

Oakland University Chronicles

Interview with

Paul Tomboulian

Transcript of Oral History Interview

Interview date: May 20, 1999

Interviewer: Harvey Burdick



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Oakland University Chronicles

PAUL TOMBOULIAN

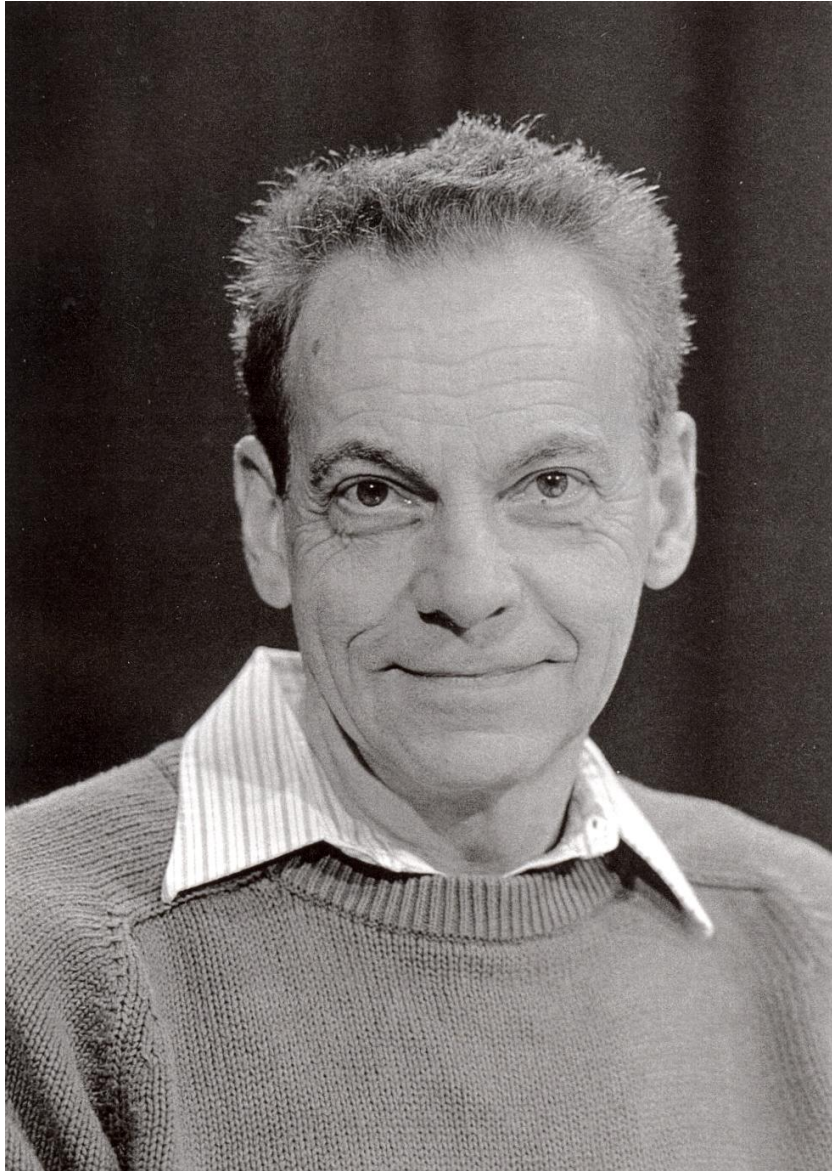
Date of birth: October 19, 1934

EDUCATION

| | | |
|-------|------------------------|------|
| A.B. | Cornell University | 1953 |
| Ph.D. | University of Illinois | 1956 |

OAKLAND UNIVERSITY

| | |
|----------------|--|
| 1959 | Assistant Professor of Chemistry |
| 1962 | Associate Professor of Chemistry with tenure |
| 1967 | Professor of Chemistry |
| 1963 - 1997 | Chair, Department of Chemistry |
| 1974 - present | Director, Environmental Health Programs |



Photograph of Paul Tomboulian

May 27, 1999

Photographer: Dennis Collins



Photograph of Paul Tomboulian

Photograph taken in 1959

Source: Loan from Paul Tomboulian

Oakland University Chronicles
Interview with PAUL TOMBOULIAN
May 20, 1999

HARVEY BURDICK: This is one of a number of interviews of the Oakland University Chronicles Project, supported in this third year by a special university allocation. Today is May the 20th, 1999 and we are speaking from Varner Hall on the campus. The goal of the project is to collect oral histories dealing with the beginnings of Oakland University. We are going to focus on the first years, the few years before the graduation of the first class and the few years after. I am Professor Harvey Burdick, now retired, and my guest today is Paul Tomboulian, professor of chemistry.

I'd like to describe a little bit about Paul. Paul is a very special member of the faculty. He came the first year with an undergraduate degree from Cornell University and a Ph.D. from the University of Illinois. He began as an assistant professor of chemistry, as the only chemistry professor, and was responsible in those early days for many things, as he will tell us in more detail. He was promoted to full professor in 1967, and was official chair of the department from 1963 until 1997. In 1974 he also became director of environmental health programs.

Welcome, Paul.

PAUL TOMBOULIAN: Thank you, Harvey.

HARVEY BURDICK: Paul, let's start from the beginning and have you tell us a little bit about your background before you came to MSUO, and how you first heard about MSUO.

PAUL TOMBOULIAN: I had been a post-doc for three years at the University of Minnesota after I finished my work at Illinois. So this was in 1959, and I had also done some teaching there as an instructor, and I think they were thinking of me as a possible faculty member. But the fit wasn't very good and I was getting less excited about that kind of an institution. So the job postings came in from universities and colleges around the country and I reviewed them, and I looked at two in my last

year that looked particularly interesting. The first was from Amherst in Massachusetts in 1958.

HARVEY BURDICK: An undergraduate school?

PAUL TOMBOULIAN: Yes, and this seemed to be more of the kind of position I was interested in. So Alice and I took an interview trip out there sometime in the winter—we think it was in 1958 or '59, but can't pin it down exactly—and saw a lot of possibilities there that were interesting. They had a nice, high quality student body, but not very much for research. Then the social responsibilities of the job looked like they would be more than I was interested in doing. They wanted faculty to chaperone dances and events like that, and they had to live in certain areas. So it wasn't very exciting, but it was a possibility. I could probably have stayed at Minnesota another year or two; they weren't kicking me out or anything. I had a big office, I had a lab area I could work in, I could use undergraduates for research, so it wasn't as if I had to leave. But it was time after three years of a post-doctorate to get a serious academic job.

Probably sometime in April or early May of 1959, a letter came in to the chair, because this is the protocol at the University of Minnesota, about the new institution at Oakland. It was written by Woody Varner and it caught my attention because it said Michigan State University—I think that must have been a key phrase. I checked with the chair at the University of Minnesota, whose name was Bryce Crawford, and he said, "Look into that possibility. If that's the kind of thing you want to do, go for it, look at it." So I responded in some fashion, and before I knew it, Woody had called me and said, "I'm coming to visit the University of Minnesota, and I'd like to come up and see you." So, one day—I guess he must have called ahead—he showed up in my laboratory on the fourth floor of the chemistry building at the University of Minnesota—just walked in.

HARVEY BURDICK: This is at the end of April or about the beginning of May?

PAUL TOMBOULIAN: Something like that, late April. He walked in and we went out to lunch. I can't remember any details at that point but he clearly painted a picture of an institution that made it sound very attractive, which he was very good

at doing. Subsequently, I received an offer in the mail to come and visit—or a request in the mail. Maybe he said it the same time he visited me—I don't know.

HARVEY BURDICK: I'm going to stop you, because here Woody comes, and starts describing. Can you remember some of the ways he described this new school that was going to be created in Michigan?

PAUL TOMBOULIAN: Not particularly. It was just glowing. Woody glows. And he had a way—he still does—of portraying dreams as reality: an incredible person. I heard him say: We're going to do this, we're going to do that, we're going to have these features, we're not going to have frills; he went through the list. He had memorized all the kinds of prescriptions that were to be used at the institution: the no-frills and the liberal arts emphasis and the no-athletics and the other kinds of features that we would have—the focus on academic work.

HARVEY BURDICK: And that's what attracted you.

PAUL TOMBOULIAN: Very much so, very much so—and he had a much more outgoing and progressive kind of attitude than I'd found at Amherst.

HARVEY BURDICK: We've talked about this before, and what I remember is that one of the things that Oakland was not going to have was an ROTC [Reserve Officers Training Corps].

PAUL TOMBOULIAN: Right.

HARVEY BURDICK: And you had some strong feelings in that area, as I recall.

PAUL TOMBOULIAN: As a person who had gone to Cornell and then Illinois and then Minnesota, I had strong feelings of not really being excited about large institutions; not being excited about physical education as a requirement, which it was at Cornell; disliking intensely ROTC, which was required at Cornell, and I was in it for two years. This was the kind of activity that I didn't think should be part of the academic world. So I was anxious to get away from those trappings of non-educational activities and subjects.

HARVEY BURDICK: So here Woody comes and gives you a picture of a university that fitted what you thought a university ought to be.

