to quote my friend back there in the back row who says, "You guys just be grateful for the architects; otherwise, you wouldn't have anybody to blame." I sort of enjoyed that kind of comment. I suppose that if I reflect a little bit on the two tendencies I have observed in undesirable architectural practice in relation to some of the higher education construction I have observed, they would be these two main things primarily: First, once in a while, I think that an architect really is not too concerned about the desires of the academicians as long as he constructs a lasting monument to himself. This is observable, I think, in some campuses where the architecture overwhelms a person coming to the campus, and it does not speak to any particular purpose except to its own glory. Now I just put that in because you might, sometime or other, have an architect like that come into West Virginia, and you ought to be able to detect him when he does come.

The other thing which bothers me is the tendency of architects to over-design. They may be so impressed with the academic needs as they have heard

them that there is not anything else for them to do except overdesign; but man, they are way outside the money. They had a notion in the beginning about how much money was available, but they got carried away with the project. Then when the bids are in, you are just so far beyond the funds available that there is nothing left to do except, well, you make your choice at that point. You end up giving up another building that you had on the drawing board and delay its construction; or you go back and redesign and you have a lot of trouble along those lines.

Who determines these limits? Are you to give the architect the dollars and he is to determine the square footage? Or do you give him the square footage and he is supposed to determine the dollars?

Well, you have had more experience along these lines than I. I would indicate that my notion is that if the partnership doesn't begin very early, then there are differences which are going to arise right on down the line and that the more conversation which takes place between the academicians and the people who are doing the designs, the greater the likelihood that you will get a building which speaks to the purpose and is well within the budget.

I guess that here we have a kind of a language learning which has to take place on the part of the academicians and the architects, too. When I first heard that word "program", it meant something like, you know, that I was to describe the activities that were to take place in the building. Well, it did not turn out that that was the way the architects were using the word "program" at all. I got through describing all the activities that we wanted in the building, and he said, "That's fine. Now give me your program." By visiting with the architect, it became clear that he was very

much interested in what we wanted to do--not the activities particularly. He could almost anticipate; he could visualize that, but what did we want out of those activities? He was interested in what has come to be known as terminal behavior change. That phrase always sort of scares me--terminal behavior change. But he was behavioristically oriented; and the architects, I suppose, are a kind of a hybrid between a social scientist and an engineer and maybe they are humanistics too because they are very much interested in the kinds of behaviors which you want to come out of that building. Now you don't always know, as was pointed out earlier.

You know you talk about ability, and I have one more ability for you, Bill--convertibility. Those of you who know the old schools and the buildings at Oxford know that no building is ever torn down in that city. The exteriors always remain the same, but inside they sure do make a difference. At Realy House where I was last fall, for example, was an old convent built about 1200. It has been standing there all this time, but now they have converted it on the inside and they have a center for continuing education. So I would like to add the word "convertibility".

I have a general question. When you say a building should be programmed, you seem to imply that an institution would go into a building program without those in the academic grounds precisely knowing what they want, but now here's the way I imagine any college goes about the job; and when I am stating something wrong, correct me!

Suppose you want to build a library. Well, I imagine most colleges go around saying, "It's obvious that we need a library; you have to agree

on that." Then you go around and visit ten college campuses, and you see a recently built library and then you hear, maybe, of one far away which has an outstanding reputation and you go and see that one. So you have a pretty good idea of something you do want and something you do not want. So then you consult the librarians, not only in your institution, but in other institutions. You call in an architect and tell him what you want. He makes preliminary drawings and after about a year's time, he comes up with a pretty fine set of drawings which is a compromise between the architect and the librarians and so on. Then you come up with a building, your amount of money. Your architect and you fairly well agree, and you build the building. Now that seems to me the sensible way to go about it. Now even after that, however, there are about five things radically wrong with the building, but I see no other way to go about it. Now, is there anything wrong with that general idea?

I wish everybody did that--did that much. My experience has been that they do not do that much in some cases. What I am talking about is perhaps a little different attitude again from Dr. White. The thing that bothers me about programs is something like this--let me give you an example.

