

DEMOGRAPHIC DESTINIES

Interviews with Presidents of the Population Association of America

Interview with Jacob S. Siegel PAA President in 1980



This series of interviews with Past PAA Presidents was initiated by Anders Lunde
(PAA Historian, 1973 to 1982)

And continued by Jean van der Tak (PAA Historian, 1982 to 1994)

And then by John R. Weeks (PAA Historian, 1994 to present)

With the collaboration of the following members of the PAA History Committee:
David Heer (2004 to 2007), Paul Demeny (2004 to 2012), Dennis Hodgson (2004 to
present), Deborah McFarlane (2004 to 2018), Karen Hardee (2010 to present), Emily
Merchant (2016 to present), and Win Brown (2018 to present)

JACOB S. SIEGEL

PAA President in 1980 (No. 43). Interview with Jean van der Tak at the Department of Demography, Georgetown University, Washington, D.C., June 21, 1988.

CAREER HIGHLIGHTS: Jacob Siegel was born in 1921 in Philadelphia, where he grew up. He received the B.A. and M.A. in sociology from the University of Pennsylvania. He was with the Census Bureau for almost 40 years, from 1943 to 1982, moving up to the position of Senior Statistician for Demographic Research and Analysis. In 1982 he became Professorial Lecturer and Senior Research Associate at the Department of Demography of Georgetown University, where he had already been teaching a famous Saturday morning class on demographic techniques. He has also taught demographic techniques and population statistics in the Graduate School of the U.S. Department of Agriculture (1948 to 1968), in Cuba, at CELADE in Santiago, Chile, at the University of Southern California, the University of Connecticut, Cornell, Howard University, and other institutions. He received the Gold Medal from the Department of Commerce and is a Fellow of the American Statistical Association and of the Gerontological Society. He is particularly well known for his research and writing on population estimates and projections, the census undercount, aging, and, most recently, applied demography. His long list of publications includes the famous two-volume monograph, The Methods and Materials of Demography (with Henry Shryock and Associates, 1971), Projections of the Population of the United States by Age, Sex and Color to 1990 (1967), and a 1980 census monograph on the U.S. elderly population (forthcoming).

[Jacob Siegel died in 2020 in Maryland at age 99, shortly after the death of his daughter earlier that year. He was also predeceased by his wife.]

VDT: We are speaking on a very hot first day of summer. It's nice and cool in here, but the air conditioning in Jay's car isn't working and he's arrived in a sweat. He recently returned from a semester as visiting professor at Cornell. I am lucky to capture him, because he was very busy before he left for Cornell and now he's busy again, plunged into his summer teaching at Georgetown. To begin at the beginning, Jay, how did you first become interested in demography?

SIEGEL: In my early academic training, I had no particular interest in demography. I found it quite difficult to select an area of professional and occupational interest, and having spent more time in courses in foreign languages, I early decided to become a specialist in Indo-European linguistics. I pursued courses even as a high school student and as freshman, sophomore, and even junior in college with the intention of becoming a specialist in Indo-European linguistics. Through those years, I got to have a reading fluency in French, Latin, and Greek, and even studied some Arabic and Hebrew.

VDT: You're famous for your Spanish. Did that come later?

SIEGEL: My Spanish is wholly self-taught, learned as a reaction to the fact that none of the languages which I tried to learn had become fully operative in a conversational context. So I started anew, learning Spanish almost wholly for conversational purposes, and then grabbed every opportunity I could to use it, even imposing my broken Spanish on the many foreign participants in the Census Bureau international training program.

VDT: It's on record that you've been to CELADE and to Cuba, and you taught in Spanish. So you also used it with demographers from Latin America when they came to the Census Bureau?

SIEGEL: At that time, I was merely meeting with them at lunch to get to know them better, but also as a practical thing to try out my Spanish. That didn't work very well, not only because my Spanish was very defective but also they had no interest in practicing Spanish; they wanted to practice English.

Going back to your earlier question. As I came near my senior year, I had to grab for a formal major, and I began to realize that there was very little opportunity to get employment in the area of Latin and Greek, because I sat in a few classes in Latin and Greek where I was the only student or one of two.

VDT: At the University of Pennsylvania?

SIEGEL: Yes. This may be embarrassing to the university, but it's probably common. Professors want on record the fact that certain courses are taught and, even though few students may be registered, they continue to sponsor the class. So, looking back at the record of my courses and noting that I had taken a lot of philosophy and sociology, I realized that I could register myself as a major in sociology and graduate on time--which is what I did.

Then, not knowing what to do with myself in the following year, I applied for an endowed fellowship in sociology to the graduate school, which I did win, and a principal course which I took was in population, taught by Donald Young, who later became executive director of the Social Science Research Council. He didn't tell me anything much about the methodology of population research but a lot about world and U.S. trends in population.