PAUL TOMBOULIAN: Yes. I think I always had this educational direction, from my first years of wanting to go into higher education at the university level. (I didn't think much about colleges, I didn't have any experience with an undergraduate institution.) But my father was a professor, his father had been a professor. Alice's parents were both professors at Cornell, her grandfather was. So there is a long tradition of academic involvement here and I somehow was programmed to continue that tradition.

HARVEY BURDICK: Also I heard the idea that you were attracted to a small school.

PAUL TOMBOULIAN: Right. Not those other kinds of large institutions.

HARVEY BURDICK: So Woody invited you to come after having interviewed you at Minnesota and, what was it, two weeks later or so?

PAUL TOMBOULIAN: It might have been right away—early May. He said to come out, he wanted both of us to come. It was a one-day trip—a high intensity one-day trip.

HARVEY BURDICK: Tell us about the trip.

PAUL TOMBOULIAN: We must have come early in the morning. Woody picked us up at the airport and we joined the Tafoyas who also were interviewing at that time, in foreign languages. Woody then proceeded to spin his tales as he drove us from Metro Airport through Detroit, telling us about the buildings and the activities and the great cultural attractions, on the way up Woodward Avenue. In those days, there was a lot to be seen and a lot of life going on.

We stopped for lunch at the Kingsley Inn in Bloomfield Hills, and had lunch with a woman named Elizabeth Gossett who was a member of his Foundation, I believe, at that time; and I can't remember much about that. Then Woody took us for a tour, first to the Adams Road site where the faculty Meadow Brook

subdivision was to be located. We stopped there, and he showed us this pasture and talked about how there would be houses here for the faculty and administration.

There was another dream being painted, that the faculty could get into relatively inexpensive housing and they would live right across the street from the university. This would be a very nice kind of feature because there wasn't much inexpensive housing in the Rochester area. There were no apartments and there was very little in the way of housing that faculty on relatively modest salaries could afford. My salary at that point from Minnesota was \$5500 a year, and the first salary I got from MSUO was \$6500 a year. In those days, you couldn't build or buy much of house which was priced at \$20,000. So Woody painted this picture of this subdivision area, and I took photos of it because I was so intrigued by this idea that it might be a subdivision and I would live there.

Then he went across the street to Meadow Brook Hall and gave us a mini-tour, the Tafoyas and us, a mini-tour of Meadow Brook Hall and what he knew about it. When we walked into the kitchen area, there was Mrs. Wilson apparently doing some cleaning in the kitchen. We think she had an apron on, and didn't exactly fit our image of what this grand person would be like.

HARVEY BURDICK: But it was a nice image, I take it, to see this woman of some wealth doing a round of cleaning.

PAUL TOMBOULIAN: Oh, very pleasant. I even think she was cleaning under the kitchen sink.

After that, we went on a short tour of the university, which just consisted of walking around on the ground over boards, and into parts of buildings because, you know, the buildings weren't finished—this was early May. We know it was early May, because the pictures I have show the leaves just coming out on the trees.

HARVEY BURDICK: Were there any buildings up?

PAUL TOMBOULIAN: Oh, yes. That would have been the Foundation Halls, North and South Foundation Hall. Oakland Center was under construction but that didn't really get finished until six months later. But the other two buildings

had to be up and running by the fall for the first classes, and I'm sure that Woody convinced us that they would be.

HARVEY BURDICK: Right. Here you come, you don't see anything but promises, basically, and that didn't bother you?

PAUL TOMBOULIAN: A lot of dirt. No, it didn't bother me.

HARVEY BURDICK: You bought right into it.

PAUL TOMBOULIAN: Yes, indeed.

HARVEY BURDICK: Do you remember, were you saying, "Oh, there is going to be so much fun and interest, to come here as a beginning faculty person starting this school!"

PAUL TOMBOULIAN: I think the beginning was an exciting idea: being in on the beginning, being one of the few, being able to essentially—to use the words in retrospect—make our own mistakes. That was a very attractive feature of it.

HARVEY BURDICK: And you were going to be, as I understand, "the chemist."

PAUL TOMBOULIAN: The chemist.

HARVEY BURDICK: There was nobody else hired before you in chemistry?

PAUL TOMBOULIAN: Not in chemistry. I was to teach, presumably, the freshman chemistry course, because that's all we would have—freshmen—that first year.

HARVEY BURDICK: Paul, I want to ask a personal question—how old were you when all this happened, when you came?

PAUL TOMBOULIAN: My birthday is in October, so I was 24.

HARVEY BURDICK: You were 24 years old, and here you were beginning at a new school, the only person in chemistry.

PAUL TOMBOULIAN: But I had been teaching three years and doing post-doctorate work so this was not a problem for me.

HARVEY BURDICK: You had a lot of confidence, I would think.

PAUL TOMBOULIAN: Remember, Alice and I were Depression children. We had to learn how to handle challenges that many people now would have difficulty doing, and to take risks that many people wouldn't take today. So we just did those things because that was okay.

HARVEY BURDICK: You could do it. You felt, "We can go in and we'll make it."

PAUL TOMBOULIAN: Oh yes, "We can do it, we'll do it." And Woody's attitude would fit in with that: We're going to do this. Woody was convinced: We'll make it work.

HARVEY BURDICK: There's no question: Varner comes across with such tremendous confidence in the future, this is going to be where you'll fit in—that it just sweeps you along.

PAUL TOMBOULIAN: He paints a picture, and you see how to fit into it, and you just fit right in with that dream.

HARVEY BURDICK: And that's essential. In that one day, you didn't even waste time and money staying over—you went back to Minnesota.

PAUL TOMBOULIAN: Just before we left—to close the loop on that discussion about the subdivision—we stopped at the architect's office for the Meadow Brook subdivision homes. Woody had contracted somehow with an architect named Stickel in Bloomfield Hills. Stickel showed us the models of houses that apparently could be built within the budgets available that people would have, based on their salaries. Alice and I didn't like any of them, but that's not the point; the point was

we spent some time there. We were going to be picked up by George Karas, and he would take us to the airport. It got to be an episode because George was late, and it was a wild ride we won't forget—neither will he.

HARVEY BURDICK: Getting to the plane on time. But notwithstanding that troublesome car race, you and Alice were essentially sold on the project and you knew that if you were given the offer, you would take it.

PAUL TOMBOULIAN: Well, we were waiting to hear from Amherst.

HARVEY BURDICK: Amherst was still in the picture?

PAUL TOMBOULIAN: That was a possibility. You know, you always liked more than one option, even in those days. They didn't say anything, and so finally I guess I must have contacted them again, and said, "Well, are you going make me an offer or say anything?" I guess at that point, they finally had decided—this would have been months after I visited—that they weren't probably going to show any interest in me. They had something else in mind, thank goodness.

So Woody's offer came through, which must have been very quickly. Maybe by May 10th I had an offer, \$6500, assistant professor, teach chemistry, and not very much else in the offer.

HARVEY BURDICK: You understood that starting in the fall, you would then have to begin the chemistry program—whatever that was.

PAUL TOMBOULIAN: Freshman chemistry.

HARVEY BURDICK: It did not exist on paper.

PAUL TOMBOULIAN: No, and I had never taught it before.

HARVEY BURDICK: You had never even taught it, and that's what you were going to do. I take it, you really spent that summer preparing for the course?

PAUL TOMBOULIAN: No. We had other plans, and the university would take care of itself, because there wasn't any work we could do there—the buildings weren't completed. So Alice and I went on a trip to Europe.

HARVEY BURDICK: You and Alice went on a trip to Europe for a week or so?

PAUL TOMBOULIAN: No, it was eight weeks. We left about the 11th of June and didn't really get back to the area until August 25th because we had other commitments.

HARVEY BURDICK: August 25th, and classes began when?

PAUL TOMBOULIAN: September 21.

HARVEY BURDICK: Oh, you had a whole month—

PAUL TOMBOULIAN: Had a whole month to plan a new institution. It's interesting, because we learned from other faculty folks that they had spent a lot of their summer working up courses and studying materials, and figuring out what they were going to do. But I guess I didn't feel that was necessary.

HARVEY BURDICK: That's very interesting, Paul. I don't know what to assign it to: youth, trust in one's competence, I don't know. You must have had a lot of support from Alice.

PAUL TOMBOULIAN: Sure, but we generally agree on almost everything, so there wasn't any particular difficulty.

I think the point was that I would be teaching a course which was a kind of standard one. You teach freshman chemistry and one size fits all. It was a standard kind of course that you teach and you would have a standard text. Somebody had ordered the text books, the lab books, and the supplies for the first year.

HARVEY BURDICK: Well, that was nice that it was done. You came and you had all the materials for teaching that first year in chemistry.

PAUL TOMBOULIAN: Yes, there were boxes spread all over the place because, in their enthusiasm to order supplies, somebody apparently had said, "Send Oakland University, MSUO, the same set of materials that you use at Michigan State." So they did, they duplicated the order. But we had 180 students, and the order was for 2000. We had supplies for 2000 students stacked up in North Foundation Hall.

HARVEY BURDICK: Was it in North Foundation Hall that you had to set up the labs?

