

Interview with Walter A. Netsch, Jr.

Skidmore, Owings, and Merrill Director of Design for the Air Force Academy

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Interviewer: Colonel James C. Gaston, USAF, Ret.

Previous Experience

Planning the Project

Defending the Plans

Designing the Chapel

Working at the Site

Planning Beyond the Cadet Area

Dealing with Challenges

The Project after Fifty Years

Walter Netsch had primary responsibility for the architectural design of the Air Force Academy including the cadet chapel. He was born in Chicago in 1920 and received a bachelor of architecture degree from the Massachusetts Institute of Technology in 1943. He served in the Army Corps of Engineers during World War II, then returned to Chicago and worked with the Morgan Yost firm. He joined Skidmore, Owings, and Merrill in San Francisco in 1947, designed air bases in Japan and Okinawa during the Korean War, and moved to the firm's Chicago office in 1954, shortly before the beginning of the competition for design of the Air Force Academy. His other important designs include the Naval Postgraduate School in Monterey, the Inland Steel Building in

Chicago, the Regenstein Libraries at Northwestern University and the University of Chicago, and the East Wing of the Art Institute of Chicago.

Previous Experience

Q: Winning the Contract

The competition to select a firm to furnish architectural and engineering services for construction of the Air Force Academy began in April 1954, not long after you arrived at the Chicago offices of Skidmore, Owings, and Merrill (SOM). On July 23, 1954, Air Force Secretary Harold Talbott announced that he had chosen SOM from a field of 261 competing firms. Please tell us what you recall about how SOM won the contract.

Netsch: I had been out in California and I was brought back to Chicago to work on the Inland Steel Building. Nat was a roving partner in charge, Nat Owings. He was the principal partner, and he heard about the competition. Normally he didn't believe in them. This was a commission of the utmost importance to the nation, to architecture, and so we decided (they decided, it wasn't a *we*) they decided to join it, and they appointed me to assemble the entry. So I assembled the entry for the firm, and then we were selected as a finalist.

Nat and Gordon Bunshaft, who was the chief designer of Skidmore at the time and well known for his buildings—the two of them were to make the formal presentation. Nat wanted a chart, so I had been doing all that work before. He wanted a chart to show that we could get the cadets

in so that the seniors would graduate with a completed campus. So I did a chart; it was called the “yellow chart.” It was very bright. I had taken the program that had been given all the architects, and assembled it in a yearly construction sequence. Gordon took one look at that and said, “Nat, if you show that, I’m not going in the room.”

And Nat said, “I’m showing that and you are going in the room.”

And so that’s how a decision was made, and it was important. Nat was right—it was an important decision to know that one of the firms that was entering was as concerned about the cadets getting in as about doing a piece of architecture.

I disappeared from the scene after the “yellow” presentation. Then later on, of course, we were selected. There were many stories about selection. Many architects did try a lot of “connections,” shall we say, just to put forth their qualifications. Skidmore, because they had been working at Oak Ridge, because they had been working in Morocco, they had known many people and many people knew Skidmore. So it wasn’t really necessary for the firm to express its opinion.

At the final meeting in which we presented our proposal, Eero Saarinen sketched a solution. Eero was of course acting as a single person. It was a question of his talent, and he was the one person I was concerned about among the finalists because he was then, I would say, the leading architect in the country except for Frank Lloyd Wright. I had no idea that Mr. Wright was on one of the teams until many years later. So teams formed for various reasons, and at the presentation I know that Eero did this sketch and it happened to be on the site that the academy now sits. So he had made a decision very early, which I

discovered later, and he was one of the four or five professionals selected by the secretary of the Air Force.

And that was Nat's brilliance. It really was. Nat wanted top professional teams to criticize our work so that in the minds of the public and the military they were getting a top job—unlike many other competitions that have happened since, where they've had twenty or twenty-five consultants and no one did anything because no one could agree on anything. By having Mr. Saarinen and Mr. Belluschi, they could expect a top job. They reported to the secretary, not to us. And it was very important.

