

ORAL HISTORY TRANSCRIPT

CHARLES F. BINGMAN
INTERVIEWED BY CAROL BUTLER
FALLS CHURCH, VIRGINIA – 9 APRIL 2000

BUTLER: Today is April 9, 2000. This oral history with Charles Bingman is being conducted for the Johnson Space Center Oral History Project. Carol Butler is the interviewer and is assisted by Kevin Rusnak. We are at Mr. Bingman's home in Falls Church, Virginia. Thank you very much for having us today and for participating in the project.

BINGMAN: You are most welcome. I am very interested, and I wish you luck on the whole project.

BUTLER: Thank you.

BINGMAN: NASA was a very exciting experience, and I was one of the fortunate people to be in on the very earliest stages of it. Perhaps what I could do is just walk through my general service with NASA and then come back to the portion that dealt with the Houston Center.

BUTLER: That would be great.

BINGMAN: The dates will be sort of approximate, but you get the idea. I was hired into NASA in January or February or March of 1961, which is right after NASA got created. '69? '59?

BUTLER: '59.

BINGMAN: '59. Right. I was working at the Atomic Energy Commission [AEC] at the time, and the man for whom I was working, a man named Al Hodgson, decided to leave and was looking for a job. He applied at NASA and at the FAA. When he got a job, he called me up and asked me and one other fellow, would I want to join him. I said, "Sure. Great." He said, "Okay, we're going to work for NASA." And I said, "Which one is that? Is that the space crowd or is that the aircraft crowd?" And he said it was the space crowd, which shows you about how much I know at the time that I went to work for NASA.

It was very much in the early beginnings of the agency. I was a management analyst at a very junior level, got involved in organization management systems planning in the Headquarters element of NASA. We were in temporary buildings here in downtown Washington. And I also got involved in looking for, or developing plans for a permanent building for NASA, which is the one they're in now. So my early experience was on the administrative side of the organization.

At the time that the beginnings of the real move toward the manned space flight program were initiated, I and one or two others got involved in some of the organization and management planning for the creation of a new spacecraft center. At that time there was a Space Task Group which was stationed at Langley, Virginia. [Robert R.] Bob Gilruth headed it down there. And so [Wesley] Wes Hjernevik, myself, and [Philip] Phil Whitbeck were assigned as three people out of the Washington Headquarters to help with the design and development of what was to become first an augmented Space Task Group and then to become the beginnings of the Houston [Manned Spacecraft] Center [MSC].

So the three of us drove back and forth between Washington and Hampton/Newport News, working with the Space Task Group down there. Now, the reason they wanted the three of us is that while there were marvelous engineers in the Space Task Group, they did not have the kind of people who were experienced in designing large-scale organizations.

Wes Hjernevik, who was at that time the special assistant to the administrator, [T.] Keith Glennan, had been more or less picked to become the assistant director or the head of the management organization at the Space Task Group once it got firmly created. So we bounced back and forth for, oh, I guess three or four months doing that preparatory work.

Then all three of us transferred permanently to the Space Task Group down at Hampton/Newport News. Hjernevik was assigned as the assistant director for management. Phil Whitbeck headed the management analysis shop, and I was one of his analysts in that shop. We spent most of our time trying to put together the design for an ultimate spacecraft center. We began to hire a few people, but it was not wise at that stage to hire too many people in the Hampton/Newport News area because we knew we were going to move somewhere in the country, and we didn't know where it was going to be. So there were negotiations with OMB [Office of Management and Budget] and then the Congress, or I should say the Bureau of the Budget and the Congress, first to obtain authorization for the construction of a new center and, secondly, to go through the haggling about where the center would be located.

The Bureau of the Budget finally caved on their opposition to the creation of a new center, and there was a site selection team that was put together, on which Hjernevik and I both served. It was to visit various sites around the country and see where we wanted to put the center, the new spacecraft center. We were using criteria such as the city location. It had to be a city, an urban area that was substantial and could support a major new technology, high-technology institution. It had to be near the kind of airport that could serve as a service organization primarily for handling of spacecraft and conducting certain kinds of flight tests. It had to be on the water, because at that stage they thought they were going to transport spacecraft by barge, which they ultimately never did. It had to be at the site of at least one substantial, high-quality university, and it had to have what looked like an appropriate kind of work force to staff a number of the positions in the center.

Well, the negotiations proceeded, and it was quite clear that [Vice President] Lyndon [B.] Johnson was very interested in Houston, but the real swing was Albert Thomas, who was then the congressman from that district. Thomas was a very old-fashioned Texas-type politician. He sort of liked saying, "Forget all these fancy criteria. Who cares about that stuff? You can put this center anywhere you want as long it's in Houston." So that's how the answer came out. I guess gratuitously there was a large ranch in the south of the city of Houston, which I'm sure you know all about—the West Ranch—and how that was made available to the government as a site for the Houston center.

I was also part of a famous caravan of people who were selected to move from the Langley [Research] Center to Houston to begin to set up the new Manned Spacecraft Center. That is to say, there were people who were packing up their goods and belongings and driving the family down to Houston and beginning to be put the center together, but also looking for places to live and getting their kids into school and so on. There were people who were in that caravan who were halfway to Houston and still didn't know whether they had a place to live. This was a very rushed exercise, and there was a lot of risk-taking by people in terms of their personal situation, their personal commitments. We had people coming down there to go to work for the center who had not yet been hired by the center, but they were working on the expectation that they would be hired. Everybody was saying, "Well, I know we don't have the bureaucratic stuff straightened up, but come anyway and we'll work it all out," and that's approximately what we did.

So we ended up in a series of temporary facilities all over the city of Houston, trying to concentrate primarily on the southeastern quadrant of the city and in the areas immediately around Clear Lake. But we had stores and shopping centers, and we had old garages and whatever we could latch onto.

The most difficult area, I think, was in the technical services area. We had both a technical services shop operation and also a growing photographic services operation, and

then we had test facilities for testing equipment of all kinds. We needed fairly large warehouse-type space for those facilities, and very little of it was available in that Houston area. So some of our facilities of that kind were more widespread than the administrative offices.

So I ended up in an old office building abandoned by an oil drilling support organization of some kind and had the nicest offices in the whole place. Other guys were sitting in the second story of garages and things like that. It was in that facility—well, I'll leave that for a little later.

The organization that we developed is essentially the organization that is portrayed on those charts which you have shown to me. I started out just—I didn't really have an assignment. I was a kind of jack-of-all-trades, troubleshooter, and whatever. I remember Hjernevik called me in and said, "We need to get the new organization up and running, and we don't have any people. We certainly don't have the leaders of these new organizations. So you are now hereby assigned responsibility as the acting chief of seven different organizations." We're talking about personnel, [audit] security, logistics, technical information, administrative services, and management analysis. And he said, "Okay, what you do is you find six guys to head six of those organizations, and you keep the one you like." And so I said, "Okay."

So I spent a good deal of time in that first period right after we moved down there, just recruiting people. We had all kinds of applicants, hundreds and hundreds of applications. But that simply made the process of selection more difficult in a sense because you've got to plow through these things. Many of them were clearly not capable, not experienced enough. Many just didn't have the knowledge that they needed. But I did sort out a whole series of people to bring them in to interview them, and along the line decided to keep the management analysis staff and hire people for the other organizations.

The two earliest organizations that Hjernevik himself worked to set up was the financial organization and the procurement organization. So I was essentially doing all the rest. The management analysis staff, the reason I chose that was that it was clearly intended as a generalist role. I viewed things such as auditing or financial management or procurement or personnel as technical expertise. So you could be very expert in personnel, but the peak of your career would essentially be a senior personnel officer, a top personnel officer. I was much more interested getting my fingers into everything, and so the management analysis shop looked like that kind of an opportunity. I ended doing a whole lot of organization work, not only in the administrative organization, but throughout the whole center. I would work with the heads of the engineering, technical, program management staffs when they had organization problems. Also I would try to develop methods, procedures, business practices, especially those cut across the operations of the whole center, all the way from a mail system and design of forms, up to major management systems which I would help design and develop the written procedures to govern them. So it did work out that that was a marvelously interesting assignment. It got me a good deal more exposure with the technical people than I think many other people in the administrative side of the organization were able to experience.