PAUL TOMBOULIAN: The labs had been constructed and they were in 118 and 120 North Foundation Hall. The actual labs were finished, there was a larger one [120] and smaller one [118] and they held about 28-30 students, and that's where we held freshman chemistry that first fall. The supplies were put in the stockroom in between [Room 119]. Woody had arranged—I don't know how this happened—to hire a curator, a stockroom attendant: a person who had a degree in chemical engineering, actually had a doctor's degree, and he was to be our assistant. He worked in that assignment for a while, so we had a little help there.

I met Bill Hammerle for the first time, probably, just before classes began, sometime in early September. Bill Hammerle had also been away on a vacation or a trip in Northern Michigan, and so there were two of us. Bill was a chemical physicist by training, from Princeton, and he had been at MSU so he knew a little bit about chemistry, but he had never taught freshman chemistry either. Bill was hired to be in the physics program, but there wasn't anything for him to do that first year because we didn't teach physics to freshmen.

So Bill and I sort of sat down and looked at our situation and said, "Well, this is what we're going to do." We used the standard materials that they used for Sienko and Plane, which was the text that had been ordered. It was a very common, appropriate text for introductory college-level chemistry. It's what they used at MSU, and so we were kind of happy that we could borrow their materials and their ideas, and just essentially transplant their kind of approach here, and that's what we did.

HARVEY BURDICK: Well then, I kind of understand why you weren't too overwrought about preparation, because this was a fairly standard course. You had

180 students, and that was your full teaching commitment: teaching freshman chemistry, you and Bill Hammerle.

PAUL TOMBOULIAN: Yes. They were divided into six sections of about 30 students each. A lab would be three hours and there would be a recitation, along with three lectures per week. Bill and I shared that teaching the first quarter. I don't remember how we shared it, but we seemed to work together well. Our minds just fit together well. So we charged off, and thought we were doing very well, and we certainly thought we were having a good time.

HARVEY BURDICK: Well, you had been at Minnesota. You were familiar [with teaching chemistry], I suppose, if not directly—

PAUL TOMBOULIAN: Oh, I did teaching in the summer and I had a part-time instructor appointment, so I did teach, but it was organic chemistry, not freshman chemistry.

HARVEY BURDICK: Okay. And Bill had done some teaching at MSU.

PAUL TOMBOULIAN: As far as I know, yes.

HARVEY BURDICK: So you had some teaching background, and you were going to teach this first course in chemistry. You didn't think about [special plans for] the students because you'd had students before.

PAUL TOMBOULIAN: I had taught at Minnesota for three years. I had lab assistants there, and I taught there, but I also had been a graduate assistant at the University of Illinois during graduate school. So I had actually been teaching one way or another since 1953 [six years], before I came, so that I thought I had a lot of experience.

HARVEY BURDICK: I'm going to come to your experience in teaching the freshman course. But before I turn to that, when you and Alice came, where did you live? Even with the faculty subdivision, was it all built by the time you came there, after four months?

PAUL TOMBOULIAN: No, there wasn't anything built there until later in '59, as we found out. We had to close up our operation in Minneapolis where we were living while working for the University of Minnesota. We had to sell things we weren't going to move, and pack our stuff or put it into storage, because we were going to be away for eight weeks.

We had to go back and pick it up ultimately, and bring our belongings here in a trailer, which is what we did. We rented a trailer, brought it here, stopped in at the housing office at the university. They said, "We've got a list of potential sites," places that faculty could rent for a while, and we found a house right on the list very quickly. The total number of miles traveled that first couple of days in looking for a house was only about 70 or 80 miles—that's all we did.

We rented a house at 2477 Pontiac Road and it was \$125 a month rent, a furnished house, and so we were delighted. It wasn't quite available then so we had to spend a few days actually camping before the house was available. So we unloaded our trailer, left the stuff, came back there a few days later, in early September, and essentially moved into this house. We didn't have any possessions to speak of, so this move was not a big challenge. But the house was in the northbound lane of the future I-75, and so it didn't last very long.

HARVEY BURDICK: So you've come, you've settled into the house. You're going to be working, but you're meeting other people who are coming. Bill Hammerle, was he the first person on the faculty that you met?

PAUL TOMBOULIAN: Well, I had met the Tafoyas. I can't remember many of those details.

HARVEY BURDICK: Was there a gathering that Woody hosted that early September?

PAUL TOMBOULIAN: There were a number of events. There was a luncheon, I think, a special luncheon or some kind of event for the faculty [at Meadow Brook Hall]. I can't put a date on it but there were enough events, so that you got to meet both the administrators and the faculty, and you couldn't tell one from the other—we sort of worked together, spoke together.

HARVEY BURDICK: That's interesting. The faculty and administration—no big distinction.

PAUL TOMBOULIAN: We were working on the same team project, so there was an attitude of “I do more of this, and you do more of that,” but we chatted all the time about everything.

The situation in North Foundation Hall where we had our offices was such that nobody was more than about 100 feet from anyone else. The most distant office would have been the registrar's office, and he was 100 feet away. The rest, all the offices, everybody else was in North Foundation Hall in the two corridors where all the little cubicles were.

HARVEY BURDICK: Was there a sense of movement? Were people interacting? Were they dropping in on each other?

PAUL TOMBOULIAN: Oh, very much so. The secretarial pool was right there on the west side, and everybody would go back and forth. In the course of a day, you might see half the employees of the university one way or another just walking by their offices, going to the secretarial pool. Office doors were always open, Woody was right down the hall, so it would be an odd day that you didn't see somebody in the administration.

HARVEY BURDICK: Can you describe the atmosphere? You know, sometimes atmospheres have a chilly quality—a dull quality. Was there anything special about that feeling as you moved around and talked to people?

PAUL TOMBOULIAN: I didn't know what to expect because I had never had a job like this before. So this was a new departure. I like the image of a pioneer here— we were just doing our own assignments and tasks, and it was working, and so I was not concerned. If I had a problem, I would ask somebody about it and we would try to solve it.

I remember one day the shelves on the walls in my office, where my journals were kept, fell over. I called George Karas, who reminded me later that apparently I had a little edge in my voice when I said, “George, we have a problem. My journals are all over my head.” They fell over my desk because the shelves hadn't

been properly mounted on the walls.” They came right away and fixed it. There was a general attitude of “We'll get things done, we'll fix it; if something's wrong, we'll fix it.”

For instance, when I moved into the laboratory area, I discovered there was no place for me to do research. We hadn't talked about that before, so I told Woody, “I've got to have a place to do my research.” So they boxed off an area with a wire cage and a temporary door inside 118 North Foundation Hall—a little corner of it. They chopped a corner out, and I had my research lab inside that little cage that Woody had built for me. I collected glassware and equipment and materials that I needed, that I could get started with.

I wrote a proposal for a research grant which was funded [by the Research Corporation]—it was the first research grant given to the university. I got that in early 1960, and proceeded to reinvigorate and reinstall my program that I had developed at the University of Minnesota, continuing some of the same kinds of research.

By June of 1960, I was working with a freshman student in my laboratory. We could pay her to conduct some experiments and work on the research that I was continuing from that work I had started before at the University of Minnesota. I found her lab book the other day [*shows notebook*]: Anita Mansfield. This was her lab book for a year and it's just full of her notes. She worked like a demon. So either I motivated her or she wanted to work. I guess that was a common situation: The students really put out, they really performed, they tried a lot. She really worked.

HARVEY BURDICK: Just as a footnote, when you were working at Minnesota as a post-doc, did you have any assistants there?

PAUL TOMBOULIAN: I had a couple of undergraduates, very talented seniors.

HARVEY BURDICK: When you came here, there were no seniors—you had to take a freshman.

PAUL TOMBOULIAN: I chose Anita Mansfield, who was a marvelous person but a freshman. Right after she finished her freshman year, she was working in my research lab.

HARVEY BURDICK: I don't know what to say except that you found a person you could use, and it turned out.

The image I have is that faculty people are living together in their offices, not far from one another. Everybody had a comparable task of teaching this beginning student body, this freshman student body. So tell us about what happened in your first year of chemistry that you were sharing with Bill Hammerle.

PAUL TOMBOULIAN: We started with great enthusiasm, I'm sure, to meet our classes. We had 177 students that first quarter, [the largest single lecture class], in the big lecture room. I don't know how it fit because, actually, there's no room to hold that many but we must have figured out something.

HARVEY BURDICK: You didn't have one room that would hold that number?

PAUL TOMBOULIAN: No, the biggest room was 156 North Foundation and it only happens to hold about 156. So, I don't know, I can't reconstruct that. It was one of those many things where you just figured out how to do it.

About halfway through the course, it became clear that the student body was not what we had expected. We had a great many students who said they were engineers, in the course. About two-thirds of the students in that chemistry class would have been called "engineering preference," because one-fourth of all the students at MSU had declared engineering as a preference. If they chose that curriculum, then they had to take chemistry and calculus, and there were about 142 of those first students who said, "I want engineering." So a majority of our class of 177 was engineering-preference students. We assumed that this was going to be the first engineering chemistry-type course. So we taught it that way, and that's why we used Sienko and Plane as our textbook. That was the standard intro chem course textbook.