I guess as a young architect, I was somewhat afraid because I had been an enlisted man in the Second World War and I was suddenly going to be meeting generals. I'd rather have them recognize my star performance at MIT rather than my service in the Aleutian Islands to be a determinant of qualification. But that isn't why we did it [used independent consultants]; that was my worry. Nat wanted an orderly procedure and a professional one. It all worked out; we only had a few complications with the secretary of the Air Force.

I don't know whether you are aware or not but one of the main problems with design was the airfield at the academy. We discovered that the airfield was subject in location to a diurnal wind situation, which meant in the morning and evening we had opposite winds. Fortunately they were 180 degrees. But they made access to the airstrip a problem. And so we had to recommend moving the highway. In those days it was post war, and the world was going to solve all problems, and it was our responsibility to solve this one. The secretary of the Air Force did not see that as a problem. He just kept saying, "Change the

airstrip around.” And it took private conversations between the military and the secretary to convince him of the need for that.

I had made a beautiful drawing showing all the red danger areas to aircraft. These are student airplanes; these aren't airships. And besides, remember we were still propeller driven when we started the academy, and you had to worry about shifting winds. I had this wonderful diagram that showed all the areas we would have to cut down if we had to change the topography and the plant material, and I was, of course, considerably concerned about that. Well, all's well that ends well. We were able to move the road. We were able to establish a good flood plain solution for the academy and the community. And it was the only really major problem, of course, except for the design of the chapel.

Q: Influence of Earlier Experiences

You were a young man when you became head of the design team for one of the largest architectural projects in the country, but you had extensive experience with the military and with SOM. After earning your degree from MIT in 1943, you spent three years with the Army Corps of Engineers before joining SOM in San Francisco. You designed air bases in Japan and Okinawa, and you designed the Naval Postgraduate School in Monterey. How did these earlier experiences influence your thinking as you assumed responsibility for designing the Air Force Academy?

Netsch: I was thirty-four. It amazed me, too. I was Nat's protégé. I did not expect to be given the project. I was very happy with the project I had. Everybody in design in Skidmore was wondering how it was going to be handled. Nat in a sense raised me in the firm. He wanted a Chicagoan in Chicago, a lead designer that was not devoted to any one idiom as far as architecture was concerned, whether it was Mies, Gropius, or Corbusier. He didn't want that, and so he depended on me. My graduation from MIT provided a situation that had no god. I was free, from his standpoint, in that I would not be bringing a particular design philosophy to the project except the more pragmatic ones of an architectural and engineering institution.

So I was selected, and I was then asked to form a team. I called up all the leading architectural schools in the country, talked to the deans, and told them that I had been selected by Skidmore to head up the design team and that I was looking for the youngest and the brightest they had had in the last classes. And that's how I formed the team.

Actually the SOM banner was one they all were happy to join.

When I was selected, it was understood that I had to show anything I did to Gordon Bunshaft first, and I had no objection to that. He had done Lever House; he had done many important buildings; he'd had a wartime experience much broader than mine; and he had really huge talent. It proved absolutely wonderful. I would take the designs that I had been working with, and Ralph Youngren (who was my assistant) and I would trot off to New York, stay in an inexpensive room in an expensive hotel, and trot over to his office and show the work. He would have laid out on his table the plan of the academy. He would be working on it, and we would study it. If it was a building, we would go over the building, and I would go over the program, and he would maybe try to modify things.

He wasn't always very interested in pure structure, I mean just putting the columns in the right places. So I would have to go home and get them back in order. But aside from that, it was a great experience to work with him, and we became good friends as a result of that.

Eero Saarinen used to bring his chief of design to meetings to see how I did it. And then Eero and his wife, Aline, and Nat and Gordon and I would meet afterwards and talk, and it was a highly professional thing. Pietro Belluschi was a little different. He was still the dean at MIT. He had a different kind of role to play, he felt, and he stayed pretty much to that. His wife had been ill, and so he wasn't as free socially as Eero was. Welton Beckett and Wally Harrison were at two ends of the country. One was in Hollywood and the other one was in New York. Both of them had a big practice. Welton Beckett was pretty sure of what he wanted, maybe not what I wanted, but pretty sure of what he wanted. Wally Harrison was then designing the opera house in Lincoln Center, and he asked me to help him design the opera house. I really at that moment was not interested in an opera house from Adam, but it worked out. So we had good rapport except for one instance on the cadet quarters.