Say the University of New York has five major 4-year graduate campuses in the major part of the City of New York. The librarians just got together to determine the need in libraries, and they have just presented the bill to the City University to build the five libraries that they think they need, and the City University is now to make up their mind as to whether they need this or not. Now they have come up with a program. The librarians have sat down as a group and have detailed every space and office. The office of the

librarian is only 480 square feet. It contains a small kitchen and a private toilet (that's in addition to the 480 feet). One of the first things that the librarians decided was that each campus needed a minimum of 2 million volumes and that they needed to accomodate, as the American Library Association suggested, at least 25 percent of the student body at one time. Well, the bill for these five libraries is 75 million dollars, and one of these libraries is to be constructed across the street from the New York City Public Library. Now this is one probe, and it was developed by the librarians. I have nothing against librarians, but my question to you is who sets the limits? Are these limitations established by the librarians? By the adminstration? By the faculty? By the deans? This is what I mean by "program".

I've got another friend who has a very good proposal. He has decided that we people working with square feet are all wrong and that we should not program facilities. The faculty should design the buildings and work directly with the architects--messing around with those people called administrators. I think it is a brilliant new concept, except I said to him, "I want to be a professor in one of your institutions, and I want to be professor of higher education; and my specialty is facilities in higher education. That is my degree and that is what I am going to teach. So I am going to teach your class with twelve graduate students in it. Here are the spaces that I need: an office for myself with at least 140 square feet, one receptionist, two secretaries, a conference room, a special classroom-lab combination with walls that adjust sizes and shapes so that we have space relationships all worked out. I have to have a special room with furniture in it so that I can explain to the graduate students the different relationship

of furniture and so that they can see the best examples of the types of furnishings that should go into the university. Then I am going to need a special reading room for reproductions of articles and other materials that I need. If I keep on going, I will have built up about 4,000 square feet of space. When are you going to stop me?" So "program" to me is the control element that we have concerning a facility. This is the document that not only outlines the controls, but it also should outline hopes and desires. Now can we mix the two things? This is what I am interested in.

I made a statement this morning that I could get a faculty office down to 55 square feet, and there have been a number of people wondering how I can do it. This is what we do with our controls. We overuse our controls, and we do not have enough hopes and desires. To me, the ideal building committee consists not only of the senior professors but also of the instructors since the senior professors are going to retire tomorrow. It is the instructor who is the one that is going to have to use the facilities. And maybe the administrator should be out of there as much as possible, but then again maybe he should be in there because you have to have one person to act as interpreter. You have got to have one person who can speak the set language of the architects and the academicians, and this is the most difficult person to find. Most of us simply do not have them. So this document that I am talking about--this program, these educational specifications, whatever it is--is the attempt to get all the needs of the faculty and administration within the limitations of whatever controls you have. But this dialogue, Dr. White, that is the thing that is most important--you cannot get this in a document.

The document probably emerges from some kind of a dialogue and, hopefully, it will be as complete and comprehensive as indicated for the normal procedure in West Virginia. I wanted to ask a question, and I wil address it to anybody who wants to take a crack at it. I think Bill Fuller led us into a blind alley when he said, you know, that this library should be 2 million volumes and would be located across the street from the New York Public Library. What is wrong with that? The conversation took place with the librarians and the people on the faculty, and it was not an administrative decision. It was done by the people who are experienced in the area of librarianship, and they said that they had a student body which requires the full-time services of 2 million volumes. So what is wrong with putting it up on top of the New York Public Library if need be? To say the proximity or the propinquity to these two installations is necessarily bad seems to be sort of in contradiction to his earlier promise. On the other hand, I have heard some people in the media system say that books are old-fashioned, and they are out-of-date. At Wayne State University in Detroit, this situation does exist already. They have a 1 million volume library right across the street from the Detroit Public Library, which is very large and comprehensive; and I don't think that the services conflict.