The class performance was not very good, and there was an enormous spread in grades between the top and the bottom. When an instructor sees this now, we raise flags and say, "Hmm, there may be something wrong here." Now if there had been no students at the top, then we would have said we've calibrated this system wrong; our expectations are too high. (It's an easy thing to shoot in the wrong gallery.) But we knew what kind of exams to give because we were using the kinds of materials and pace that they used at MSU in the same kind of course.

And we—Bill Hammerle, who was a very practical person, and I—we figured out what percentages would be appropriate for different grades, and the expectations we had were not unreasonable, in our view anyway. And—look at that!—we had a whole bunch of students who were doing well; not a lot, but enough to calibrate the system at the top of the scale.

We're always—in our science courses, and chemistry especially — distributing students along the scale according to their performance scores on exams, a top-to-bottom ranking. We give a lot of exams, there are a lot of points to distribute, and so this grading system was something we did routinely. So we had students at the top, they did well, but there were a lot of students that were not. So about the seventh week, I probably said to my colleagues in math—they were just across the hall—“You know, these students are not doing very well,” and they said, “Yes, and ours aren't either.” (Probably we said that earlier than the seventh week.)

We didn't know exactly what the problem was, because here they were “engineering preference,” and they were clearly working hard. There was no question that they weren't trying, and so something wasn't right here. We didn't have any information on them. We had been told by Woody and Herb Stoutenburg that these students were suitably qualified high school graduates. Herb Stoutenburg was the director of admissions, also registrar—he did both. He was responsible for the main recruiting of the students, the nuts and bolts, as well as the admissions.

So they had the high school requirements that typically would have allowed a student to be admitted to college at that time. Stoutenburg was bringing—as we did with many things—the value system and the attitudes at Michigan State, because that's where Herb was from. We knew their administrative programs, their ideas, their standards, and we were using them at Oakland.

These MSUO engineering preference students had graduated from high school, they had their minimum course units, they had recommendations from their high school counselors. If they wanted to take engineering, that was enough qualification. There didn't seem to be an understanding that maybe there was more to doing engineering than just graduating from high school and wanting to do it.

HARVEY BURDICK: So here they come into your course. You have a lot of students who for one reason or another, have an image that engineering is the way to go.

PAUL TOMBOULIAN: This is Detroit.

HARVEY BURDICK: That's true—certainly, getting into the car world and so on. Now we come into November, you're getting the returns on your exams, and you and Bill are confronted with a problem—is that what you're saying?

PAUL TOMBOULIAN: Yes, a problem in the sense that the students weren't performing the way we thought they should perform. First of all, we talked to each other about this, because the grades and the student performance were on everybody's mind—what kind of students do we really have? We had this image that had been portrayed by Woody and by Loren Pope about the good quality of the student body, and the dream that was described.

HARVEY BURDICK: So you sort of bought into that.

PAUL TOMBOULIAN: Oh, yes: “These kids can do it”—and yet their performance didn't match that dream world.

The end of the quarter comes very quickly—in ten weeks—so you don't have much time to make any corrections. The ten weeks gets done and by Christmas, or just before Christmas, when the quarter ends, you get your grades out. We had a significant number of students who were not doing well, a significant number of students who were failing the course, getting Fs. MSUO had A, B, C, D, F; we did not have an N or “drop” grade option.

HARVEY BURDICK: So even if they discovered they were doing badly during the semester, they couldn't drop the course?

PAUL TOMBOULIAN: We instructors didn't give any of those N grades, as they're called, in that course, none. I can't find any record. Which means that this was not an option that was in anyone's mind. Once you're registered for a course, you're in that course, you stay in that course. The only way you can get out is either pass or not pass. However you could withdraw from school [and receive an N grade].

HARVEY BURDICK: You had to do something as dramatic as that?

PAUL TOMBOULIAN: Dramatic. Otherwise—as we would say in today's language—you are trapped in that course. Many of the students clearly were in over their heads. This problem emerged because our rates of failure in chemistry, as well as those in mathematics and economics, were relatively high. All the quantitative courses reported high failure rates.

We looked for an answer, and it became very clear in January when we started looking at test data: the entrance scores on the numerical exams the students were given before they entered—the CQT-N, College Qualification Test Numerical scores. We looked at those numbers, and we looked at their high school standings—data which we didn't get until late in the quarter. We discovered several very important features that really explain what the problem was. I wrote a nice memo—I thought it was a nice memo—in January explaining that this low numerical aptitude is the problem.

HARVEY BURDICK: This is a memo to—?

PAUL TOMBOULIAN: To everyone—this is the way you did things. You told every faculty member, you told the administrators. We'd use email today and blanket the campus. Everybody, I think, was concerned about these grades, yet apparently I was the only person that did this. I couldn't find any other memos from other people saying we're having trouble, or we're not having trouble, or everything is going well. But I've always had the habit of writing things down.

HARVEY BURDICK: In the memo, what did you offer as a solution to this problem?

PAUL TOMBOULIAN: I think I have the memo here—January, 1960. It talks about qualifications of the students. The focus here wasn't on their performance. When the final grades came out, our students weren't doing very well, and so we looked at two possible options here. One of them was to water down the course, make it into something much simpler—what you would call a non-major-type course, high school chem.

HARVEY BURDICK: And were you sympathetic to that way of dealing with the problem?

PAUL TOMBOULIAN: No, but it was one of the two options—

HARVEY BURDICK: —but nothing that you would support—

PAUL TOMBOULIAN: Because it doesn't lead to the professional sequence, to the normal major sequence of course work that students would take if they were in engineering, if they were in the sciences, and if they were like the students at MSU in their technical curriculum.

We compared our students at MSUO with the students in the MSU technical curriculum where they took the same courses—the calculus, the chemistry, and what they call their basics in the general ed. The mismatch was very evident. I guess we felt a great sense of relief that we could explain what the problem really was, after all this period: that the students taking our course were not at all matched to the requirements, or were not the typical students that took these technical curricula elsewhere.

So we said: Either you exercise some selection over the students permitted to enroll, in other words, screen them or advise them (perhaps a method similar to that employed at East Lansing, where they had to meet certain test scores); or else you water the course down. And we had no appetite for that because it wouldn't lead to the subsequent courses, and it wouldn't be a conventional freshman course.

HARVEY BURDICK: So I must conclude that when you sent off that memo in January, your assumption was that if anything was going to be done, it would be to improve the selection process, that people would not be essentially allowed into these programs unless they met certain standards. Do I understand that's what you thought, that's what was going to happen?

PAUL TOMBOULIAN: Well, we said, "That's the solution." To pick a particular score: 5% of the students at MSU had scores below 33 on this CQT-N numerical test, versus 40% of ours. So there was just a whole different world of students going to MSU than MSUO, and we felt the students just didn't live up to the advance hype, in our classes. So we said, "There's trouble out there, there's icebergs. We're in the Titanic, you need to do something," and we didn't hear anything.

HARVEY BURDICK: You didn't hear anything?

PAUL TOMBOULIAN: No, no echo. No response from the control room to us.

HARVEY BURDICK: You're into January and you have a lot of students who failed the first quarter. As you said, they had no place to go. What did you do?

PAUL TOMBOULIAN: About November, it became clear that this phenomenon of poor performance would occur in a number of courses. So the faculty voted to allow students to repeat courses, and so that was a universal amnesty. They were having a tough time getting started, things were complicated, first time in any college, and so on. There was an attitude of "Let's give them a chance—a second chance." So starting in January, we started the second quarter with teaching not only the second quarter of the chemistry sequence but a trailer [repeat section], starting the first quarter over again. We taught both the first and second parts of that course. Bill taught the trailer group and I taught the regular group.

HARVEY BURDICK: Was this also true in mathematics?

PAUL TOMBOULIAN: Yes.

HARVEY BURDICK: So you were doing it in all these numerical, technical areas.

PAUL TOMBOULIAN: There was a sequence in math and a sequence in chemistry. There wasn't a sequence in economics. I suppose they did it in language, too, but I don't know.

HARVEY BURDICK: They could have. So it was the second chance phenomenon of the second quarter at MSUO. How did they do when they were given a second chance?

PAUL TOMBOULIAN: About what you would expect. We know this now: The enthusiasm and performance of a student who doesn't have the right background and has already failed the course the first time does not increase on retaking the course. Even though they're required to take the course by their program, that

doesn't cause them to do a lot better. I think a total of two students completed the whole sequence of taking the three trailers, through the second year. In other words, the attrition in the failure group—the group that wasn't doing well—was enormous.

HARVEY BURDICK: Oh, that's disastrous to teach people, almost all of whom were going to fail right in front of you. Of course you didn't do it—

PAUL TOMBOULIAN: Bill Hammerle did it—

HARVEY BURDICK: —but it was a disappointing thing. The proofs are now building that somehow you cannot make a silk purse out of a sow's ear, if I can use an old expression.

PAUL TOMBOULIAN: They came in without the right preparation to take that curriculum. That choice was self-selected: They had no advising, they had no test screening, and we didn't give them an option to get out once they were in. So these were three factors which made it very difficult for the students who didn't meet those requirements to succeed.

HARVEY BURDICK: Did anything start changing? You had this realization that somehow advising had to be introduced, selective testing had to be applied, you had to start screening people.