Planning the Project

Q: Project Organization

SOM made a point of emphasizing teamwork, with five functional groups contributing to every project. As head of the design group for the academy

project, you supervised four subordinate areas: master planning, academic area, service and supply, and housing. You were known as the “original motivator.” Could you describe a typical week of working with your design team?

Netsch: I saw how immense the project was, and I saw that I had to have leadership in each area. And the initial master planning was obviously the most important. If we got off on the right track, then we were all set. So I really dominated the master plan group. Ralph Youngren did the academic group, and others were selected to do the airfield and the housing. That made it easier for me because we had these separate teams, each of them with specific responsibilities, and no attempt to overrun from one unit to the other.

We had the site to understand; we had the program to understand. There’s quite a difference between academics and the airfield. We had different clientele in the military to talk to. You would talk to teachers or the corps of cadets for the academic area. For food service we went to Cornell University. In the airfield we had another set of people we had to talk to. It was at a time, post-war, when people were willing to talk and willing to share. It was an unusual time. It was an unusual time in architecture.

There’s a book of materials that architects use, and when we started the academy it only had four volumes. By the time we finished, it had seven. Today it has twenty-seven volumes. So you see, American industry gradually got back into the field, and we were very instrumental in even getting materials done.

I had one other group, which people don't usually consider important, but I asked Nat if I could have a research group. Nat said, "Well, anything, if you think it will do some good." He was rather hesitant about it. But I brought in a man, Robertson Ward, from Paris who had been working over there on a UNESCO project. I'd known him. He was a very good materials man, and we developed the uses of the granite, the uses of aluminum, floor coverings. We invented mirrored glass at that time. We did gray glass. Out of this marvelous project, industry saw an opportunity to cooperate. So we had great, great cooperation and support. This was an important thing.

Then we had to have good people out in Colorado Springs because I had a studio with about sixty people in Chicago, and the team for the fieldwork was being formed. Al Lockett was in charge of that, and Ed Merrill. I should say John Merrill was in charge of all of it, but Ed Merrill, his brother, was in charge of much of the architectural fieldwork. It was an early civil rights project because we had women on the team; we had blacks on the team. It was somewhat surprising to some of the people that we were working with, but they all had talents so it all worked out just fine. And I'm very proud to say that the academy was made up of a great grouping of people. We didn't have any kind of stigma or elitism involved in the whole selection of people. And that was true, of course, as you know in the military. You go up in the military, you become a major, and you have certain responsibilities as a major. So the staff people that we were working with had the same feeling, and that worked out well.

Let's mention a couple of problems that came up, because a project of this size has natural problems. We spoke of the need to move the highway. But then there were other problems. We had as a consultant from Georgia the people involved with the water

distribution system. Working with our staff, they developed a high pressure, hot water system for the academy. We had to locate the major plant so that it could be used for peaceful atomic purposes. We had to search for a site near the greatest demand area as well as one with concealment potential. And the other heating plant was down at the airfield for the buildings and grounds of that area. You could see I had to be involved in a lot of things and decisions. It was wonderful, from walking every road through the design.

But you know, I discovered I had a big help—the cattle that were on the ranches. We had four ranches involved, primarily, and the cattle would take the easiest road from one valley to another valley. And so when I was talking with the civil engineers, we would be looking for the paths the cattle took because that obviously is going to be the easiest way with the least amount of movement. You had to be observant of the way the world works, and in this case it was the animals leading us from one valley to another.