Also it was during this period of time that President [John F.] Kennedy came and visited the site. I remember meeting him, listening to some of what he had to say, and then the next day he was killed.

I was talking about organization and management matters. We went through two or three organizational changes during the course of the time I was there. The next big issue, I think, was the procurement competitions. That broke into two pieces. One was the development of the MSC procurement operation. We had a very good man running that, a guy named Dave [W.] Lang, but many of the people under him had been people who had been brought in from the defense establishment. Frankly, they were, I suppose, technically

competent, but they were very uneasy with very open-ended environment. They were encountering things every day that they didn't quite know how to handle. So their base of reference was, "Well, we could do it like we did in DoD [Department of Defense]."

Then most of the NASA technical people would say, "Oh, no, we won't! The last thing that we want is a center that is rigid and stultified, relying on those tedious, difficult procurement regulations that characterize the Department of Defense." So that's where a lot of the problems initially occurred in this arena: how do you make the Manned Spacecraft Center function at a very high level of competence and quite rapidly and avoid all the bureaucracy that had overburdened the Department of Defense?

There were tons of work to do in this area. So the initial effort was to design a procurement system which was as flexible and as open as possible and could be operated with some rapidity. I got involved in that simply because it was a systems design, and the procurement people were having a lot of discomfort trying that. Some of this was done at a time when NASA Headquarters procurement organization was not very well evolved itself. We had a lot of interaction with the Headquarters people because they said, "Ah, these guys down at Houston seem to have the right idea. They don't want to just adopt standard bureaucratic practices from the DoD."

The second big concern in the systems acquisition area was the conduct of Source Evaluation Boards. At any given time in these early days of, I guess, '61, '62, '63, '64, somewhere in there—I could look it up on the charts—the center was always conducting source evaluations of one kind or another, all the way from a Gemini master contract down to a janitorial services contract or a security guard contract. At the beginning of that process, it was clear that neither many of the technical people nor the people in the procurement organization were deeply experienced in this kind of procurement, source evaluation kind of procurement. So we spent a good deal of time at the front end designing the source

evaluation process in a generalized way, and at the same time we were actually launching many of these systems acquisition source evaluations.

The process tended to group itself around three areas. One was the technical statement of work, which was always the product of the technical staff, whether it was flight operations or Gemini Program Office or what. Then there was a business sector, business portion of the request for proposals, and that dealt with such issues as the organization of the contractor. If they should win the job, how were they organized to do it? Who would the key personnel be? What would their staffing patterns be? How many people did they see as being required for the job? What kinds of management systems would they employ to control the work, either on site or back in their own factories? How would they integrate their own internal accounting system with the accounting system of the government, so that we could crosswalk between financial information coming out of the contractor and the structure of our own budget?

Also in this business management arena of the source evaluations, there was a financial sector which was a cost estimate coming from the contractor, which we then had to try to evaluate and judge its completeness and accuracy and reality. I spent a lot of my time serving on those Source Evaluation Boards, including drafting teams to put the original statement of work together, develop the boilerplate to accommodate the information to potential bidders as to what was wanted, what the bid process would be, how the evaluation itself would be conducted, and so on. It was, first and foremost, another systems design effort.

Then I got involved in the actual source evaluations themselves. I started out essentially as the organization and management expert on Source Evaluation Board teams, serving as part of the overall business management evaluation. So there would be a Source Evaluation Board constituted in the center, run by one of the technical people, then there would be a next-level manager of the technical proposal evaluation, and at that same level a

manager of the business management proposal in the submission. So I was on the business side, but interfacing heavily with the technical people on the engineering side.

Then as I got a little more experience, I began to move up into being that manager of the business evaluation, particularly on those that lay within the responsibility of the Office of Administration. That management analysis role made me sort of—I'm outside of the procurement organization and I'm kind of neutral, so it was easy for me to serve as chair of that kind of Source Evaluation Board. The responsibilities included the evaluation, extensive discussions back and forth with the technical people to make sure that we were giving them everything they felt they needed to judge the capacity of proposed bidders. Then we would write up the evaluation based on a rather formal and structured series of evaluation criteria and weights.

In the latter stages of this evaluation experience, we began to send those criteria and weights out to prospective bidders because we felt it was fairer to them to see the basis of evaluation. Then once the evaluation had been completed and either a winner had been identified or a top group had been identified, we then participated in making the presentation of the results to the center director, and, if necessary, we'd come to Washington and make the presentation to the Administrator here in Washington. So you can see it was an enormous effort. I used to call myself the king of the Source Evaluation Boards because I was on almost all of these things. The technical guys would do only those that were in their own technical areas, but I was on all of them. I still think I have the world's record for serving on Source Evaluation Boards, what little good it does me.

I emphasize that. I look back on this experience and aside from coping with all these problems and doing what I thought was a good job in very trying circumstances, I've sort of asked myself, what is it that we really did that seemed significant to me, looking back on it. So I'm emphasizing to you that, not alone, but as a substantial contributor within NASA, we developed what we thought was an extremely effective source evaluation process, which

later, I think was—I won't say that it was adopted by the [NASA] Headquarters, but I would say their thinking essentially became to be like our thinking, as to how you go about these evaluations. So I always viewed that as one of our really outstanding accomplishments at the center.

I would also say that there has since been a lot of dissatisfaction, disgruntlement in the federal government, across the whole federal government, because of the protracted nature of source evaluations and procurement actions *in toto*. I think a lot of this is a consequence of making these source evaluation procedures far more complicated and far more burdened with a lot of detail than I think was ever warranted. In other words, we were faced with the necessity of turning out these source evaluations as quickly as we could. Every day that went by without a contractor on board was a problem for us, and so we naturally developed the most streamlined of procedures. Yet when I look back at it, I say we didn't miss much of consequence, even in those very streamlined processes, and if the government now were to return to something cleaner and simpler, such as the source evaluations that we ran, life would be a lot better around [government].

One of the things that got added after the fact, when we would select a contractor as a result of source evaluation, if a loser was disgruntled and wanted to come in and ask, "Why did we lose?" we would always have them in, and we'd make an explanation to them. But that was an informal process and we didn't volunteer to do this for everybody. We made it clear to the losers, "We don't want you to just come in and whine and complain. If you have some genuine interest in why you lost so that you can be better in the future, fine, we'll be happy to do this."

Well, that post-selection debriefing then became a bureaucratic necessity. It got built into the procurement system. It then became mandated that you offer that uniformly to all losing bidders, and you could not award a contract until after these appeals had been disposed of. You can see how that would add weeks to the process. So you got the contractor

selected, you know who won, but you can't get them on board and working because of this protracted show-and-tell kind of a system.

Then at some stage the General Accounting Office became more assertive in offering their services as a source of appeal to unsuccessful bidders, in effect, saying, "Look. An agency like NASA should exhaust its own administrative recourse, should offer you some appeal mechanism. But even if you had that, if you continue to be unhappy, then you can make a case to the General Accounting Office." Well, that was essentially disastrous. Because there were a lot of companies that lost, who would sit there and say, "Hey, what have we got to lose? We'll try for an appeal with NASA, and even if we lose then, well, heck, we'll take our same case and mail it to the General Accounting Office. You never know your luck. Maybe they'll upset a selection." That added further weeks to this whole source evaluation process. So it went on like that.

I guess I got to thinking about this, and NASA's reputation now as a management organization is far, far worse than it's ever been, and it's far, far worse than it was during this time frame that we're talking about here. In many respects, while they may have themselves to blame, they also are the victims, along all other federal agencies, of managerial systems that became too complex, too overburdened with red tape, and far too slow. So if NASA is less effective than it used to be, the rest of the government can share some of that blame.

There's another case of the same kind that I want to talk about, and that has to do with the design of contracts. In many of the service areas particularly, but also on the major hardware contracts, the Manned Spacecraft Center took the lead, I think, in NASA in designing incentive contracting. I don't know how familiar you are with this area, but most of the contracts were essentially cost-plus, every cost that was sought for reimbursement under the contract, plus a fee of some kind. That was the kind of contract that made it highly desirable for contractors to charge as much as they could to the contract, because they got

paid that and they also got paid a fee on essentially what you call the volume of work or the size of the job which could be reflected by the money.