PAUL TOMBOULIAN: We in science and math immediately started imposing our recommendations. I don't know if they were screens or they were requirements that you had to achieve a certain test score in order to take the courses.

HARVEY BURDICK: They took a test—when, where?

PAUL TOMBOULIAN: Before they entered.

HARVEY BURDICK: In order to get in, they had to take the test?

PAUL TOMBOULIAN: Yes. We had this data because it was a part of the MSUO admissions procedures. It wasn't used for admissions, but it should have been used for advising: If you don't have a score of at least 33 on the CQT-N, you can't be in that program.

HARVEY BURDICK: "I strongly recommend that you don't go into that program."

PAUL TOMBOULIAN: That's what should have been said. Somebody should have sat down and said, "You have the wrong dream."

HARVEY BURDICK: You say it did happen after this.

PAUL TOMBOULIAN: I think we were in a better position to make that statement. We faculty didn't do that advising so I don't know how that communication occurred. But we made it clear that students in technical curricula needed to meet these requirements.

HARVEY BURDICK: Was that set in motion by the second year, the following year?

PAUL TOMBOULIAN: I don't know. I can tell you that the practical answer is that the students got better, dramatically better, from a combination of factors—and we didn't change the course, we didn't change the standards. We couldn't because the course is essentially calibrated by the discipline; it's a standard freshman course. The student quality improved dramatically, the numbers of students taking the course declined, and ultimately, the option to drop a course came along a little later.

Prerequisites like math became clear. MSUO needed more math prerequisites than some students had, and the calculus people were the first to realize this. They said, "Well, we've got to introduce a sub-collegiate course," which was something again that was not in the original literature—we weren't going to teach any sub-collegiate courses.

HARVEY BURDICK: That was a break [with the curricular plan.]

PAUL TOMBOULIAN: That's right—so they had to teach trigonometry. There wasn't anything much we could do about freshman chem because we weren't going to teach high school chem to them. But we do today—we teach a sort of introductory chemistry course to the students who either don't have the confidence or find they don't have the background. But we didn't have those options then, and so it was either fish or cut bait in this freshman course.

HARVEY BURDICK: So things did improve over the next few years.

PAUL TOMBOULIAN: Yes, there was a dramatic improvement, and by 1963 or '64, the student body had moved up dramatically in terms of its entrance test scores overall, and in our case in particular. So by the end of that period, the quality of the students was high enough that we were very confident that we were on the right track. Then our students were getting into graduate school and doing well, and that further validated what we were doing.

HARVEY BURDICK: That was an interesting working out of things that first period of time—getting the proper students into the proper courses.

PAUL TOMBOULIAN: In the second graduating class, we had students going to MIT and doing well, so we knew we were doing what the discipline would expect us to do.

HARVEY BURDICK: Let's talk about the discipline. Go back to the time you were coming here to start a new school and beginning chemistry classes. You also brought with you your own traditions, didn't you?

PAUL TOMBOULIAN: Sure.

HARVEY BURDICK: There was no question in your mind that Paul Tomboulian was not just a teacher but a scholar, and you were going to continue in your research. As you said earlier, you received the first research grant at the university and you used a freshman as an assistant. Did you feel that that's what you had to do, you had to do research and publish—did the university suggest that this was expected of you?

PAUL TOMBOULIAN: I have no recollection of anyone saying what was expected. Nobody wrote down a list of expectations or directions. We received very little feedback of the type that we would probably give today. We were driven essentially by our own academic standards.

I come from this conventional discipline of chemistry, which says: If you want to be a successful chemist, then you need to publish, you need to get research grants, you need to teach courses. If you do all these, then the American Chemical Society blesses you after a period of time, if your program meets their accreditation standards. We were the first program on campus, for instance, to be accredited—in 1967—because we had done all the things that the American Chemical Society said we ought to do. So again, we had an external validation of what we were doing. I think the impetus and the motivations all came from our discipline, either inside or external to the university.

HARVEY BURDICK: The impression I'm getting is that Woody went out, and brought in the faculty people, to whom he said, "Okay, you know what to do. You're on your own, we don't have to lay out to you the kinds of things we expect. You're self-motivating people, you're going to do what's appropriate, you're scholars." Is that the assumption?

PAUL TOMBOULIAN: Certainly in areas that I worked in, Woody left us alone. I can't remember any time that Woody ever said to us, to me or to Bill, "You guys are doing the wrong thing," or "You need to be a little more lenient," or "You need to publish more papers, or less papers," or spend more time teaching, or something like that—never. And for Bob Hoopes—who came out of an English discipline—of course this science was all foreign to him, so he didn't intrude his disciplinary perspectives on us. He was a scholar, as many of the other faculty were, and they were doing their own scholarly work. So what we were doing—our scholarly set of directions—came from the external world.

HARVEY BURDICK: I don't know how to pose this question. Certainly, when you came here, it wasn't like coming to a small, insignificant, unimportant little college. I don't want to sound arrogant, but they exist throughout the entire domain of this country—you can travel anywhere and come across little colleges.

PAUL TOMBOULIAN: Now, maybe 4,000.

HARVEY BURDICK: It was not in your image that this was just a little college where you were going to go off and do teaching. Didn't you have the sense that this was an important phenomenon that you were coming to?

PAUL TOMBOULIAN: I don't think I had that perspective of a "phenomenon" at that time, but we did have the constancy of Woody's direction, speech, and planning which indicated that this was going to be a major campus—there's no question. Recently, we've uncovered more information which proves it was always in the early plans that Oakland University would be a major campus with 25,000 students in a relatively few years—10,000 by 1970 was one of the numbers, 25,000 by the late 70s. So there was a great upper trajectory planned.

HARVEY BURDICK: That's an interesting topic, and I take it that these kinds of insights have come out of your working with the Chronicles project; is that correct?

PAUL TOMBOULIAN: Yes.

HARVEY BURDICK: And we're going to discuss this in more detail when you and Alice sit down for an interview.

PAUL TOMBOULIAN: I think the idea that the university would be big was one of those attractive dreams: this was going to be something big.

HARVEY BURDICK: We also talked about the notion of your research and how committed you were to its virtue, its purity. Just for a moment, distinguish for us between applied and basic research.

PAUL TOMBOULIAN: What I had been doing for all my career up to that point was what we call pure research. I was working on problems of more or less theoretical importance, mostly in the area of organic chemistry. I was working on fairly esoteric experiments, so I can't even explain easily what it was—except it's fascinating when you're doing it, there's no question.

HARVEY BURDICK: And no application, no immediate application.

PAUL TOMBOULIAN: No practical application. You can't put your finger on it and say that it will solve any problem that anyone's ever identified, except it moves the research director one notch closer to the Nobel Prize, or something like that.

HARVEY BURDICK: Nobel Prize was a goal?

PAUL TOMBOULIAN: That's one of the motivations of the faculty in many major institutions.

HARVEY BURDICK: Paul, you certainly had enough laboratory material to teach the freshman chemistry course, as you pointed out—in fact, you probably didn't have enough room to put all this stuff away. But you were also getting involved in your own research that you brought with you from Minnesota. You wanted to get this grant, and so you had a place set up for yourself. Did you have enough material for the research that you were doing?

PAUL TOMBOULIAN: No, because the freshman supplies and equipment would not have been appropriate for what we needed in my research. I had some of my special chemicals I'd already brought from Minnesota. But the special flasks, the special hardware that you need to run the kind of experiments I was doing—and the kind of special chemicals and glassware I found described here in our lab notebook—getting these required that you work with a department that has those items, or a stockroom that has those, or you ordered them.

We discovered we had a very good friendship with MSU, always. I had a colleague up there named Bob Hammer, and he gave us an entree into working with the folks in the stockroom there and giving us whatever we needed. So I would make these occasional trips to go to their stockroom at East Lansing and pick up what I needed, flasks and equipment, and there never seemed to be any concern about cost. I wasn't aware of costs, and I was able to obtain the research equipment I needed because of the friendship and the pleasant response and behavior of the folks at East Lansing.

HARVEY BURDICK: Good relationships with the people at East Lansing.

PAUL TOMBOULIAN: Oh, yes. Never anything but the best. They were looking at us, they were sort of—I won't say cheering, but they certainly were interested. So we have always had very friendly feelings about the folks in East Lansing.

HARVEY BURDICK: So here you are teaching a class with Bill Hammerle, it's a lot of students. You've divided the responsibilities but it's a lot of students. You had some problems with the students, the first crack in the image that perhaps Woody was creating along with Loren Pope. You were working on your own research, which you describe as basic and pure research, and at the same time you had to think of facilities and curriculum in the following year. So you had to prepare for the next year—you weren't going to repeat it with Bill Hammerle, were you?

PAUL TOMBOULIAN: No.

HARVEY BURDICK: So, you recruited?

PAUL TOMBOULIAN: We immediately—and immediately means probably about Christmas time—in addition to everything else of '59, we started recruiting another faculty member. I sent letters out to departments just the same way one does today, announcing an opening in our institution for a chemist. That ultimately was filled by Fred Obear, from the University of New Hampshire. We were in a recruiting mode in that spring of 1960, and I know it was spring because Fred got caught in a terrific snowstorm somewhere. So we were already in that mode of expanding. We had to invent courses to teach that second year, get them approved, set up the programs for the major—what are you going to teach in the future?—and plan all the subsequent work so that we had a credible catalogue.