Then I had the task of finding a job and I saw or heard of an announcement by the Census Bureau. They were employing people to finish off the 1940 census. And so, with scarcely a few hours' notice to my boss at my Sunday school where I was teaching, I announced that I couldn't be present the following week because I had gotten a job in Washington. So in December of 1942, I arrived in Washington to become a clerk in the Business Division of the Census Bureau. Not knowing anything about administrative protocol, I insisted on having an interview with the chief of the personnel division at the Bureau, who happily granted me that interview. She told me that they had no vacancies so far as she knew in the area in which I was trained, but that if I wanted to discuss the matter with one of the staff I could do that, and she mentioned a Henry Shryock. I went to Henry Shryock and he offered me a job, virtually on the spot.

VDT: And you didn't part company for many years after that!

SIEGEL: I early, then, met that little coterie of demographers, consisting of Henry Sheldon, Paul Glick, John Durand, and Henry Shryock.

VDT: And Con Taeuber?

SIEGEL: No, Con Taeuber was not at the Census Bureau at that time.

VDT: That was what has been referred to as the "Class of 1940"?

SIEGEL: Not at all. Not one of them is in the Class of 1940. That's a different concept. The Class of 1940 is that group of recent graduates of the City College of New York or other New York colleges who in the year 1939, or maybe 1940, graduated and came virtually en masse to the Census Bureau to work in various junior professional and sometimes clerical positions. They included people like David Kaplan, Joe Steinberg, Norman Lawrence, maybe Joe Waksberg, Ed Goldfield. You cannot be a member of the Class of 1940 without having originated from New York and without having just

emerged from college and arrived at the Census Bureau about 1940.

VDT: With a Ph.D., or a lower degree?

SIEGEL: No, none of these people had PhDs. It was characteristic at that time for people with only bachelor's or master's degrees to come to the Census Bureau or another federal agency, partly because there were jobs available but also because then, as now, the Ph.D. was a rigid requirement for full acceptance into the fraternity/sorority, shall I say, of academics. I haven't given all of the names in the two groups that I've mentioned. I could add to the first group people whom I met shortly after, like Hope Eldridge.

VDT: Did that first group, the little coterie of demographers, have some informal or formal name?

SIEGEL: I don't know. But note the characteristics of the two groups. Every member of the first group had a Ph.D. in sociology or economics: Sheldon, Glick, Shryock, Durand, Eldridge. Three of them came from the same university and were friends originally: Glick, Sheldon, and Shryock--all Ph.D.s from Wisconsin. The second characteristic is that they typically obtained their PhDs somewhat earlier and arrived earlier at the Census Bureau, and hence typically were in positions of authority over the Class of 1940-type people. Not always, because sometimes the subject matters did not coincide. Steinberg and Waksberg and some others like them were mathematical statisticians and actually had degrees in statistics or mathematics. Perhaps that was true of all of the members of the Class of 1940.

It should be clear, then, that I am neither a member of the first group nor of the second. I'm a johnny-come-lately to both; I don't have credentials for either. In many ways, you'll find that my history is anomalous, especially my tremendous involvement with academic life without having had a doctorate.

VDT: Where did Con Taeuber fit in?

SIEGEL: I met Irene Taeuber first, although I knew of their work even before I arrived at the Census Bureau. I must say that population work and study fascinated me even before I came here. As an illustration, I recall that in trying to learn to read German, I began with a textbook in population. That was my first book in German--first thing before I hit the grammar--called Bevolkerungsentwicklung, Population Development. And so I was able to . . .

VDT: Plunge in.

SIEGEL: Yes. There's a great similarity, at least phonetically, between German and one of my familial languages, which was Yiddish.

VDT: You knew Yiddish as a boy?

SIEGEL: I could understand a good bit of Yiddish, though I never really spoke it. My parents spoke English, Yiddish, and Russian.

VDT: Were your parents born in America?

SIEGEL: No, they were born in Riga, Latvia. They were married here.

VDT: Where were you born?

SIEGEL: I was born in Philadelphia.

VDT: Of immigrants, that's marvelous! We were talking of your anomalous position between these two groups and you were telling me where the Taeubers fit.

SIEGEL: And I was saying that I was familiar with the work of the Taeubers. One of the leading "texts," in quotes--I say quotes, because I'm not sure whether it ever was intended for that use; I had it assigned to me--was a National Resources Committee publication called something like, "America's Changing Population" [National Resources Committee, Committee on Population Problems, The Problems of a Changing Population, 1938]. I got to know the names of the technical credits in that report: Frank Lorimer, Clyde Kiser, Conrad Taeuber, and so forth. So these were people whom I early had as sort of intellectual heroes, whom I had never met. I early met Irene Taeuber. In a way of speaking, she was one of my bosses, because as a consultant to the then Department of War, she was asked to prepare population projections for the prefectures of Japan. And the people who were on the production line of that job were Hope Eldridge and Jay Siegel at the Census Bureau.