Well, we went very early to the design of a couple of forms of incentive contracts. One was cost plus an award fee in which you'd say to the contractor, "We will pay all of your costs, but your fee will essentially be awarded based on the excellence of your management performance." That could be stated in a series of criteria—cost schedule adherence, technical excellence, things of that kind. The intent there, the contractor could earn a larger fee, but only by demonstrating superior managerial effort within the company on the NASA contract.

Another version of that was a CPIF, cost plus incentive fee, in which, in effect, the fee would be determined by an evaluation which was predicated on NASA expressing certain highly [important objectives] for work under the contract and then designing an incentive schedule in accordance to how well the contractor met those objectives. For example, you would say, part of the fee would be attributed to schedule adherence. Do they do things on time? And if they do things on time, they would get 80 percent of the money set aside for timeliness. If they exceeded the schedule, I guess you could say either X percent of the time or by X days, then the contractor could earn up to 90 percent of the incentive fee. And if the contractor was even faster than that, they could earn 100 percent of the incentive fee.

What then we were doing was clearly basing the incentives under the contract on things like timeliness. So if you think about it, you could envision contracts where the NASA people would sit down and say, "What is it that is most urgent for us to achieve? Let us design our incentives such that they press the contractor to produce the things that we really want, even at the cost of doing far less well on other elements which are unimportant to us." That was a fascinating exercise in and of itself, and I think there was a time in which the MSC was the only NASA center and, I think, the only government agency outside of elements of the Defense Department that were using that incentive award basis.

So I spent a lot of time—this is the latter stages when I was the manager of center support, planning, and control. I spent my time designing these incentive fee and award fee bases for our relationship with the contractors and then inserting them in the requests for proposal so that the contractors could respond to us in their bids to tell us how they proposed to earn the maximum possible under the contract.

Incidentally, I might also mention under the incentive system, there were also disincentives, penalties. If the contractor was late, pow! We really got them. The point I am making is that this became a policy matter, not just a process, because you had to sit down and say, “What is it that we really want to incentivize?” Like the security contract, what they really wanted to incentivize was cheapness. They didn’t want to pay any more for security guards than they had to pay. On the other hand, if you’re looking at the photographic laboratory, they wanted to incentivize very high quality control, particularly on color film processing. Then, and I suppose now, they processed enormous amounts of film, but we were quite reluctant to create incentives on volume because that would just cause everybody to rush stuff through the system. So we designed an incentive that was very highly oriented toward a very tough quality control system. There wasn’t a firm in the Southwest that could do that kind of work. So you’d pick the best one, and then our own laboratory people would first train them in how to achieve these high levels of quality control and then observe them as they performed and develop their incentive fee schedule.

It also follows then that a lot of what we did was to run these contractor performance evaluations against the criteria that we had established. We made quarterly determinations with respect to how the contractors stood on their meeting the standards or the qualifications or the requirements under these various incentive contracts. In some cases, the contractor actually asked for monthly appraisals, didn’t want to go quarterly. He wanted to know every month how he was doing against the government’s evaluation. So, here again, I spent a lot of time running these evaluation teams. The people who ran the technical organizations were,

in fact, delighted to have me doing that. They didn't see that as a usurpation of their authority. I was seen as essentially a neutral guy, and so I had some confidence coming from the contractors themselves and, I guess, essentially ran that process for some time.

Let's see. Anything else? We increasingly got involved in, I guess you'd call it human resources development. At the time that Phil Whitbeck was promoted to being deputy associate director for administration, he brought to that position a marvelous commitment to human resources management development. The personnel organization was well run. It was quite an effective organization, but it was a very standard, typical nuts-and-bolts personnel shop. Whitbeck was very interested in generating a genuine development program for people in the center, including hiring of minorities into the center and women into the center. If you know NASA at all, you know this is not where women and minorities would normally turn as a first opportunity for a job. At that time particularly even with the best women in the world, there were not that many women taking advanced engineering programs. That's not to say that they were not out there, but it is to say that you had to work harder to go find them or to make the fact known that Houston was a good place for women and minorities to work. A lot of them didn't believe it. A lot of them didn't believe that you could go into an old-fashioned engineering shop and ever be given any responsibility or become a real partner in the organization.

Whitbeck was instrumental in developing programs for development of managers. He would send them off to training programs. He was instrumental in starting an adjunct to the University of Houston out near the Clear Lake site, to get the university to set up an extension or Clear Lake operations right across from the center. I would say that in the early years, most of the people who enrolled in that center at the University of Houston were out of the MSC.

We instituted programs of briefings for all new employees. We'd get them together, and within a couple of weeks of their coming aboard, give them a really extensive briefing

and summation of what the center is like. I remember doing those almost once a week during a period of a lot of high activity in the center. So I'd go in there and take like two hours to explain this organization chart to them. "This is not just boxes, folks. This is a pictorial way of understanding how this place works." Not only that, but I'd describe like how does this center relate itself to the Washington [NASA] Headquarters, both in the Office of Manned Space Flight and in the other Headquarters elements; how does the technical program offices relate to the oversight of their contractor organizations. In other words, I had gotten so familiar with this stuff that the technical people would say, "Oh, that's okay. Let Bingman do this. He gives a pretty good talk. Let him waste two hours on these guys. We don't want to waste two hours on them." But I've always felt that it was a little thing, but there were a lot of people who walked out of those briefings that had a better head start at really getting down to their jobs in the center than they would have had had we not had this series of briefings. And that was one of the things that Whitbeck sponsored.

He was also very interested in getting minorities into the center. So I'd work with the personnel office to design some outreach programs. Where would you look for outstanding young minority people, both blacks and Hispanics? Again, it was only when we began to put a very high signal on the interest of the center in having minorities, that minorities began to believe that we really meant it. In other words, you can't just open up the door of the personnel shop and wait for blacks to come in and say, "I'd like to be an engineer." It'll never happen. But if you can start visiting black schools and talk to faculty and sit down with students, then you can get them to start believing that you really mean that you want them there. It was that kind of program.

We then also, I won't say as a collateral to that, but as a collateral to heightened racial sensitivities in the country generally, we found that we had many more complaints about alleged discrimination or the failure to provide equal opportunity or issues of civil rights,

even civil rights in the community. I found myself getting into investigations, either formal or informal investigations, about these complaints.

That reminds me of something that I hope you'll work into the report. One of the first things that NASA did when it came down to Houston and began to set up the Manned Spacecraft Center was to make it clear that this was going to be an equal employment facility, even to the point that we would go around and visit good-quality motels in the area and say, "Look. We're going to have people coming in here from all over the country. Many of them will be black. Many of them will be Hispanic. We do not want to have a situation where some of these people are refused a room, refused service in a restaurant. First, we want you to play along with us. If you've had what is essentially segregation policies in the past, we want you to drop those. But if you will not do that, then we will simply tell the community that you did not do that and we will blacklist you." Well, we didn't say 'blacklist,' you know. That's bad [form]. "But we will make it known that minorities are not welcomed in your motel and are not welcomed in your restaurant. Believe me, we'll see to it that everybody knows about it."

My own feeling is that we broke open that southeastern part of the city. I think Clear Lake was not like that. I think Clear Lake was a far smaller community, was far newer, a lot of yuppie types living in Clear Lake, but we were looking at the rest of Houston, much of which is still twenty years behind the times.

Let's see. What else did I want to talk about? Can we pause here?

BUTLER: Absolutely. [Tape recorder turned off.]

You were just talking about the transition from—

BINGMAN: I started to say that I enjoyed and liked the management and analysis experience because it was broad-based. It was not a technical specialist. I kept that up in my own career

and always looked for jobs that were broad. Each job was bigger than the last one, not just in terms of its rank or whatever, but in terms of its interest, the breadth of its interest.