HARVEY BURDICK: In 1959, MSUO did not have a catalogue?

PAUL TOMBOULIAN: We did not really have a catalogue.

HARVEY BURDICK: As I see on this document, it starts in 1960. Is this the first catalogue? *(holding up a stapled document with a yellow front cover)*

PAUL TOMBOULIAN: That's right.

HARVEY BURDICK: And you were essentially responsible for putting this together?

PAUL TOMBOULIAN: I felt we needed it. We didn't have the information in one place so I went around and got people to contribute. We got Marian Wilson to do the typing of the stencils, and I remember running off mimeograph copies and getting it collated—because you had to collate it by hand—and designing the cover. We produced this document in August of 1960 as our first catalogue.

HARVEY BURDICK: And this is the first time students had a chance to look over the offerings ?

PAUL TOMBOULIAN: Yes, really something more than mimeographed handouts. That was one of the many elements that we needed to create for the first time.

HARVEY BURDICK: So this is something you did, and produced in the spring of '60. Any other kinds of responsibilities you were assuming?

PAUL TOMBOULIAN: Woody had already in mind to get a couple more buildings built on campus, and so he announced in the fall of '59 that we were going to build a library, and we were going to build a science building, and I don't remember what else—intramural building or sports building, I think. So Woody came to Bill Hammerle and me—there were only two of us—and said, “You know, we've got to get started on this,” and so an architect got picked. The building apparently came up on a priority list in the state legislative appropriations—things moved very quickly in those days. The state would fund an architect to do the design of a science building. The architect chosen for the science building, which was known later as Hannah Hall, was a group called Giffels and Rosetti—high class architects. We said, “Boy, this is going to be done right!”

Bill and I went around and visited several universities in an attempt to find ways in which one should construct university laboratories, facilities, classrooms, and so on. We put together descriptions of these facilities—how many we would need [with a future student body of 4,000], where they would be put in relationship to each other, how big they would be, how many students you could put in each one, and those kinds of things. And we planned this by cutting out pieces

of colored paper scaled to the dimensions appropriate for a classroom or laboratory or office, and put them on a sheet of paper to make a building. Bill and I did that in 1960—it must have been in the spring. I remember, in the basement of our house on Pontiac Road, many times going down there and taking these pieces of paper and gluing them around on this larger sheet and trying to make a building out of it.

HARVEY BURDICK: Now, Woody asked you to think about this, and he turned to some architects. Was it your understanding that you would be working with the architects in the design of this building?

PAUL TOMBOULIAN: I never even questioned that. They were going to do it, but we were going to tell them what we wanted.

HARVEY BURDICK: So you and Bill took on the responsibility saying, “Listen, we’d better have what we want.” Right?

PAUL TOMBOULIAN: Woody always supported us—he was always supporting us. Essentially he said to the architects, “Those are the experts, they know what they want to do.” We came to a point where Bill and I had designed this building with four different wings, one for each kind of function. They had different widths and we didn't how to put them together, not being architects of that character. So we had this plan, it was for a cross-shaped building.

We thought it was going to go ahead alright, but then something happened and the architects wanted more money than was in the budget, and a parting of the ways came. Varner had to find a new architect and start all over. The new architect apparently wasn't willing to do all the work, because there was only a fixed architectural fee that had to be shared between Giffels and Rosetti and the new architectural firm, which was O'Dell, Hewlett and Luckenbach. The new architect said, “We can't put any effort into this. We've got to go ahead.” There was a timetable and they didn't have any money. So Woody said, “Well, why don't you just take these plans that we've got”—my plans, Bill's plans, these pieces of colored paper—“and use them?” And that's what they did.

HARVEY BURDICK: And that's how we ended up with Hannah Hall.

PAUL TOMBOULIAN: Yes. Very energy-inefficient, but very analytically designed with certain widths that you would never use today in a building. They took our plans and built Hannah Hall essentially from these colored pieces of paper that Bill and I put together in our basement.

HARVEY BURDICK: So here you are coming from Minnesota, involved in basic research—hired, and you end up putting out a catalogue, designing a building, dealing with admissions criteria. Essentially you were being asked to do all sorts of things without being told beforehand what they were going to be.

PAUL TOMBOULIAN: Indeed. I guess in retrospect, that's what you do as a pioneer, right?

HARVEY BURDICK: Is that what it was—a sense that you were coming here to pioneer, and that's what was very attractive to you, also?

PAUL TOMBOULIAN: You did what needed to be done. There was an attitude that if something needed to be done—we need a catalogue, who's going to do it?—you raised your hand, and you did it. Nobody said, “No, don't do that, that's not your department.”

HARVEY BURDICK: I suppose some people could see this as a burden. Did you see it as a burden or as an opportunity?

PAUL TOMBOULIAN: I saw it as a necessity. We needed to put a catalogue together, we needed to build a science building. Woody was always cognizant of time constraints and said, “We've got to move along.”

HARVEY BURDICK: As you look back on it, are you pretty proud of those accomplishments? I think I hear a kind of pleasure in saying, “Yes, I did that.”

PAUL TOMBOULIAN: Yes, very definitely. I think there were a lot of these check points that I can look back on now, and say, “Wow, why did I do that?” The answer was: It needed to be done.

HARVEY BURDICK: Okay, it needed to be done but you were glad to do it.

PAUL TOMBOULIAN: And I felt I could do it, at least as well as anyone else. Certainly as well as the architects. They didn't have any scientific training, and they didn't know how to build a lab.

HARVEY BURDICK: So it got built.

What happened to the university? Were there features of the university you began with that have continued, or has it all been washed away like sand, and we are now something different than what we were?

PAUL TOMBOULIAN: Or something more like everyone else?

HARVEY BURDICK: What do you think?

PAUL TOMBOULIAN: Well, the newness is gone, and that's of course inevitable; you only start once. The newness is gone, but I think that spirit of commitment to certain values remains among many, certainly among the people who have been here a long time, like you and me. We have a commitment to quality, we have high expectations for the students. We're interested in stretching them as far as we can. I think that's one of our goals. How far can you stretch a student? How high can you get them to reach?

We've had terrific successes with very minimal budgets. We have the most efficient research paper production in Michigan. We did an analysis, in chemistry, of dollars per paper of every major institution in the state. Of any institution, we get more research papers produced with less money. So we've figured out how to deal with the constraints which were inevitably a consequence of our junior status in the hierarchy of state institutions in Michigan. Even though we never got the budgets that we would have if we had been an established institution for 100 years, we were doing teaching and research of the same quality that those other established institutions were doing.

HARVEY BURDICK: I hear a lot of pride in this. Are you proud of MSU Oakland University?

PAUL TOMBOULIAN: No question. It's not what it used to be but nothing ever is, and you can't retain that original character. I think what happened inevitably is a realization on the part of all of us that you can't make a new institution with a striking new image quickly. That was a mistake, and one of the many mistakes made in planning. You just can't say, "We're going to do something new here," and expect that everybody will come. Or "We're having a party, come down here."

I was reminded of an image that Bill Hammerle talked about, how you make a good lawn: You start with good dirt, good seed, water regularly, and cut it for 100 years. I think we're looking at a long-term kind of perspective and not something where we can say we're going to have that final status now, because it certainly takes time.

HARVEY BURDICK: Without disagreeing about needing time for the grape to ripen, and so on, I also heard "minimum financial support." Let's not kid ourselves, Paul.

PAUL TOMBOULIAN: That's absolutely true.

HARVEY BURDICK: You know, with a lot more money thrown in—

PAUL TOMBOULIAN: Oh, it could have been a lot different institution, yes. Some of the dreams never got implemented, partly because of this.

Woody was very fond and talked in the early days of using television as a shortcut in teaching. Rooms were designed in North and South Foundation Halls where there would be television studios set up, so that we could have "distance learning," as we would say today. But there never was any equipment for them.

When we came, there was no equipment in physics. Equipment money has always been very hard to get, and yet it's so important in any technical area, and so important to moving ahead in a variety of disciplines. Science faculty always place a very great premium on acquiring equipment, so we had to essentially do things very efficiently.

HARVEY BURDICK: Given the financial restrictions, given whatever were the cultural limits, you also mentioned that the students were coming as first-time students in their families. Has that changed much at Oakland University?

PAUL TOMBOULIAN: I think we've carved our niche out in the communities [in Oakland and Macomb counties] where we draw students. The students that come here know about us, and the teachers out there and the advisors out there and the counselors at those schools know about us. I think they put us in a slot, it's very hard to move out of that slot once you're in it, and so the students we're getting today reflect a lot of that set of decisions which we can't very much control. We try to make inroads. We've had a recent program of going back to the schools and trying to tell them how great we are. It takes, again, decades to do that.

HARVEY BURDICK: Yes, the lawn. You've got to "mow the lawn for 100 years."

PAUL TOMBOULIAN: So ultimately, you make a lot of compromises in what you're doing, but I think the successes are sufficiently high. You look at the successes, and you look at the number of students that you've helped along in various areas. Especially as I got into more practical areas of environmental studies, I felt that we in science can also make a contribution in the general education program that we could never do through the traditional programs.