VDT: That means you were in on Irene Taeuber's famous The Population of Japan [1958]?

SIEGEL: No, I didn't work on that book in any sense, but on a job being prepared as a demographic contribution to the war effort. That was one of my principal assignments, to assist in the work under her direction. She was not a Census employee at the time, although there was a period [1941-44] during which she actually was assigned to a project called the Census Library Project, where she did a bibliographic job on the censuses of the Americas, working at the Library of Congress.

VDT: She worked at the Library of Congress in part on her work on Population Index.

SIEGEL: I have the book here. It was a bibliographic project relating to the censuses of the Americas and I believe in doing that she was a Census Bureau employee assigned to the Library of Congress. So I met Irene fairly early.

VDT: Was that the first job you did when you arrived in 1943--doing the projections for Japan?

SIEGEL: One of the early jobs. I worked for Wilson Grabill at first, who was an excellent mathematician, from whom I developed a sort of early working knowledge of formal demography. Here he was, quite unlike many of the other Census employees, developing these, what might be called, refined measure of fertility in connection with doing census work. He produced a thin little report which stands today as one of the remarkable analytic reports of the Census Bureau, relating to the censuses of 1940 and 1910, an analysis of fertility changes over that 30-year period, based on the census question on children ever born in 1910 and 1940. He computed measures like intrinsic rates of natural increase, intrinsic birth rates and death rates--all of these things which I had to hit the books about, read Lotka and Kuczynski, to catch up on what it was all about.

He and I spent many hours in the lunch line and in his office communicating with one another, he to me by writing on sheets of paper or the backs of envelopes or napkins, and I to him by writing or signaling in sign language, which I learned--only haltingly, but enough to communicate with him, without a pencil and paper.

VDT: You mean Wilson Grabill was deaf?

SIEGEL: Yes.

VDT: I'd heard that you'd learned sign language to communicate with a deaf person at the Census Bureau, but I never realized that was the Wilson Grabill!

SIEGEL: Wilson, like some other very able deaf people who work to overcome their handicap, learned to speak a bit. He spoke in a kind of irregularly sounding speech which could not easily be heard in a crowd because it was high-pitched and thin.

VDT: Had he been deaf from birth?

SIEGEL: As a child he had some infectious illness that destroyed his hearing. He could speak a bit, but he could read lips very little; that was not something he tried to do. So our way of communicating was as I explained. We'd stand in the lunch line and, if he didn't have any paper, he'd pick up a napkin, although he often carried little cards or notepaper, and he'd write something to me. I could not receive the sign language, but I could signal back to him. I could make the alphabet signs quickly enough, so we could communicate. And we were talking about problems like adjusting the 1910 census for underenumeration; we were talking about what the next steps would be in our calculations. In those days, everything was done by hand, in the sense that it had to be laid out on worksheets by hand, and we worked with a crew, a section of statistical clerks who had a supervisor. So typically he would give me some general instructions; I would draw up a worksheet and then deliver it to the supervisor of the clerical section, who in the earliest days supervised a group of people, some of whom had Comptometers.

VDT: Is that a calculator? That's not a word I know.

SIEGEL: Yes. I'll give you the historical succession of calculating instruments. There's the abacus, still used by some. Going beyond that, in college, for example, when I wanted to do calculations for my statistics class, I pulled out a slide rule, which, as you may know, is an instrument which contains a logarithmically scaled section which slides in a groove in the bed of the logarithmically scaled rule. The Comptometer you might think of as an elaborate manual tool. It's a mechanical device, non-electrical; in other words, you had to grind it so many times to do a multiplication, and you were a real expert if you could do division on a Comptometer. Then came the earliest Marchands; that was the earliest company, I think, that produced electric calculators--noisy, slow.

VDT: I've heard about those; in a roomful of them you practically lost your hearing.

SIEGEL: Yes, when the Marchands were going, it was a noisy affair. Of course, the noise continued until very recently, actually, because the more elaborate calculating machines continued to rattle away; they just moved faster and a little quieter. With each new version, they could do the calculations more quickly and more quietly. But still, a roomful of Monroes or Marchands was noisy.

VDT: How did you get so interested in statistics? You came out of languages and, technically, you were a sociology major.

SIEGEL: Well, lots of sociology majors are quantitatively oriented.

VDT: Were you--as a sociology major?

SIEGEL: I was a sociology major, but the sociology department was physically housed in the Wharton School of Business at the University of Pennsylvania. I don't recall whether statistics was required, but I felt I had to learn it to do any kind of solid thinking in sociology. Except for the graduate year in sociology and miscellaneous courses, I don't have intensive training in any of these fields in a formal sense.

VDT: Yet you became famous for them--techniques, projections, undercounts, and so on.