I wanted to point out to you that what I thought was an extraordinary set of decisions that were made by many people, NACA engineering types, people on the engineering side of the organization, were also confronted with that same kind of decision. The ethnic in NACA had been that the superior position was essentially a research engineer and research on aircraft. There are a lot of people who did not want to get into project management, thinking that was an inferior kind of a skill. It was just hardware mechanics or clerks that go yell at contractors, and that was beneath their dignity. But in the last analysis, a very high proportion of the people who were available did make the jump and move into the project management arena. It's also extraordinary, the degree to which these people succeeded.

Or put it another way, there was a school of thought that says, "Look. You're never going to get project managers out of NACA/NASA. What you're going to have to do is go out to contractors or go to the Defense Department and get project management people from the DoD establishment." And I think they were wrong. I think more NACA/NASA people made the jump and became effective project managers than anybody ever expected would be true. To be an effective project manager requires the same kind of very disciplined thinking that an engineer would bring to any kind of engineering job, even design concept work. But if you've been engaged in building almost anything, an automobile, a bridge, whatever, the logic is much the same as the logic needed to become a spacecraft engineer.

I think then the management aspect grew out of that kind of engineering perception. In other words, in the engineering profession, A is followed by B, and B is followed by C, and you see the interconnection between hardware. That led to the idea of a management system that had the same logical sequencing of events and the same degree of interrelationship. So it became as part cost and part schedule, but it's fundamentally an extrapolation of engineering logic.

I also felt that when I first began to work primarily at MSC, even when I was at Langley, I knew what it was like to become a second-class citizen, because anybody on the management side was viewed essentially in the same kind of clerkship relationship, and Hjernevik was highly respected, but many of the engineers simply saw him as a very effective chief clerk. So you had to say, "Look. It is not that simple. The administration of a major institution, supply and logistics, those are all very demanding management challenges in their own right. So if you see good things happening, it's because you've got good managers, not because this stuff happens automatically."

So there is a degree of accommodation or acclimatization that took place between the technical staff and the management side, the assistant director for administration. My sense is that that accommodation would not have happened if there hadn't been a substantial degree of skill on the management side. If we had just been a bunch of chief clerks, then we never would have succeeded in that organization.

I also think that there was another learning process that—let me just say it. I don't know that it led to any particular conclusions. But one of the great difficulties the technical people experienced in the early days was the nature of the relationship with the contractors. What they had started out thinking they would...design the Mercury or Gemini spacecraft or the flight operations system as if it were just another research project, like you were doing at Langley or Lewis. And they found that they could not do that. The jobs were simply too complex and demanding. You had to use the contractor organizations. That's why we went through all those Source Evaluation Boards and got all those contractors. But I'm saying the technical staff often had difficulty then in letting go of stuff and say, "Look. I really can't design this parachute recovery system. I've got to rely on McDonnell [Aircraft Corporation] to do that. My job now is going to be reduced to being an overseer of McDonnell's performance." And many of them hated that. It was not hands-on engineering; it, in fact, began to sound like that chief clerkship that everybody decided they didn't want to have.

So they had to develop skills in the oversight of contractor organizations, which means to build a level of trust that says, "I know it's got to work. I know it's got to work right. It's got to be safe. It's got to be cost-effective, and it's got to be ready on such and such a date. I just have to let the contractor do that."

But then what I thought was interesting was sort of like the next sentence which says, "Yeah, let the contractor do that. However, we don't stop oversight." We have to devise ways in which while you're trusting the contractors to perform, we will do continuous evaluations of how their performance is going. So we began to develop techniques for contractor performance evaluation, some of them more formal than others. In some cases they were written, they were like site visits from which a contractor evaluation would be developed.

In other cases, if the contractor appeared to be in substantial trouble, MSC would put together a review team. We called it a Tiger Team or something like that, and they would take that team to the contractor's site. They'd just infest the contractor's organization, to try to figure out what was wrong. In other words, a fresh set of eyes coming from the outside to assess a contractor in trouble, that didn't quite know how to get himself out of trouble. Then there would be a big culminating meeting with the contractor's management and the site evaluation team would deliver its results.

So I served on some of those, not to look at the hardware, but to look at the business practices of the organization structure, the same sort of things I looked at during the course of the Source Evaluation Board. It always amused me, there were occasions when I actually said something that sounded intelligent to the engineers, you know, and they would look at you like, "This guy isn't such an idiot after all," or they might come right out and say, "That was a pretty smart thing you said there." So it's that kind of acculturation that I'm talking about that was taking place in the organization. I think it went very, very well. I think it was

largely attributed to Wes Hjernevik and to Phil Whitbeck during his tenure as the deputy assistant director, but I think I played my part in that.

It was a big learning curve for me, too. I have never since that time been intimidated by other professions, even doctors, because I can talk to engineers now and say—in my heart I'm saying, "I understand your trade, whether you think I do or not. I can learn to speak your language. I know what you're saying. I know what your problems are. As a matter of fact, I may even know a few solutions."

And I can't tell you how much that experience has helped me in doing these international consulting assignments, because there I am, I waltz into—I did one a year and a half ago with the Palestinian Authority in Gaza. So here I'm waltzing into Gaza City, the Gaza Strip, totally foreign environment, dealing with the staff of the Minister of Planning and International Cooperation, talking about how to design policy for their present government and for their future government of Palestine, across the whole range of all of the public programs there. That [takes] confidence, if you'[re] fac[ing] up to other people in their own environments.

In this management analysis kind of a job there is this same sort of thing. You go into some organization, attempting to assess their problems, whether it's organization or money or staffing or what, and you may be almost totally ignorant of the area in which you're going, but if you have a general understanding of management, what is effective, what is not, then you've got something to contribute in almost every organization. So I learned I can go into other people's organizations and I know that they will resist, just as the MSC engineers started out saying, "This guy cannot conceivably understand what we're doing here," and then two weeks later they say, "Well, he really does understand." And a week later I'm making recommendations, explaining to them how to improve their own business. That takes a lot of chutzpa.

It was kind of under forced draft that [we were] doing that at MSC, and Hjernevik was terrific in that sense. He would say to me, "Look. The director deals with me by saying, 'Wes, you're a very capable guy. If you want to talk to me about anything in this center, you come in and talk about it, or if you've got problems or you see things that can be improved, I don't care whether it's deep in the heart of the spacecraft, anytime you think you've got something that you want to talk to me about, you let me know and come on in.'" And Hjernevik said the same thing to me.

So I'd go in to him and we'd talk about problems that were not our own, somebody else's problems, things that we observed, people who were unhappy or uncomfortable. By that means he was able to work to get his hands on things that needed improving, whether the people in those organizations wanted them or not. And it took a certain amount of diplomacy to go to the head of some engineering organization and say, "Look. I know you're having trouble. I know you don't like 'foreigners' intervening in your organization, but would you rather have the problem, or would you rather have a solution? Now give us a chance. If we can generate a solution for you, then it'll work to your benefit."

Also one of the things that I did at the center was to become the liaison with the General Accounting Office. GAO had a resident staff in the Houston center from fairly early days, because [we] were going to be very big-ticket spenders. We found the same kind of—whew, that's good coffee, strong. No danger of me falling asleep on you. We found that the General Accounting Office felt very frustrated because they had encountered this same prejudice about people. The engineering guys would pat them on the head, say, "Well, why don't you go look at the books. You'll never understand this engineering program." As a matter of fact, GAO did have a lot of trouble of that kind. There was simply nobody else in GAO that understood technical engineering management except a few people that were auditing the defense establishment, and they were already overworked.

So GAO was attempting to bring relatively young, not inexperienced people, but people whose background and experience was elsewhere, and they were having really heavy weather, of trying to understand the whole spacecraft business and how they could audit it. So we ended up working out a deal. I said, "Look. I will explain this place to you and I will keep explaining it so that at any given time when you want to initiate an audit, come with me, sit down, and we'll talk about what you're going to encounter in terms of the overall framework of management here."