HARVEY BURDICK: I want to just pick up on that point, because this is the first time we really referred to your working in the environmental area, although you began as a pure—I don't know what the expression is—pure chemist doing basic research within the discipline, hoping to get the Nobel Prize, perhaps?

PAUL TOMBOULIAN: Not really.

HARVEY BURDICK: Well, whatever the myth is. And then you moved into environmental studies. How did that happen?

PAUL TOMBOULIAN: There was some kind of an epiphany there in the mid-60s. A lot of cultural and societal changes were going on, as you know. By 1967, Alice

and I were teaching freshman writing, another one of these things you wouldn't expect.

HARVEY BURDICK: You were teaching freshman writing—but you're a chemist. How did you get into freshman writing?

PAUL TOMBOULIAN: The assumption was that any educated person could teach freshman writing—a fallacious assumption.

HARVEY BURDICK: It's interesting but it's hardly an assumption made generally, you know.

PAUL TOMBOULIAN: I don't think it's true. The assumptions were made here because it solved a problem of hiring a lot of instructors to teach rhetoric.

HARVEY BURDICK: You were teaching early writing.

PAUL TOMBOULIAN: It was the first writing course—there was supposed to be an emphasis on writing. The general direction was: You pick a subject that you want to talk about and you have the students write about it. And somehow this would teach writing—that was the mistaken belief.

HARVEY BURDICK: Well, that's an interesting idea. In other words, every member of the faculty could teach anything they pleased at a freshman level—but yet they had to teach writing.

PAUL TOMBOULIAN: Right. It was called an “exploratory.” You picked a subject like global warming, or then it would have been population issues or ecological awareness or something like that, and you focused the student writing and interest and readings on that subject.

HARVEY BURDICK: Well, you said, “What could I do in chemistry that would fold in writing?”

PAUL TOMBOULIAN: We didn't do chemistry, though. That's what I'm saying. I could see that the student population that we had . . . I can't imagine any university where the average liberal arts student in a general education course could be comfortable with learning the standard concepts of chemistry, such as a watered-down periodic chart, or a little bit of this, a little bit of that.

HARVEY BURDICK: Right, it didn't make sense.

PAUL TOMBOULIAN: Not to me. People try this but I don't think that's the way to go.

HARVEY BURDICK: And that's how you got into environmental subjects?

PAUL TOMBOULIAN: Yes. So we said, "Let's pick a subject that we like." I think it was probably triggered by a couple of books in the early ecology era. I remember Stewart Udall's book called *The Quiet Crisis* was just out in the early 60s, mid-60s, and we said, "This guy has a lot to say here, and these students need to think about these environmental issues."

That got me started in the exploratories, which didn't last very long, because ultimately they—as with all educational experiments—succeeded for only a while. I think it's called the Hawthorne Effect: They succeed for a while, and then everybody loses their enthusiasm, interest, and so on. But fundamentally I'm not a person who knows how to teach someone else to write.

HARVEY BURDICK: But it affected you.

PAUL TOMBOULIAN: Oh, very much. I said, "This is a more important academic pursuit than some of the things I have been doing before, and so I need to go off in this direction." That got us started in the area of environmental studies, and developing the environment studies curriculum in the early 70s, and ultimately a degree in environmental health, which allowed students to take a science background and work in applied areas. It's applied science and it's not basic research like I started with. It's working in societal problems, it's working with issues, it's letting someone else bring the issue to you rather than you inventing the question, which is what you do in basic research.

HARVEY BURDICK: So, Paul, certainly by coming here something happened at the university that turned you around in your scholarly interest.

Now I have one last question, as you look back on your choice in coming here, when you in principle had other choices. You could have stayed at Minnesota waiting for a university that has been around for 100 years—you know, the grass being well-developed—but you came here. And now as you look back on it, I'm asking you straight: Was it a good choice?

PAUL TOMBOULIAN: A happy choice. There's never been a dull moment. I like to do things, I like everything I've done. For instance I like to do this kind of project [the Chronicles].

The opportunity to do a variety of things is always attractive: the opportunity to correct some of the mistakes that we see in what goes on elsewhere, and to make my contribution to the world. I think that's been part of my life, and I think I've had more of a chance to do that here than I would have if I had gone to a much more conventional university. But I see that now, and I didn't sense that then. Woody was able to paint a dream which fit my unstated interests.

HARVEY BURDICK: So it turned out, even though at the time you came here for slightly different reasons, it turned out to fit Paul Tomboulian, giving him the freedom to explore different things—to put your efforts and skills into doing different things—where, as you say, if you went to that 100-year old school, you would have been more limited.

PAUL TOMBOULIAN: Oh definitely. You don't rock the boat there, you fit into a slot—and here you could make your own slots.

HARVEY BURDICK: Do you have anything negative to say about your experience? I don't want to finish it on a negative note, but do you think Oakland has done as well as it could have done? Could it have taken another direction legitimately?

PAUL TOMBOULIAN: In retrospect—and this we get by the hindsight of experience—the leadership that Varner provided has not been subsequently

followed. The relationship of the faculty with the administration deteriorated seriously after Varner left, for several reasons.

I think that loss of institutional strength and communications has been a negative feature. We just never got back to that idea that we're all in this same boat together—or if we were using the pioneer image, we're on the caravan together—we've never come back to that. It's now an “us-and-them” kind of situation—partly, I'm sure, because the faculty decided that we wanted to have our own kind of organization, but partly because the administration essentially said, “Okay, if you're going to play that game, we're going to cut you off.” So we've not had the relationships that we could have had. Maybe that's dreaming, but we certainly had them with Varner.

HARVEY BURDICK: So, Paul, it's interesting. I want to thank you for coming. This has been part of yours and Alice's project, and we finally got around to interviewing you on it.

PAUL TOMBOULIAN: Well, I don't come first.

HARVEY BURDICK: Okay. Thank you, Paul.

Oakland University Chronicles

PAUL TOMBOULIAN

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Further Reflections on MSUO

by Paul Tomboulian

September 1, 2001

An educational venture that worked

Starting a new university is an extremely complex and challenging undertaking not obviously destined for success; many have failed. The amazing outcome from all of the MSUO planning was that the enterprise worked remarkably well and better than one might have realistically anticipated, largely due to the leadership of Woody Varner. He inspired the faculty to believe in their own versions of his dream, even if the versions differed. Varner remarked privately that the quality of the faculty was much better than anyone would have expected. They believed in the same kind of dream that he described. The strong student-centered focus of MSUO along with the liberal education emphasis were two of the many appealing innovations which broke from practices of the times.

Loren Pope's press releases about MSUO back in June 1959 described his own enthusiastic dream of a new model in higher education. The sometimes lofty Pope rhetoric and the practical realities were often far apart, but in retrospect, Pope's contributions and image-building were of great value, mainly to the faculty and doubtless to others in academe.

Success was due in no small part to the fact that we borrowed, adapted, or adopted many of the administrative operating procedures from MSU. But the inheritance from MSU came without the parental dominance characteristic of many branch campuses. We were the new sister! And yet help was only 90 miles away if needed. Quiet support and concern was always available from experienced and enthusiastic personnel.

Fortunately, Varner made it work and his role cannot be overestimated. He was the magician combining the zeal of a missionary with the skills of an entrepreneur.

Gaps with no bridges—an unfinished dream?

Planners at MSU might have been able to predict the student performance problems we encountered at the outset, but no warnings or alternatives appeared in the planning documents. In the technical curricula, the lack of any advising system, the limited subject choices (only chemistry and calculus were offered), along with the absence of preparatory math courses, were a clear recipe for academic difficulties.

MSU vice presidents Thomas Hamilton and D. B. “Woody” Varner didn’t acknowledge the student abilities that could realistically be expected, because they had other dreams in mind. Hamilton in particular was fairly optimistic in the demanding curricular plans he developed in his concept document for the “Matilda Wilson College.” Although subsequently modified by Varner and the many MSU curriculum planners, the course demands were still well above the average talents of the MSUO entering class. Eugene Deskins, who served on the final curriculum planning committee for MSUO, characterized the intended new university as a “first-class operation,” yet Hamilton and Varner did not have any apparent strategy for recruitment of the required student body for a new “first-class” university.

In engineering, there could have been an evaluation of the probable competitive position of MSUO relative to Wayne State University, which had high visibility, high quality, and well-established engineering programs. How did anybody expect MSUO to compete for well-prepared students in that technical area, with MSUO’s novel and untested curricular choice of “engineering science”? The pervasive Detroit automobile culture produced a predictable interest among local high school students in engineering, but MSUO started with no opportunities for the less well-prepared desiring to enter our technical programs.

The attractive factors for many prospective students were the proximity and affordability of attending MSUO, not the academic vision of the planners. This predictable reality was under-recognized by most MSU planners and incoming MSUO faculty. *Time* had it right in February 1962: “It had one major drawback: serving almost entirely as a commuter college in a low-income area, it was expected to demand Harvard-level performance from poorly prepared youngsters.”