The point that I am trying to make is that the input is not from one person or one group of persons because the input (and this is the point that Dr. White was making this morning) is from persons who all have like-thinking, you are not going to get the input that you want to provide the services that you want. I will use the library again on this example. I would say that

if the 2 million volumes across the street from the New York City Public Library are 2 million different volumes, this may be one thing, although you have many problems here. The other thing that I am worried about in your statement, is that you say you go to 10 or 12 other institutions and you pick the best from them. I think I would want, in my situation, to have some new ideas which are not in those 10 institutions, and you did not say that. Just because we do it in New York does not mean that it is good for West Virginia. Just because someone does something in a particular way does not make it right. But it is important for you to know what mistakes you are making and to see if they apply to you in your own situation.

I wanted to include one other group just to get it all sort of laced up together. You know, we have the librarians and we have the architects and others. There is another ground that we have not talked too much about, and those are the guys that are sort of out on the cutting edge of the knowledge explosion. I do not know where you fit them into the West Virginia plans, but there are these characters in America who are thinking so way out beyond the previous bounds of knowledge. We could find these chaps, you know, and visit their installations or their minds. Then we might be able to anticipate a little more about the kind of learning requirements that will come to your youngsters or to adults who come back for self-renewal five years from now.

If you are building a medical school at the present time, I suppose you could forget all the medical schools that have ever been built in the history of mankind and go to these chaps who are developing the instrumentation for the new health care programs. You have a brand new set of doctors, you see,

at the end of this. Well now, something like this went on in New York when it began to divide up the various functions of those institutions. I have visited some of the campuses; and I think we ought to get Bill Fuller to talk to us a little bit about where they get all their fancy ideas for all of these new colleges. Where do you get all these architects' wonderful ideas for those new insititutions off the future?

I do not want you getting any magic ideas, but this is the place where an institution which I have no direct connection with has what they call "anomaly". They have nobody checking to see what they are doing. They have unlimited funds at the present time, but they do have a possibility to do some exciting things because they do not have a person like myself checking each step of the way. Now this shows that the control is wrong. Their control is always on the funds, and this tends to limit what we can do in establishing a program. Now how we can avoid that and how we often get the funds that we need—that is a good question. I guess we have to have another consultant on that; but there is talk that what they have done here is given the architects free rein, and there have not been facilities involved in the planning.

For example, the State University of New York at Albany is a $125,000,000 masterpiece by Edward Geroud Stone. My wife is a faculty member at the institution. It is beautiful architectural sculpture. If you are ever in Albany, you ought to see it as a sculpture, but if you are superintendent of buildings and grounds, do not look at it in terms of maintenance. If you are a professor, do not look at it in terms of limiting your academic program, because the architect did the educational edsign.

One of the inputs which I think is used too seldom is the superintendent of buildings and grounds or whatever he is called in your institution. Now many people think that the superintendent of buildings and grounds should be the person who develops this program, and he should know the most about space, etc. The superintendent of buildings and grounds, to me, has as pliable a position in the planning of facilities as anybody else on that campus, but it is not his responsibility to determine the academic program. It is his responsibility to speak to the planners for facilities in terms of the mechanical functions of that building and to explain what he needs within his system so that an architect or an engineer does not go wild and introduce some entirely new system that requires a different type of maintenance. Now he is used as a control factor in many ways, and he is one that we leave off so many times or we put him on the list after the building is fully designed. After the building is all designed, then he is asked to review the specifications that the mechanical boys have left, and it is too late for him to get his ideas in there. I think he is just as important as a faculty member.

Well, there must be people with a lot more experience in this very practical area than I have, but when this occurred at least in one instance on our campus, it developed phases. Phase I which we could do immediately, Phase II which would be the next thing, and phase III which was the long-range. This particular decision became much easier for us when we could begin to see this thing in a series of steps. That is an approach which I suppose everybody in the room has used one time or another. Are there any other suggestions?

Let me speak for a minute. There are in my book (if I were to write a book), there are two different committees which work on campuses--at least two. One is what I would call a general planning committee. This consists basically of the top administrative office representatives, with possible faculty and student representation, and surely with a ground representation. This is the committee that establishes the basic policy of the institution, the basic utility system, and the basic campus plan. Unfortunately, this is the group on our campus that determines that all buildings will be of Georgian architecture or colonial or contemporary. This is generally the wrong policy, but that is the policy that must be established. For example, I know of one institution that has a policy that, instead of saying that every building must be designed in a certain tradition, says that the outside of the building must contain a certain construction element. It must be a certain brick, limestone, marble, wood, or some other material. By keeping the materials consistent on the campus, they think they can keep a common campus plan. This is one committee that determines the broad objectives in campus planning of the institutions. This is the committee that also determines the limits on dollar cost for facilties.