In some cases where they needed a briefing of some kind, I would arrange for them to have a briefing before the audit ever began, so they could catch up with the area. In other words, my end of the deal was to believe that an auditor that intelligently understood what was going on would be more likely to do a competent audit and would not confront me with a lot of dumb, stupid things we would have to waffle our way out of. So it became to our advantage to try to cultivate, not blandish GAO and buy them lunches, but to cultivate their understanding. I had a lot of fun doing that kind of thing.

Imagine yourself sitting at a table, you've got a suspicious technical guy on one side and a sort of scared GAO auditor on the other side, and you're going to make these two guys both happy.

BUTLER: Quite a job.

BINGMAN: Quite a job. It ended up a fun aspect, and I believe that we avoided a lot of not just incompetent auditing, but auditing that would create problems, audits that would make recommendations that could not conceivably be done. Therefore, you'd have to spend all your time and effort telling the GAO people they didn't understand or they'd got it wrong or they're too dumb to know what they're saying. So I didn't want to go through that.

How am I doing? Have you got any questions that you want to fill in while I look at my list?

BUTLER: Sure. Let me look over. Going back a little bit to when you were talking about coming down to Houston and you talked about the site selection process and you talked about how you were spread all over the city, how was the general reaction of both the people coming in to work at the center and the people of Houston? How was the interaction there?

BINGMAN: That's a very good question and some very good answers, I think. As to the people coming in, it was quite extraordinary. Everybody wanted to get into the manned space flight program, or NASA generally, but particularly the manned space flight program. When Houston was announced as the site for the center, I think half the people in the city of Houston applied for jobs—insurance salesmen, shoe salesmen, you name it. "Hey, let's go work for NASA."

But, in effect, we had the opportunity to select very high-quality people to come work on the staff, which means that most of them were very highly self-motivated. It was not a question of people in dull, sluggish jobs, and you have to try to pump them up in order to get them to get away from the water cooler. It was not like that at all. Almost without exception, the people who came to work there were just charged with this emotion. They wanted to do well. They were the chosen. They had been selected. This idea, the caravan of people driving from Hampton and that area to Houston, it was personal commitment to quite an extraordinary dream. They were staking a whole lot on their personal lives on the fact that this was going to be an attractive work situation and was all going to work out, was going to be great. I think for most people it was great.

I would also say, I dwelt at length about a streamlined procurement process. Almost all our other management systems were of that same kind. That is, we took the attitude,

"Look. We're going to move fast. We've got to get things done. We can't afford to have a lot of red tape built into our systems. Let's pick out the essentials and make sure everybody does those, but don't have a lot of other—you know, nine different reviews and committees and all this stuff." I'm deliberately trying to explain a work situation which was highly productive, in part because the managerial systems permitted people to be productive and were not essentially the kind of intensity of red tape that everybody complains about with the government. So a lot of people, I think, felt that they were being very effective in that work environment down there.

This was true, even though some people moved six times. They'd just about get used to where they were and we'd find a better place for them, and they'd move again. Then we'd open up another building on site and they'd move again, and so on. That was also true despite the pressure of the job. Everybody was under pressure. I mean, we had a lady running the mail room, she felt pressured to get the mail out, and that sort of thing.

As far as the community was concerned, they were enormously excited, almost as bad as the MSC people. They hadn't a clue what this was all going to be about, but they knew it was going to be good stuff. A very substantial number of the people who commented came to the same conclusion, that this would make the city of Houston, that this was going to be such a marvelous thing that forever after, Houston would be known as the place where the astronauts worked and where the spacecraft were built. I think thirty-some years after the fact, that perception was correct. You can't hardly watch a space movie anymore without, "Are you there, Houston?" And I really think it was the making of that city. Not the Astros, not the Rice University football team, certainly.

BUTLER: As you were setting up the center, the Manned Spacecraft Center, it was a transition from the Space Task Group and having worked on the Mercury Project, very small scale, and as you said, having come from the research background with Langley, but here

you were transitioning into this large-scale, massive effort for going to the Moon and building this whole organization. You talked some about the process, but how did you figure out which offices were needed and where and which people to best fill those roles?

BINGMAN: Well, there's two kinds of answers. Let me take the technical and engineering side first. Structural issues were very driven by the hardware. It's a problem then, and now, that is very thing-oriented. You knew you were going to have to have a flight operations system, so you had a flight operations directorate. You knew you were going to have to have a mission control center, one here and one at the Cape [Canaveral, Kennedy Space Center, Florida]. So there is an organization to put together that mission control center. Same thing on Gemini. You could take Gemini and break it down into its major component systems and then you'd have an organizational entity to handle both systems. The role of the director of these offices was essentially to coordinate the people in the organizations, just the way the hardware system got put together. So it was very systems-driven.

Having said that, one of the biggest conflicts was not within the center, but was between the center and the Washington office. The difference between a Washington Headquarters program office versus a Houston program management, project management center. I guess the way I'd characterize this would be to say everybody in the centers, then and, I think, now, conceded to the Headquarters the importance of having a broad overall program management organization, well functioning. They also conceded to the Headquarters a role to integrate the centers, to assemble the centers just like you'd assemble the launch vehicle—MSC for the spacecraft; Marshall [Space Flight Center, Huntsville, Alabama], launch vehicle; the Cape for the launch complex; the Cape and Goddard [Space Flight Center, Greenbelt, Maryland] for the tracking. Again, very thing-oriented. But these institutions were in natural conflict with each other and to some degree the technical issues between them could be resolved at a low technical level, but if it became an argument over

major technical issues, there had to be a referee. Therefore, the centers would concede to the Washington Office of Manned Space Flight that refereeing role as part of the program management role.

The difficulty came in distinguishing between what was legitimately top-down program management versus what was, let's say, residential program management. If you were in Houston, you would look at the Apollo spacecraft and say, "Look. We're completely in charge of the Apollo spacecraft. That's our program. We have projects underneath that, the manned life support system, the reaction control system. Those are projects." But the Washington office said, "No, no, you don't understand. Apollo is the program. You're the spacecraft project." So there was a conflict over when and in what degree and to what circumstances the Headquarters intervened in a management or decision-making sense over things that the center felt was essentially their responsibility and their prerogative.

This was not just bureaucratic. I think there were some genuine issues of how this authority was best exercised. For example, I've said the Headquarters proved superior in negotiating conflict as between centers. They were far less successful in dealing with people inside any given center, and trying to intervene in the decision-making processes in those centers.

In part, it was a clash of technical judgment. In other parts, it was a clash of sort of like who's got what power? And in part it was a genuine disagreement over how the decision ought to be made. If you're working at the center, you tend to make decisions on a technical engineering basis. If you're at Headquarters, you might want to make decisions on cost basis or political feasibility or public relations value, things of that kind. And who's to say who's right? So many of the clashes were genuine disagreements over matters of policy. But that's all right. I think to a very high degree the monthly review meetings in Washington tended to resolve those questions, and there was a time when I think there finally emerged a pretty compelling feeling that—Washington program people finally began to realize that they were

not very good at second-guessing the field centers, and that the results would be better if they essentially kept their hands off the specifics of project management.

But even more remarkably, at the same time the field center people began to believe that there did have to be an umbrella organization in Washington, there did have to be a competent program management organization, they did have to do overall program planning and design, and they did have to do a certain amount of refereeing as between the combatants. And that was prime time for NASA, I think. I'm speaking primarily for the manned space flight program, but I think the same kinds of disparities existed in other programs, such as science programs and so on, as well.

So I think NASA has never functioned better than that period of time essentially during the Gemini program and the Apollo program, where you had both strong Headquarters program management and you had strong field project management, and they had found ways to accommodate and work together. It is not that way now.

BUTLER: Any thoughts on how it devolved from a system that appeared to be working well and—

BINGMAN: Yes. I guess I don't have a good grip on the details, but let me give you a general perception. I think it began to weaken when three or four things happened. One was, there was a level of political and public relations intervention that was higher than it had been in the past. That simply heightened some of the concerns or problems that the Headquarters thought they were responsible for resolving.