The origin and enigma of philosophy of science in the curriculum

When I was first introduced to the new MSUO curriculum, and for 40 years thereafter, the presence and intended function of philosophy of science in the curriculum remained an enigma. This proposed course was an intriguing and curious innovation. Those of us in science didn't understand how you could teach much philosophy of science to students who don't necessarily know any science beyond high school (if that much).

Finally in 1999 while interviewing Eugene Deskins, a member of the last MSU planning committee for the MSUO curriculum in 1959, we discovered that the apparent originator of this idea was Stanley Idzerda, a member of the committee whose specialty was philosophy of science. The only other science-related representative on the committee was Richard Schlegel, a theoretical physicist. The apparent justification for the inclusion of philosophy of science was that the expense of setting up the traditional science laboratories would thus be avoided. Now for the first time, I understand the absence of any significant laboratory science coursework in the originally proposed general education curriculum.

Deskins reported that there was no written curriculum until May 1959, although Varner had enough sense of the curricular direction to convey it to faculty hires. The student recruiting materials are notably vague on all details of coursework. Varner had told Dick Burke in early 1959 that he would be teaching philosophy of science, one of Dick's major interests, and Dick assumed it would be in the first year. But when the MSUO curriculum finally emerged in May 1959, philosophy of science was not in the first year, and Dick Burke was assigned to teach Western institutions that fall. By the time the MSUO faculty reworked the general education components of the curriculum in 1960, philosophy of science had lost favor and was never offered as a general education course.

Conflicts, resolution, and early academic governance

The early governance structure was apparently an original MSUO creation; we didn't inherit this from MSU, although we should have adopted a more workable system. The early administrative organization was outlined in a document developed in the first year (1959-1960), but not clearly adopted by any vote. The document defines an Academic Senate, a group with some administrators and with an academic focus. But this Senate, as with many traditional academic governance structures, was not designed to solve difficult problems in a cooperative or timely fashion, or to do strategic planning.

The first Academic Senate was academically centered, because most members were faculty, especially in the first few years when there were three to four times as many faculty as administrators. It seemed to work from November 1959 until February 1961, the time of the "Black Saturday" episode, when Varner unilaterally abolished the group.

Since about two-thirds of the faculty were in the humanities subject areas, their political voting strength up to February 1961 was strongly influencing the amount of humanities proposed in the general education curriculum. Subsequently, George Matthews's Senate constitution was adopted about 1966, and this model ultimately gave a lot of power to non-faculty, and the administration members often voted as a block. I tried hard to work up a revision of the constitution with Dick Burke in the late 70's to address these design flaws, but to no one's surprise, Matthews did not ever bring it up for consideration.

The Oakland Chemistry Department in the Early Days

by Paul Tomboulian

September 1, 2001

(Adapted from an article written for the Chemistry Department annual alumni newsletter, *The Catalyst*, 1990 issue.)

The first-ever classes on the Oakland campus opened in the fall of 1959. We were operating as a sort of sister institution to MSU, but in practical matters we were essentially autonomous. We were supposed to be writing on a “clean slate,” but we found out that nothing is quite that simple—we were really part of a higher education system, full of rules, conventions, and expectations!

Since I was hired in May of 1959, and William Hammerle, the other science faculty member, was hired about the same time, there was little time to plan for the fall. Somehow a number of decisions about the early chemistry course had already been made, and when Hammerle and I met for the first time in the early fall, we toured the two chemistry labs, a stockroom, a balance room, and the huge stacks of supplies and equipment waiting to be unboxed. Someone had decided that we should pattern our course after MSU’s course, and to save us time, one entire year’s supply of MSU freshman chemistry materials had been ordered, enough for 1800 students. That was a reasonable plan except that we had only 177 students taking chemistry!

Professor William Hammerle and I shared the lecture teaching in the beginning course CHM 111-112-113 during the first year. Neither of us had ever taught first-year chemistry before, but in a new institution, almost everything is being done for the first time anyway. Hammerle was a chemical physicist with a Ph.D. from Princeton. He had been teaching physics at MSU and was an excellent complement to my background in organic chemistry. Almost a third of the 570 first-year MSUO students enrolled in CHM 111, since there was no other science offering. One can imagine how enthusiastic a group of prospective business administration and engineering students were, when told to take this course.

Using a typical introductory chemistry text of that era, *College Chemistry* by Sienko and Plane, we seemed to be copying the MSU format for first-year chemistry in almost every respect, including the syllabus and academic standards. But the MSUO students were not close to the quality of the students in the MSU technical curriculum, and not surprisingly, many did not fare well. Of those 177 students, only 50% had ranked in the top one-quarter of their high school graduating classes. At the end of one quarter at MSUO, 45% of the class received grades of C or above. Comparing these first-quarter grades with those in the year 2000 introductory chemistry course, about 60% of the class now receive final grades of 2.0 or above.

For the first class of MSUO students in technical programs, the reported numerical ability scores (CQT-N) on the admission tests ranked them below national averages for all college freshman—as we learned later. Many of those particular students did not thrive within the inflexible curriculum choices available at MSUO. Almost immediately, we had to start a trailer (repeat) section of CHM 111 in January of 1960. But then, as today, repeating a course did not necessarily increase a student's commitment to the subject.

However, the excitement of the new venture combined with the enthusiasm of many of the students made the enterprise rewarding, and soon we were planning the second year (organic) sequence. No provision had been made for any faculty research space, and a corner of the organic lab had to be partitioned to make a small research lab for me. I had several first-year students join my research program, which was directed toward the synthesis and reactions of pentaphenylethanol analogs. In early 1960, we were successful in obtaining from the Research Corporation the first research grant to be received at the new university, and we immediately acquired a student-grade infrared spectrophotometer, a Beckmann IR-5, and a wonderful new device, the single-pan balance.

Although we inherited a lot of administrative process and structure from MSU, the Oakland faculty quickly set about doing things their own way. It took one year to restructure the course credit system, and two years to change from MSU's quarters to

our own semesters.

In several ways we tested the conventional wisdom on teaching, faculty-student interactions, and departmental administrative structures. In one case, the design for introductory chemistry lectures, we found no suitable substitute. In another case, we improved on the conventional laboratory experience by providing better experiments, more lab time, and direct supervision by the professors. Radical departures are difficult in academe, because of the strength of tradition and the necessity for some inter-university equivalence in course work. Indeed, requirements imposed by standardized tests, graduate schools, the American Chemical Society, and employer expectations often constrain the range of options. While we often attempt to be experimental in our outlooks and attitude, chemistry teaching seems to be an area where significant departures from the norm are difficult.

One example of a new educational departure that seemed to make good pedagogical sense was the introduction in 1960 of self-paced (so-called Keller plan) courses in elementary physics. Professor Hammerle knew that some students could learn physics faster than average, while some would be slower than average. He developed a set of proficiency exam checkpoints that would establish the acceptable performance, more or less on the European model. Students would start by registering in the first course, then go ahead into the next course or not, depending on their pace of passing the proficiency exams. It is said that all educational experiments succeed for a while, and this one did for some students. However, many others lacked the discipline and motivation to complete course work without a fixed schedule, and the experiment was soon abandoned.

I recruited our second chemist, Frederick W. Obear, from the University of New Hampshire. He joined us in the fall of 1960 and promptly took over the first-year course work while I concentrated on the organic sequence. Professor Obear initiated a research program involving transition metal complexes, while concurrently developing the first analytical chemistry course.

The era of growth in higher education was upon us and the planning for a new science building, Hannah Hall, was underway. Construction began in 1961, and by late 1962 we moved out of our North Foundation Hall chemistry labs, which occupied about 2,000 square feet. When we first moved into Hannah Hall in 1962, we were assigned about 12,000 square feet, and over the years additional space was converted to chemistry use, mainly on the third floor. By 1985 we had a total of 22,000 square feet, much of it modified from non-chemistry uses by the addition of utilities and laboratory furniture. This practice of incrementally renovating facilities was typical of Oakland, since at any one time there never were sufficient funds to build and equip all the facilities needed. From 1959 to 1997, when the new Science and Engineering Building opened, the chemistry department was always in a catch-up mode.

By the fall of 1961, we had instituted six courses and three undergraduate chemistry programs: the liberal arts major, the minor, and the secondary education major. The university initiated a trimester system in 1961, a design that came out of the early MSUO planning documents. Theoretically a student could take three semesters of work in a calendar year, and graduate in 2.67 years. But that concept has never worked well in higher education, and few students at MSUO ever took full advantage of this accelerated educational option before it was quietly abandoned a few years later.

We started physical chemistry in 1962, when Steven Miller from MIT joined the department to handle that assignment for the first class of juniors. Because MSUO grew by mostly adding first-year students, no senior courses were necessary until 1962.

The first class graduated in April 1963, with a full range of chemistry courses then available including research, which was a popular and important option. Our undergraduate research participation program was one of the first supported by the National Science Foundation, and their funding continued for over 20 years. We were strongly committed to encouraging our students to pursue graduate work, and in some years over half of our graduates went into medical or graduate schools.

Courses in biochemistry and radiochemistry were added in 1964 as electives. A major

change occurred in 1965, when we had a staff of six and added a masters program. The department received ACS certification in 1967, the first accredited department in the university.