The main philosophy of the plan of the academy was to allow the public to completely encircle the academy so they could go into, if permitted, the academic area or the playing field area, or the housing area, or the officers' living quarters, or the airfield, or buildings and grounds. So we had these different loci that you could meet from this central ring. I saw that, really, in some of my own experience. When I was working on, believe it or not, designing a bar for the famous golf match at Pebble Beach, or redesigning it, I discovered how Seventeen-mile Drive works, how elegant it was. And then I had the commission to do a shopping

center just off of that. Architects pick up experience many ways, and it was very important to just keep your eyes open. It helps.

Q: Air Force Academy Construction Agency

Rather than rely on the Army Corps of Engineers to supervise construction, the Air Force chose to create a unique Air Force Academy Construction Agency under Colonel Al Stoltz. The academy's director of installations, Lieutenant Colonel Art Witters, provided liaison between academy officials and the construction agency. Please tell us how you worked with the construction agency.

Netsch: We had an unusual situation since this was the first Air Force Academy. The Air Force wanted to make the statement of being able to build it. The Corps of Engineers had been hired over the history of time from pre- Revolution on, really, as being the leading engineering group for the country. But this was a chance to change that. Aircraft and airfields abounded, and it was the beginning of a new world. So they wanted the Air Force Academy Construction Agency, and they got that.

But there was an intramural battle on the responsibilities of the Air Force Academy Construction Agency and the Corps of Engineers, naturally. The corps would hardly want to give up what was then the leading project in American society for the government. So there were problems between the two leaders in that area on who would establish the policy for the construction program. I was mostly immune from that

because that would occur in the field. All my work went through the secretary of the Air Force, and it went through the consultants. The design of anything had to be approved by them. The construction, however, the field engineering was a problem for these two agencies. It led to some friction on their part, and it was necessary for us to try to be immune and not play sides. But I've got to feel that Air Force people were more concerned about the ultimate problem than the Corps of Engineers, who were doing military bases all over the world. A military base was quite different than an Air Force Academy. So things did work, but there were rough spots in that resolution.

Q: Consultants

In addition to SOM, the Air Force secretary had an independent advisory board of architects. How would you describe the contributions of Pietro Belluschi, Welton Becket, and Eero Saarinen?

Netsch: Oh yes, let me tell you of the problems, even with all the brains of the consultants and ours and design interests. We had a presentation on the cadet quarters. Now it's been said today that the design of the cadet quarters actually made the scheme. Gordon is quoted in his history and in his biography that without that design of the two-up and the two-down, we would never have been able to get a level playing field for the campus, which was a prerequisite for assembly and marching and the proper components

of the academy. So I brought along this ten-foot long drawing of the cadet quarters and all the backup material and everything.

Eero missed the meeting, and it was the first time the leader in the consultants didn't attend a meeting. So there was a kind of a rustle and a momentum developed by several that perhaps they should give me some advice. The advice went from mansard roofs of Paris, shutters, getting rid of the open floor, putting it all together, making it five stories high. It was amazing. It was the most difficult meeting I had in my life because neither Gordon nor Eero were there. So I had to take all these directives home, and I called up Nat and explained that this is a crisis. We have all these people designing all of a sudden, but I promised to do it. So I did about eight schemes incorporating different things. And we had a new meeting. Eero was at this meeting. He walked in this room and saw all these things and he said, "Walter, what is all this about?"

And I said, "Well, the consultants asked if we would look into this, or this, or this."

And he said, "Will you and Gordon excuse yourself? We need a meeting."

So they had a private meeting. We never discussed all the schemes that had been suggested. Eero made an apology that it was not the responsibility of the consultants to design but the responsibility to criticize, where criticism was important, but not to get involved with the overall aesthetics because these were aesthetic changes. And the meeting changed just like that. So we started like the last meeting with the big, long drawing instead of all these little schemes. And from then on it was seen that we each had

our responsibility to be as good as we could be, to accept criticism if offered, and we did that. Eero saw that I did have the best solution. I wasn't really worried about that, but how we were going to get there was another thing. The consultants were very good. We had one other incident on the athletic building. I'd forgotten about that. It's a tremendous building, as you know. It has two kinds of swimming and diving platforms. It has basketball and tennis and volleyball and exercise rooms. It was a really big problem to make it successful. And it was suggested by some, and I think it was General Harmon in the background, that "Does this have to be a big box?" So it was decided that we would talk to another engineer who was then doing different buildings, and he came up with a building that swooped and dived. It was really quite a building. Today I think it would have gotten much more serious consideration than it did. But trying to put all of these programmatic needs inside these various shapes was a little much, within the time structure of the academy. I've spent four years on complicated forms, and we haven't gotten it completely solved. So I know we couldn't have stopped the academy at that particular time. Much more has been done in complicated structures since the computer. You've got to remember we didn't have a computer.