Secondly, during the latter stages of the Apollo program particularly, a lot of centers began to say, "What next?" And I think there is some very serious slippage in Washington over designing the next programs and projects in the manned flight arena, and things turned very uncertain. The centers then began to worry that they could not see [their future]. It's

like, "We're a highly successful, highly qualified engineering organization, but six months from now we're going to fall off a cliff because we don't know what we're going to be doing after the termination of the Apollo program. Would you guys in Washington kindly get that straightened out?" It was that kind of confusion.

At that time I think many centers began to shop for business, if you know what I mean. They began to say, "If Washington can't get their act together and define a next generation of manned space flight, then we'll get it together and we'll go peddle it. And lo and behold, we will be the star of the show." This even extended to the centers that were not within the manned space flight complex. Lewis [Research Center, Cleveland, Ohio], for example, would start and say, "Gee, we could take over some engineer development work or launch vehicle development work. Doesn't all have to be in manned space flight. We can do that stuff here."

So you began to have an area in which all the center directors were scared to death. They couldn't figure out their future. When they weren't scared, they began to get entrepreneurial. So you had those two motives going simultaneously. "There is going to be a future, even though we don't know what it is, so let's go hustle around and capture part of it."

I think also that the program management staff in Washington and the leadership in Washington, unfortunately, was less competent in the latter stages. [Samuel C.] Sam Phillips had been very good. When he left, the nature of the leadership was down. [James C.] Fletcher was not the same kind of manager that [James E.] Webb had been, and so on. So the uncertainty in Washington was very great. There was a lot of cloudiness about the level of congressional support. It became easier for the congressional people to meddle around in the specifics of some program than it was to redesign the next twenty years in manned space flight.

The budget began to close down. After Apollo, the world was not nearly as exciting as it was during Apollo. A lot of things just deteriorated the place.

There's another element that's not as easily recognized, but during the time I was in NASA, let's say in the sixties, up to the late sixties, NASA had this reputation for being a quick, hard-hitting, simple, straightforward organization, [but] bureaucratic red tape again built up. Also when I was in NASA it was one of the youngest agencies in the federal government in terms of average age. If you looked at the average age of especially the centers, it was very low. Now if you look at NASA, it has become one of the oldest agencies in the federal government in terms of average age for employees.

I think what happened is that after Apollo, a lot of very, very good people left the organization and went elsewhere. There were some terrific people who stayed, that had an intense commitment for NASA, and they tended to make it look like we still had a completely superior staff, but we didn't. It was more and more a thin line of really first-rate people, but many of the other first-rate people below them had moved on and out.

So this happened in Headquarters as well. There is just not that same uniform high quality and motivation, and it became much more bureaucratic, much more bureaucratic. I don't know if you've got this kind of intimation from other people, but—

BUTLER: We've had some similar viewpoints.

BINGMAN: I used to have arguments with people who didn't like government, and they said, "Government's just a bunch of clerks and bureaucrats. There's no government agency that really would succeed in the private sector." And my one refutation was always, "Let me tell you about NASA and let me tell you about the Manned Spacecraft Center." It was, during its prime, an absolutely first-rate institution.

BUTLER: It certainly was. We'll go ahead and take a brief break here and change out our tape. [Brief Interruption]

In the process of establishing the Manned Spacecraft Center, were you at all involved in helping set up the White Sands Test Facility [New Mexico], which was connected in part to the Manned Spacecraft Center?

BINGMAN: No, I was not, but I had one assignment out there, which was really something. They were having problems with the White Sands facility, "they" being most of the engineering launch vehicle, the spacecraft test people in Houston. Some of the engineering staff had gone out there and tried to figure out what was wrong with the place, and they weren't coming up with anything. They got to the stage where they were thinking, well, the only way to handle this was to fire the manager out there.

Some way—I don't quite know how it happened—they said, "Well, let's take one more shot at this. Let's have Bingman go out there and have him take a look at this." [He's not an]... engineer which is kind of strike one and strike two, but on the other hand he's not a complete idiot, maybe he'll come up with something.

So I went out there and did kind of halfway between an investigation and a management analysis assessment and came up with a series of recommendations and got familiar with the White Sands facility that way. But then I came back to Houston, and I think what they did was, they essentially liked the recommendations I had made, but they decided they were going to let the current manager see if he could implement them and sort of pull the thing up himself. So a period of time went by while he tried to do that, but I think ultimately they did release him out there. That's all I know about White Sands.

BUTLER: That's fine. Just thought it would be something interesting to ask, since it was related to the MSC.

As you were working with helping set up the organization, were you involved in the negotiations for the buildings and the contracts with Rice University for the land, or were you primarily involved in the organizational aspects of management?

BINGMAN: No, I was not involved in other relationships to acquire the site. I was in some cases involved in the design of some of the facilities, but only in terms of, let's say, a management analyst looking at proposals. Many of the buildings there were very specific to their customers. Some were general office buildings, and anybody could have occupied them, but other buildings were very specific to the people who were going to use them. So that made it very important that you have good inputs from the potential users as to what they needed in terms of the building that was going to be designed for them. I helped coordinate some of those inputs, but very early, one of the people I helped pick was Leo [T.] Zbanek, who became the head of the facilities division, and [I. Edward] Campagna, his deputy. So they did the site design, the buildings design, and supervised the construction contractors.

BUTLER: You've talked a couple of times about some of the individuals that you've worked with, especially with Hjernevik and for Whitbeck. Were there others or even anything you'd like to expand on, some of the ones you've already mentioned, that had a large impact on you while you were working at NASA or on helping make the whole spacecraft center successful and the space program successful?

BINGMAN: There were many really outstanding people in the center. I'll start with Bob Gilruth. I don't really know what his reputation—I'll put it this way. I would say his reputation was that of being a research engineer of considerable renown. There were real doubts about whether Gilruth could manage well. In fact, he became the kind of center manager that did not rely on his really tough-minded, hard-nosed management skills, but he

was an almost inspirational leader. He was a very, very, very truthful, honest, straightforward man. No pretensions about him. He said what he believed and he believed what he said. He kept saying—it's a line I've used myself—he said, "With me, what you see is what you get. I have no hidden agenda." Believe it or not, that set a tone for the people in the center.

So one of the things I think I learned, you watch all of the twisty, squirmy people, all of the connivers, the hustlers, all the crafty people in this world, and a lot of young people now say that's what you got to do to succeed. But I had a different pattern. I had Gilruth and many others in the center, these were very straightforward people who were very successful. I said, "If they can succeed by being honest and forthright, I like that pattern."

Max Faget was a very interesting man. He is, I think, a very feisty guy, but the thing I remember about him, he would turn very quiet and very thoughtful on occasion. There would be a meeting in which there was a big discussion and everybody's confused, they don't know quite what to do. And here's little Max Faget sitting down there, and he started saying, "You know, I've been thinking about this, and really the problem is sort of like—" And he'd go on like that, you know, very quiet, very thoughtful, and everybody would shut up and listen. When he spoke, everybody listened, and he was almost always right. Really a delightful guy.

I think John [D.] Hodge was a guy that I really respected and admired. I got involved with Hodge because he became the chairman of several Source Evaluation Boards. In other words, he worked for [Christopher C.] Chris Kraft [Jr.], but Kraft was worrying about other stuff. So he said, "John, why don't you become the chair of the Source Evaluation Board for the design of the mission control center, or of upgrading computers in the Mission Control Center, or some flight operations support contract, or even major segments of the Apollo Program." And I ended up working with him repeatedly as the business management side of these source evaluations.

Hodge was marvelous in the sense that he was very much a big-picture guy. He was one of the most broad-thinking men. He understood program/project management context environment better than almost anybody else I've met in NASA, which is saying a lot. But he could set aside sort of this big-picture design predilections, and he was a master of detail. In other words, we would sit down and have a protracted session in which we would look through a 150-page request for proposal, and he had worked his way through all of that stuff, right down to the nitty and the gritty. When he turned out a product, it was nigh onto perfect. That includes procurement, philosophy, and style, right down in the most arcane technical aspects of what they were buying. Again, that's what it means to be a generalist as opposed to being a specialist. He could operate at any level with a very high level of intensity. As a matter of fact, I still see him occasionally, good lord, after thirty years.

BUTLER: He lives up here in this area, doesn't he?