Then you have the individual building committee for every building that is a part of this campus. One of the first things that you must do is have the ability to protect the space needed for this particular facility. This committee works within an outline or within a parameter that has already been established for them. They operate within a policy that has been in operation on that campus. If it is the policy on that campus that every faculty member should have an office of his own, then they just operate within that policy.

If it is their policy, whatever the policy is on that campus, they operate within this policy. But then they must have flexibility, adaptability, convertibility, and all the other abilities within that broad parameter; and one of the check points that you use is this dollar figure and space figure. They use it in programs, preliminary drawings, working drawing, and construction as a checkpoint. That is one way of doing it.

I was privileged to sit next to an architect at lunch. He broke it down into three factors: size, quality, and cost. Now the owner can select any two but the architect has to select the other one. You can take the size and the quality, and the architect will tell you what the cost is. You can take the size and the cost, and he will tell you what the quality will be, but you can't lock off all three. You can tell him what the quality and cost will be and, he will be able to give you the size. I was impressed by that.

I am, too. I hadn't heard it put quite that way, but this seems to me to be a very reasonable formula. I want to give an observation along this line that I picked up at other facility meetings. Don't worry too much about planning these buildings because all of your specifications have to go to the people at the Higher Education Facilities, and they are going to tell you what to build and what to do.

I think this is a little outrageous. I do not know of any government agency that I am aware of that dictates design, size, or anything except for certain limitations. If you bring a building to us, as we have had some examples, and say the building is on a 33 percent assignable, then I think that you should know better than to bring it to us. We have had examples of

this. We try to adhere to a policy of 60 percent of that building should be assignable whether it is eligible or ineligible. That is 40 percent for corridors and baths.

This 60 percent is a rule of the thumb. For example, if you go to a higher building in Manhattan, you cannot achieve 60 percent because of the program stations within that area. Now in other places, you can achieve far better. Sixty percent has become a magic figure, and I am afraid that I am one of ones who have perpetuated it. Other rules of thumb are this way: The more stories the building has, the less the percent of it that is assigned per square feet. In a one-story building you can get the highest percent assignment. The larger the rooms with the building, the higher the percent of assigned space.

Now, I have got a good argument going right now between two very good friends, and it will show you how far you can take this. They are arguing that in the gross area of building, do you count the floor of the elevators once or do you count it at every floor? Another one is that when you have a pipe chase, do you count this at every floor level, although it has only one floor? And it actually got into a situation where the way you count the floor of the elevator, the pipe chases, and the other service areas in that building, determined whether you achieved the magic figure of sixty percent which the State required them to have. This is when we use rules of thumb which become standard, and this is when I get upset about my own profession.

Now I will say very strongly that every time an institution goes outside the rules and regulations that are established and has a very good reason for

doing so, I have found the Federal people adaptable.

The reason that this is in here is that it is a signal. You can tell an engineer that may not be familiar with what design problems are when you come down to a point where this building is less than 60 percent.

The real problem is with toilet facilities. You see, when you have a small floor area, you have to take some of that out for toilet facilities because you have to offer toilet facilities for both men and women on every floor. I have a good friend who expresses toilet facilities on his campus in terms of acres! The last time I heard he had seven acres of toilet facilities. Count sometime and see how many people you can seat. In most states, your toilet facilities are based upon the codes that were developed by the public school system. A child who goes to a public school and has to be there six to eight hours a day has to have certain tiolet facilities. On our college campuses, a student is not required to be in one building for that long, but we repeat the toilet facilities for the student in the academic building. We repeat it in the student union, and we repeat it in the residence facilities. So we have three times the toilet facilities that we need in many cases.

I had a long arguement over the phone with a department chairman and a very good friend of mine who is operating a college housing program. We were talking about the inventory because he insisted on taking an inventory of facilities at college and university dormitories. We needed to know whether these facilities were planned for men or for women. He said, "We've got three kinds in New York State: men, women, and those who are

using both."