When we did the dining hall we tried to do it on the computer, and there weren't enough brains in the machine to run through all the options that were required to get to the solution. We had to give it up, and we did a double-truss system, a knowledgeable system that had been done before. The span, 266 feet, wasn't a frightening number, but we wanted an absolutely modern method of construction if we could get it.

So as we talk about the academy, it was such a wonderful time, and problems did come up. Then Nat saw that big structure being built (and we recommended building it on the

ground and hoisting it up—lifting structures up was then a hot idea. It was in *Engineering News Record* and everything.) And Nat supported it. This was the thing to do, so we would build it.

Don't forget that construction gangs were being formed that hadn't been formed in America since before the war. We had a wide diversification of talent available, and being able to bolt things together or weld things together at grade instead of up in the air was a very practical solution. But then Nat had the idea—I must give him credit for that—“Let's get the space program to raise it.”

I looked at him and said, “I can't do that. You'll have to do that.”

And he, working with the Air Force, got the space people to come up with their equipment, and sure enough, up it went. We had a little of the space program in the project as well as other things. The design details on the chapel were mine, and it was my responsibility to get them up, but there it was an engineering affair.

Q: Site Planning

The Air Force had already selected a location when you came to the project, but you had to determine how to use the 18,500 acres of foothills and plains. How did you decide where to put the main facilities?

Netsch: I didn't know that Eero and Gordon had decided on where the academy was going. You know, they had met after the review and the selection. I had no idea. So I

did what I usually do when I attack a problem. I went out there and I looked at the site. I looked at the need for water at that time. There was a drought. I saw the beautiful Cathedral Rock, which is a natural outcropping, that maybe we could make use of. So I did decide I would do three solutions, and I presented to the academy three solutions. One of them was on the ridge separating the northern valley, the playing field valley now. On that ridge I did a very romantic—steps and walks—very romantic version of what an academy could be as a kind of, I guess you could say, a peaceful war machine. I then also picked Douglass Valley because it was a big valley. We could build a lake so we could then save the water, conserve the water, and we would have a small lake that would be the mirror of the academy against the backdrop of the mountains. And then we had the mesa. As far as the consultants were concerned, there was no choice. Eero made it absolutely certain in his mind that this was the only choice, and when we got into the program it actually turned out to be. But we did go through the process of taking three different physical attitudes of what you would see when it was through. You'd either see the mesa with the academy there on the hill but flat. You would not see the romantic version, which a lot of people wanted. They wrote to the architectural magazines that this was the time to do a romantic solution.

Of course Frank Lloyd Wright would have done it. I guess since I mentioned his name I should say a little bit more about him. Frank Lloyd Wright, of course, was the leading architect in America. He really evidently wanted the job very badly. He did work as a collaborator with one of the finalists, and this was the reason that firm got to be a finalist—that was because the word FLW was on it. But after we were selected, I

don't know if this is general knowledge, but Nat got a letter from Mr. Wright saying that, "of course you have no talent to do this project." (I'm paraphrasing.) And that, "I will be very happy to take over the design responsibility for Skidmore for the Air Force Academy." Nat prized that letter very much. He never told me about it until much later, and I don't know exactly what he did in return. It was just never mentioned except that he mentioned the letter. I know that the press talked to Wright often. In one of the news magazines from the academy, when the design was announced, Mr. Wright said it's an "aviary for birdmen." So he had several ways of criticizing it. But he really did want the job. And we felt badly about it, I must admit—at thirty-four years of age, to say this leading architect, and really a genius in our time, wanted to do it. I began to worry about it, but it just spurred us on to do the best we could do. And it would not have been finished in time [if Wright had designed it], that much I can say. I can't say what it would have looked like, but it would have not been done in time.