BINGMAN: Yes, he lives out in Vienna [Virginia], I guess. Again, there were many people who were stronger than others, but what impressed me was the overall high quality of the staff. Almost everybody was doing quite a good job. They were not all brilliant like Faget or Hodge, but they were all competent. It's just a tremendous amount of fun working in an organization that's like that. Instead of people hemming and hawing, equivocating, having trouble deciding, fighting the problem, not knowing what to do, you were experiencing almost a whole staff of people who could handle what they were doing and were committed to moving things along.

BUTLER: All good people motivated toward the same goal.

BINGMAN: Yes. There are people who make millions of dollars a year lecturing you on how to build teams and motivate, and academics who make their reputations on this stuff. I learned it first-hand in a very practical way from my relationships in the center. Nobody created that. There wasn't a master strategist that said, "Now I'm going to tell everybody how to design team-building." That's the way it was. Put it this way. People fail to understand that what motivates a lot of workers, particularly skilled workers, is not a set of rules, regulations, evaluation criteria, measurement systems, but is essentially a professional ethic.

If you ask an engineer, "How do you decide what a good job is?" or, "How motivated are you to do a good job?" almost every engineer will talk to you about the ethics of the profession. Starting from college on up, when you learn engineering, any kind of engineering, what is built into that is the clear ethic that you will do the best job you can, that you need to pay extraordinary attention to the work to avoid failure. You need to do things right, as opposed to cheap or shoddy quality, as a characteristic of engineering work. Part of the ethics of engineering, don't be a cheap, shoddy engineer. All stuff like that. Same, there's an ethic for doctors. It's too bad there's not an ethic for lawyers. [Laughter] Although they keep telling everybody there is. There's not.

I think the people on the management side of the organization then to some degree, they have a public administration ethic of their own, but I think they're also caught up in working with all of these engineers who were driving toward this high standard for a profession. So I think I saw a lot of that. Even if I was a second-class citizen, I still enjoyed working for all those engineers.

BUTLER: Having filled a different role, since you weren't one of the engineers or the operations people, during the missions, how closely did you follow them? Would you go over to the center to watch anything that was going on, or would you watch it at home?

BINGMAN: No, I have to say I think I was too busy to actually spend a lot of time in the Mission Control Center. I did watch it on television, but the main way that I tried to connect was to talk to some of the people who were involved. It's like, go out and have lunch with John Hodge or Gene Kranz or somebody like that and say, "How did it really go? You know, give me the inside stuff." So in half an hour you can get more than watching ten hours of TV. I had no role in the Mission Control Center, so I didn't want to go over and just sit around and watch things, even though I felt I understood what was going on fairly well. But the idea of dealing with all these people who were doing it and not just commenting on it, that's powerful stuff.

I must say that I have great trouble, ever since, watching things that come up in the media. For example, when this movie came out, the big movie about the astronauts, *The Right Stuff*, I've never seen that movie. I could have, but it's sort of like saying, no, I'm not interested in how some film-maker portrays that experience, because I lived through that experience. I'd rather remember it my way than end up trying to remember it the way they portrayed it.

BUTLER: That's understandable.

BINGMAN: I was at the Cape the day of the fire, the one that killed the three astronauts in the spacecraft. I was working out of Washington at that time. I had gone down on either a NASA plane or a chartered plane with General Phillips and several others. He was the guy that justified the plane, and then there was an extra seat that I could load into. Then when the time came to fly back, I went out to the airport and got on the plane, and there's me and one other guy, who was also from an administrative staff in Washington. He was an auditor. Phillips was not there, and the other program office people were not there. Why? Because

the fire had happened, and so they were pulled off the flight and were going to stay in Florida.

That was one of the worst days of my life, just to know—it wasn't just the three guys that got killed, although I had known [Edward H.] White [II], and it was an enormous tragedy at that level. But always, as I said, I had seen NASA as an enormously effective organization. It was sort of like, "They can't have had this failure. NASA couldn't have let that happen. We're just too good." It was a tremendous blow to the organization psychologically.

It was also a lesson about Washington, in the sense that there wasn't anybody at MSC, or, as a matter of fact, anybody at the Cape, for that matter, who did not believe that they could not work their way out of that tragedy, that they would find out what went wrong, they would fix it, and they would see to it that it didn't go wrong again. But meanwhile, in Washington the whole attitude was like, "These people, they must have been terrible in order to permit this to happen. We've got to fire somebody, gut the place, attack, hold hearings." It was, I must say, psychotic—that's not quite the word, but it was almost a maniacal urge to posture politically in Washington and invent solutions that simply would have made the problem worse.

Meanwhile, I'm dealing with people who, while shaken, had no doubt in their minds that they could make it right. The anchors during all of this were Bob Gilruth and Jim Webb. Webb, who was a consummate politician, essentially said, "Get off my back. Get out of my hair. Go away. I will do a competent investigation. I will do it inside, and it will cure the problems." And he won, against all these hysterical—that's the word I was searching for—Washington turned hysterical and the people on the firing line were just steely calm. Again, I had no doubt in my mind that MSC would cure that problem.

I hear some very bad things about NASA now just along this score, that they cave too quickly, they are preoccupied with second- and third-level kinds of problems, particularly in

Washington, the quality of the hands-on engineering work has deteriorated, and the consequences are highly visible.

Let me see. How about time?

BUTLER: We're doing okay if you are. Do you have any time you need us to be done?

BINGMAN: I'm kind of running out of things, unless you've got a bunch more questions.

BUTLER: I don't have a bunch more. If you'd like to mention how you moved into Headquarters and tie off there.

BINGMAN: Okay. I had one great thought, which I've now lost. So let me talk about—I did move into Headquarters. I moved in the Office of Manned Space Flight, and I moved into a role that involved oversight over the three manned space flight centers—Houston, Huntsville, and the Cape—again on the management side of the organization. So I would worry about the organization of these places, their staffing, the functioning of their procurement systems, the budget. I did a lot of work on the administrative operations budget for the manned space flight programs.

That involved traveling back and forth and dealing with these people. It was exactly what I wanted. It was a broadening experience. I was now dealing essentially with the same manned space flight program, but across the whole board. In the Office of Manned Space Flight, I also dealt more with the center, the administrator's office, and his staff.

I felt that the farther one got away from the center, the less I liked NASA, that the people in Office of Manned Space Flight were...it isn't that they were dumber or anything, but they were dealing with things that were less real, and they had a tendency to deal with them in less real ways. In other words, if they found that they needed to cut the budget in

some way, in Houston, we would have said, "Okay. Let's look seriously at what we can cut by looking at the programs and the operations themselves and identifying, through some very hard work, areas where costs can be made."

When you get to Washington and they want to cut the budget, they tend to say, "Well, let's cut everybody 10 percent." You know what I'm saying? They were looking for gross simple solutions because they either didn't have the guts or didn't have the will to go and actually dig into the substance of programs and find areas that might be cut. It was too hard. It got them into too much conflict. All I'm saying is, I'd rather do the work. I don't want to just sit up here and make large, dumb decisions. So it became a situation of that kind.

Eventually I moved over from the Office of Manned Space Flight to the Office of the Administrator, working under a man named Harry Finger. He was the associate administrator for organization and management, I guess it was, everything but the budget. I was involved in the same sorts of things, organization matters management, management systems matters, staffing, and so on, but now across all of NASA.

One of the most fascinating experiences I had was with Jim Webb himself, because he was pursuing two programs that were essentially outside of NASA, and he wanted somebody who would back him up as a staff person. He was interested in a whole series of grants to university scholars to do research in NASA's management. That is, he felt about the way I do, that NASA was doing something quite extraordinary in management and that people ought to know about it. And one of the ways to let them know about it was to give grants to university researchers to come in to NASA and research what we were doing in management.

I was picked for two reasons to work that agenda. One is that I had done some teaching at Texas Southern [University] when I was down there, and also I had been involved in these grant programs that Phil Whitbeck had started down there. So fortuitously, I was seen as somebody who knew something about working with academic institutions. And

secondly, I was seriously interested in public management and public administration. I had been the first president of a chapter of ASPA, American Society for Public Administration, down in Houston, and somehow Webb found out about that.