And I am reminded of a very good friend, Mrs. Nelson, out at Indiana University who did a tremendous amount of residential building. She had, at that campus, before she retired, built facilities for about 15,000 students and residents. And she used to say that it makes no difference in a men's dormitory or a women's dormitory--they may use men this year and women the next. The next summer she was on a trip to Europe, and she came back very excited and decided that the female urinal was in and that if we made all of our urinals female urinals, then it would not make any difference whether they were for men or women. She tried a building like that, and she found that the women did not use them. Now how they found that out, I do not know (Someone will probably get a Master's Degree for that study or something). So she came up with a new idea. She said it would be simple if we went back to the old urinal, but every time we put in a urinal, we also had to put in an outlet for 220 volts so that when the women occupied that building, they could plug in their hair dryers. Now that is enough on that subject.

I would like to make a comment on Mrs. Nelson, too, because I worked with her on this dormitory situation. She broke down the usable space, and she--now this is getting back to figures again--had a very definite percentage of square foot area of each dormitory that was allottable to mechanical space, hall space, study space; but she had figures based on the existing dormitories. She wrote right into the architects' documents that these spaces were not to exceed these amounts. If an architect came in, and he put in 19 percent for mechanical space and her figures showed that it should not exceed 17 percent, she just washed out those drawings and he started over. But she did not have

these figures remain constant; they were changing as she thought they needed to change. This is what I said this morning: Study your existing facilities; know what you are doing, and then determine whether it is good or bad. One other statement--The only true comparison that you can make in space utilization is whether or not you are doing better with your facilities this year than you were last year, not how you compare to somebody else.

I like to think that some time or another, we are going to get to a place where we have a pool or resources which can be made available to meet a need which just comes to us suddenly and that we will have a facility, a campus with structures, which can be converted to a new purpose almost over night. Now that does require some kind of imaginative scheming. I cannot visualize it myself.

How do we build library or other facilities for 10 years from now when we have no idea of what changes will have taken place by then?

One group says that the library is obsolete because all the information services are being taken over by the computer. Another group says that the library is disintegrating, and you will find resource facilities all over the campus with all kinds of call-up systems into central information banks. And I think the interesting thing is that it is a very conservative statement that the impact of computers and some of the other technology is a long, long way in the future before it becomes economically feasible. So that still does

not solve the problem, because in the meantime you are building library facilities which, in turn, must adapt to this.

If you have several institutions here in the State that are concerned about the planning of library facilities all at the same level of programming and concern, I would suggest that you try to act together to get some consultants in, to get some help brought to you, and to plan these libraries together. Do the things you want to do now but which can also be added or adapted to some of these other technologies. I do not think there is any reason not to build because of the immediate impact of these things.

This is the second time that Allen has talked about institutions getting together to do something. And when he brought it up the first time, I asked Mr. Snowberger if he could get that money to finance that kind of deal out of his funds but he said "no".

These funds could be available through research--Mr. Bright's shop in Washington. Bill knows the specific people.

Well, there is Ernest Michaelson and then there is Kenneth Nelson as a starting point. If they do not have the idea for a particular area, they could chase you off. Now the other point that I want to make and I had better be careful, Mr. Jones, because I do not want to speak for you, but there are

possibilities that certain areas here could be handied under the Higher Education Construction Planning Grant.

A good point. In talking about cooperative ideas and sharing information, I think it is important for us to think in terms of the types of problems that are common to all or most of our institutions. It is important to know that cooperative efforts on the part of the colleges tend to be very desirable types of things for funding privately and through O. E.

The difficulty in this is determining who has the responsibility. It generally has to be located in one institution or in the state commission. And the difficulty always comes when you have more than one institution involved.

I want to use this opportunity to say for a minute--Here is a publication, "Dormitories in Berkeley", and E. F. L. publication. I referred to that faculty office this morning as 56 square feet or 55 square feet. In this publication, it shows on Page 73, four different ways of getting a single-person dormitory room into that 56.