Q: Planning the Cadet Area

In March 1955 you presented to the secretary a design for the layout of the cadet area and preliminary designs for buildings in this area. How did you conceive of the basic orientation of the cadet area?

Netsch: That was coming along. We were doing the buildings one at a time. The academic building—I thought, when the cadets were marching between classes that they should be looking out at the site. So I did an inward-oriented, all-glass edge in which they were looking out and the classrooms were in the inner court.

The social hall with the theater—actually Gordon and I sort of dreamed that up very quickly. I said to Gordon, “I haven’t got time to do that.” This was for the preliminary presentation. This was the site plan; we needed a ring of facilities, and we needed an auditorium.

Gordon said, “I’ll talk to the renderer.” So Gordon did that one. That was all glass, too, by the time he got through with it, for reasons I don’t know.

When we finally got to the formal presentation, of course, there was the chapel, which was not all glass but it was different. We got to the point where we had to have this major presentation. The master plan was resolved. We didn’t have to have all the buildings finally designed, but we did want the public to know where we were going. And so these renderings were made in New York, and Gordon oversaw the renderings. And, as you know, Lever House is all glass, and that was the time when glass was the golden brick, I guess you might say, of architecture. So we did the renderings, and we did the model. As you look at the renderings, and you look at the model, and you look at the renderings that were prepared for that public opening, you will find that the plan didn’t change; the master plan was there. It was built on logic and research. But some of the aesthetics, Gordon considered you could solve that later.

That was the social hall. The academic building I thought I had solved, you know, with the cadets looking out. Well, aside from the

comments on the chapel, the other comments were, “Too much glass, too much glass.”

Even Nat joined in: “Walter, why did you have to use so much glass?”

Well, I explained why. I said the auditorium doesn’t have to be all glass. I just thought it would be nice if the cadets could look out. He said, “No, actually it’s a much more efficient design if the cadets are inside walking around.”

And I said, “That’s true, on the inside of a circle versus the outside. That’s simple mathematics.”

So I said, “Okay, I’ll take a look at obviously changing it,” and therefore it went from glass to marble. That was a really good scheme.

The social hall took a little more time, not because we didn’t get rid of the glass, but we had to get that ballroom-dining room working. We could see Cathedral Rock, and we wanted to be sure that we could see Cathedral Rock. You could put the light on it the night they had the freshman, sophomore, junior, senior dances, and it was an imagery that was worth keeping. So we had to work a lot on that. And it was a 3,000-person auditorium—then, of course, 2,600 was the limit [to the expected size of the cadet wing]. It’s a big auditorium, and we wanted it to work. There were a lot of discussions about acoustics at that time, and we had an acoustician working with us.

So we resolved that, but we had to really face the fact that there was too much glass because we were not air conditioning these buildings. People didn’t realize that. We were not air conditioning the cadet quarters. We invented gray glass, which limited the amount

of transparency, and this we had done. We had faced the problem, we thought, and nights were cool out there, even in the summer time. And the academic year isn't in the summer time, so there were a lot of reasons for us making the decisions we did. But there were also a lot of reasons to face the criticism, and the buildings looked better. There was more diversification in the facades, aside from the aesthetics of whether it was columnar at the edge or cantilevered. Those are aesthetics that most people don't really look at, but materials are something they do.

We built a great big wall—sixty feet long and thirty feet high—and put all sorts of materials on it in combination with aluminum and different kinds of glass. We had built this beautiful wall of materials, and it had snowed, and we had a mock-up of the cadet room to look at the same time, and I walked off of the roof of the cadet quarters. Fortunately I landed in the snow instead of the hard ground, so I just came up limping and needing a crutch but with nothing really broken. But everybody could then concentrate on the materials, and I had to concentrate on getting back. Nat never liked anyone sick around him, so I had to heal myself in a hurry.