So I got involved then in letting a series of these management research grants with universities around the country, and that got me in touch with academics really for the first time, and since "I are one" now, I guess the way I'd say it to you is that the things I thought I learned in dealing with academics then, working on NASA grants, became the basis of what I should not do if I ever got to be a university professor. And so that was a grounding for me.

I used to have academics, they would come in and have interviews, and I'd sit in on some of the interviews. I remember one guy who studied Jim Webb's executive leadership style, what Webb did as administrator of the agency. Then he'd come and talk to me, and I'd reinforce what he thought he'd heard. He'd say, "But this can't be right. Webb can't operate this way."

I'd say, "No, that's exactly the way Webb does it."

He'd say, "No, Webb can't do it that way because that's not right." So here's this academic who thought he understood how to be a leader, and he's looking at a real leader and not understanding what he saw.

So they'd come up with all of these team-building ideas or motivational ideas, and they'd want another grant from NASA to come in and tell us how to motivate our workers. I'd say, "You damned fools, we've got the most motivated workers in the country. What are you trying to sell us?"

After a while, I guess I had begun to get the feeling that I had sort of had the NASA tour. Then a position opened up in the Office of Management and Budget [OMB], which is in the Executive Office of the President. A friend of mine called me and wanted to know I would come over and head a government organization branch over there, and it took me about four seconds to say yes. Why did I say yes? In part because, as I say, I sort of felt I'd

had the NASA thing from the bottom to the top, but also it was part of this long-term feeling that it's a lot of fun taking another step up and looking at a broader set of horizons. That's really the reason I made the decision to leave NASA.

I hated to leave NASA just as I hated to leave the Manned Spacecraft Center. I had been happy there. I felt I had been productive there. I thought I was well regarded, and yet I quit. So the guy I was working for said, "But why would you want to go?" And I gave him the same reason I'm giving you: just to see the broader horizon.

So suddenly I'm in OMB, which is in the Executive Office of the President. I'm working on the same kinds of things I had been working on in NASA, which is one of the reasons I was chosen. But now instead of talking about the organization of MSC, I'm talking about the organization of the national government. And you think that wasn't a lot of fun. [Laughter] So I was several years on the management side of the Office of Management and Budget.

Then I made another step, which was to move into the Department of Transportation. I've sort of said, well, after six years, or whatever it was, I've had the OMB experience. And I hated to leave OMB, but you can see the pattern. So I went over to the Transportation Department and became the deputy administrator of what was then called the Urban Mass Transportation Administration, the number-two job in an organization that had a budget of about three and half billion dollars to sponsor and finance transit agencies all over the country. So now I was moving from a superior staff position into a specific program. I was now the number-two guy in a three-and-a-half-billion-dollar program. It was another step of the same kind. It was fascinating.

I learned what it really to administer a grant and aid program. I also got engaged in a lot of interrelationships with state and local governments and with transit authorities, which are quasi governmental entities. Most of them were semi-independent and functioned under political leadership, but not as a standard bureaucracy in a local situation. I think there were

lots of lessons learned out of the MSC experience that could be applied in that environment. For example, when the mass transit agency would give a grant to a city, the city in turn would contract with private organizations to do the construction of subway systems. Well, all my experience in procurement and contracting stood me in good stead in supervising that kind of relationship with grantees.

There's one other incident that might be of interest. When I was in OMB, it was the head of the government organization branch, and Richard Nixon was the President. I forget the exact genesis of this crisis, but there was growing feeling that the drug war was getting out of hand and that something needed to be done, and part of that something was going to be institutional in nature. The fact is that pieces of the drug war rested in several federal agencies: the Justice Department, the State Department, HHS [Department of Health and Human Services], law enforcement agencies, the FBI, the Drug Enforcement Administration.

So I got a phone call from my boss on a Friday afternoon saying, "The President urgently wants a proposal for kind of an oversight government organization in this whole drug arena." It's now Friday at three. We got the briefing with Nixon at two o'clock on Tuesday. Gulp!

So I said, "My god, what can we put together?" Then I thought back on my NASA experience, particularly in terms of the nature of project offices, where project offices deliberately created and vested with special authorities which can be quite powerful and do not require that you steal authority from other parts of the organization. They're new authorities, and they're oversight authorities. The project office exist for a finite period of time, and then it goes out of business, like the Mercury Project Office went out of business or the Gemini Project went out of business.

If Nixon does not want to challenge the authorities of ten or twelve federal bureaucracies, wouldn't this be a good idea? So I essentially put together a proposal for a special action office for drug abuse that was a project office, drawing a lot on this NASA

project office experience. And I went into the Old Executive Office Building—no, I'm sorry, it was in the White House somewhere. Literally, I mean literally, nobody had seen this proposal. I mean, I hadn't cleared it with twelve agencies. I hadn't even showed it to my boss. I had talked about it a little with the deputy director of OMB, but I don't think he had a clue as to what I was saying.

Quite amazingly, I give this presentation with my little flip charts and all of this stuff, and Nixon loved it. He said, "That's a tremendous idea. We'll do it." So everybody was looking at me and saying, "Where did this guy come from and how come I didn't collect some brownie points off of this?" So it's a translation of a NASA experience in design of another organization.

When I went to OMB, I left the Office of Manned Space Flight to go to OMB, and I was essentially in charge of government organization management systems in the government. I had really nothing to do with NASA at that stage anymore. I went from OMB back into the Transportation Department, again as a political appointment. The first time, the deputy administrator of the Urban Mass Transportation Administration, now the Federal Transportation Administration, is a political appointment, so that was a big leap for me. Then when I went back into the Department of Transportation a second time, I went as a special assistant to the secretary, and really ended up working for the deputy secretary as a political appointee. For most of that period, Drew Lewis was the Secretary of Transportation. So that was an illuminating, but not very satisfactory exposure to the politics of running a major program like that. I was essentially a politician without actually running for office or something.

But in both cases they were political appointees, and in both cases I got fired. They exercise the secretary's prerogative. In the first case, as deputy administrator of the transit agency, we had a change in secretary. Brock Adams came in as secretary, and called me in

and said, "Without prejudice, I'm going to fire you. As my prerogative, I'm going to put somebody in the job."

The second time around, Drew Lewis left as the secretary, and Elizabeth Dole came in as the new secretary. So I met Elizabeth Dole, and guess what she said to me? [Laughter] She said, "Hi. You're fired," or words to that effect. She wanted to clean out the office of people who were left over from the Drew Lewis regime. That's when I found out that there's Republicans and then there's Republicans. I was a good Republican, but I wasn't an Elizabeth Dole Republican staff, so she got rid of me and got people in she wanted, which is fine.

I ended up, I then went to National Academy of Public Administration for a while on kind of an interagency assignment, and then ultimately about a year later I retired and began a second career. The second career is teaching, first at George Washington University and now at Johns Hopkins [University] and doing these international consulting things, of which I do maybe a couple a year. If the phone rings, I've got a job. If it doesn't ring, I'm retired, which is a marvelous kind of second life.

Just as a closing remark, the kinds of assignments that I've been offered and I've taken are all assignments for generalists. Again, looking back on my career all the way back to the young management analyst, I tried to be a generalist rather than a specialist, and so now if people have a technical job to do, they want to design a personnel processing system or something, they don't call me. But if they want to look at an overall organization of a ministry or maybe several ministries or if they want to have a management or policy system designed or a program evaluation system designed, or if they just want to consult about how you make a government fit together or how you make a government effective, that's the kind of assignments that I will take. It all goes back to the fact that I always saw myself as a generalist.

I tell my class every time I start a class, I say, "I'm a guy who understands whole governments. I can tell you how government works." And if that isn't a good leave-off line, I don't know what. [Laughter]

So that's what I'm doing now, a combination of teaching and consulting work.

BUTLER: You have certainly had an interesting career and a lot of interesting experiences. We thank you for sharing those with us.

BINGMAN: Thank you. I appreciate the opportunity to brag about my experiences.

BUTLER: It's been quite a pleasure for us.

BINGMAN: Thank you.

[End of Interview]