When I was first involved in this thing called space analysis, I was just a young graduate student, and I thought that if I did not have all the answers, I knew where they were. So I was going to program on the computer the maintenance of the university and borrow the data that we had on our inventory which were details that had never been used. I was going to set up a schedule which buildings and grounds could use in the relationship of

electrical fixtures and painting and all of these other things. But when we got to do this study, we found out that in this institution, on the average of every seven years, every room changed, either because it had a different occupant or because it had a different function--on the average of every seven years.

This report was a background to some further developments that took place in dormitory construction at Berkeley. At the time, I think they had about 22 percent of their student body who could be housed in dormitories, yet they had a lot of dormitory rooms standing vacant because the students just did not want to live in them. Well, obviously something was wrong so they undertook this study. And it was interesting that after this project, then we began this URBS project. One of the early thoughts was that through the use of these building systems, we could create dormitory or residence hall facilities which would be a lot more responsive to individual students. You know, generally when you walk through a dormitory, there is not much the individual can do to express himself in that space. I remember going through one where the administrator pointed out the fact that there was a tackboard, about 18 inches square, and there the student could put anything he wanted. This is not much of a statement as far as providing something for responsive individuals. One of the faults that they had was that the student coming to the university in the fall would contract for some square footage of space on a floor. Then just as you now go to the linen room and check out your first supply of linen, you would also check out some other building components: wall units, closet units, etc. And the students themselves would begin to

put together the dormitory space by the way they checked out and utilized these prefabricated pieces. It is an interesting notion that we could let the students be a little more expressive.

I have always said that there are three types of faculty members. We will probably have a fourth one before the day is over. There is the spread-outer who has to have enough space to spread out. He has got to have enough space to spread out everything and then make stacks and piles and work from the piles. The other is the assistant librarian. You have many faculty members that act like the librarian particularly since their whole office is loaded with books and materials, especially your historians. They are very proud of their collections. And then there is the other type that I call the report gatherers who need filing cabinets. He does not have books, but his materials are in filing cabinets. And yet, when you are planning for your offices, a list says that each faculty member should have one desk five feet wide, one filing cabinet, one executive chair, one side chair, one hall tree; and everybody is supposed to operate on the basis of that furniture. What I have always wanted to do is make a study of what a faculty member really needs. And I wonder if we couldn't come up with a system where we program faculty offices and give them one dollar an ounce for furniture and then have enough different types of furniture available so that the faculty member could pick out his own furniture as long as he did not exceed that one dollar limit to meet his own space. We can build on a modular basis in that office--using these strips that you all use at home to build bookcases out of. You put these strips on a regular pattern and the faculty member can put his bookcases anywhere he wants to, even on the wall. He can hang a chalkboard,

or anything anyplace that he wants which gives him flexibility. But we all want to put him in the corner. The faculty member is even worse than that because he wants his desk in the very middle of the floor he can be behind it and talk over it.

I used to teach music and coach football and track. I have never found a gymnasium that made a good auditorium, nor have I found a good auditorium which made a good gymnasium. These are two functions which I personally do not want to see mixed. Now in terms of need, you come back again to the basic policy of the institution: Whom are you serving and where is the source of funds? And when do you make these decisions?

I sometimes think we get awfully hung up on the utilization of those facilities which are scheduled facilities. And I think you would be very interested in following the next phase of this Duke study--the one I mentioned where they are trying to find the various applications of computer technology on the university campus. They did their space inventory by a computer, and they can project needs for space and schedule space, but they did not really have any data on unscheduled space. But they recruited a group of students and they paid them to keep a diary--over a period of weeks--of where they spent every minute of their time: in which kind of space doing what sort of things. Of course, they have all the raw material for a tremendous exposé of college life. The important thing out of all of this is that they found out that some 10 percent of the students' time on the Duke Campus is spent on scheduled space. And this is the space we are always concerned about. There is another 90 percent that we can do an awfully lot with, too, as far as bringing in some real rational use of our old educational facilities.

At this time, I want to express on behalf of the Commission a special appreciation for the wonderful hospitality of Morris Harvey College. We wish to thank the speakers for their stimulation and you for your attendance.