SIEGEL: I never took courses in advanced statistics, that is, beyond the first year. I should qualify that; I'm overstating the case. Immediately when I arrived here, I thought I ought to get an education relating to the work I was doing. So I enrolled in a course in correlation analysis with Margaret Hagood, also in courses on the mathematical basis of statistics and on interpolation.

VDT: She was at the Department of Agriculture.

SIEGEL: Right. But I had already met Dr. Hagood, because she was a close friend of Hope Eldridge. And in a way of speaking, though she didn't come to the Census Bureau, she was a member of that first group--a recent arrival, a Ph.D. in sociology, and a friend of Eldridge. You see, you would relate Eldridge and Haagood and--now I'm embarrassed that I've forgotten the name of Hagood's principal assistant who later became president of the Social Science Research Council. Oh, yes: Dr. Eleanor Sheldon. You would associate those three and then the other three names that I gave you: Henry Sheldon, Shryock, and Glick, who were friends. Three from the South and three from the North.

VDT: Hope Eldridge was a Southerner too?

SIEGEL: Sure, from Alabama, and Margaret Hagood from North Carolina. I'm not sure I can separate the place of schooling from the place of upbringing, but these were Southerners. They all became good friends. In fact, after a bit, a sociological discussion group was organized in Washington, with the Wisconsonites and Marny Hagood as founding members.

VDT: The D.C. Sociological Society?

SIEGEL: No, it was a kind of para-D.C. Sociological Society, meeting in private homes. And in this group were Abe Jaffe, Dudley Kirk, Cal Beale, Margaret Hagood, Henry Shryock, Paul Glick, Henry Sheldon, and others. It began in the late 1940s and went into the early 1950s.

VDT: You met in each other's homes, regularly?

SIEGEL: Yes, once a month.

VDT: Did you call yourselves something?

SIEGEL: The Sociological Discussion Group.

VDT: Did you have set themes, or you just met and let the conversation flow?

SIEGEL: No, there was a theme for each meeting, selected on the basis of the interest of the next chairperson of the meeting, who may have been host also of that meeting. Usually the discussion revolved around some book in sociology which the group leader selected on the basis of his or her

interest. So the discussion was not confined to, but usually focused on, the particular topic.

VDT: You said you took courses from Margaret Hagood.

SIEGEL: Yes, I took a course in correlation analysis with her, so I got to know her further that way.

VDT: Was that at the Department of Agriculture?

SIEGEL: Yes. The Department of Agriculture in a way of speaking runs the government general college. It's called the Graduate School.

VDT: It was in existence already then?

SIEGEL: Oh, yes. I took this course back in the early 1940s; it was in existence. The classes were held either in the Department of Agriculture or in nearby federal buildings. It wasn't long after that that I became a faculty member; that's where I began teaching. In 1948 I became a faculty member of the Graduate School and taught there for about 20 years.

VDT: So that's where your teaching career began; that's a very important feature of your career.

SIEGEL: I began about 1948, teaching a course in population statistics. This was the beginning of my teaching in that area. Con Taeuber was on the departmental committee; the department of mathematics and statistics, it was called--my department in the Graduate School. Each department had a committee to oversee the selection of courses and faculty.

I owe a lot in my own career to Norman Lawrence, who died many years ago. He was one of my first bosses--a very tough, but very fair, boss. He was in the Population Division. I worked for him for a brief time, if at all, and then he went off to the military, and I was assigned to him when he came back. Hope Eldridge, not too long after the war ended, went off to be one of the pioneering employees of the United Nations, as did John Durand. So, at first I worked for Grabill, then went on to work for Eldridge, and then when Eldridge and John Durand left and Norman Lawrence returned, I began working for him, because he was put in charge of population estimates. Through all of these years, beginning with Eldridge after I left Grabill--the short period of six to eight months with Grabill--I worked on population estimates and projections.

We found very early that we had to develop and create the methodology that we needed to do what we had to do. We often turned to chapters in Hagood's book, the well-known book at the time called Statistics for Sociologists. It was a rare book, because it had several chapters on demography, statistics in demography.

VDT: At least, the first edition. I understand that the second edition . . .

SIEGEL: It was removed from the second, yes. But it was a fat one that I, again, sort of grew up on; I read and re-read that book. In addition, about the same time I enrolled in a course with a demographer whose name I knew, Frank Lorimer, at American University--a course called "population methods," or whatever. This was before I started teaching in 1948. This was quite an experience for me. As a teacher, Frank was not always very effective.

VDT: Not effective?

SIEGEL: Haven't you heard this?

VDT: No, tell me more. I know he was quite a character.

SIEGEL: He was a tremendous scholar, I must say. He pioneered work in a number of areas in his writings. He did one of the first studies on the demography of the Soviet Union [The Population of the Soviet Union: History and Prospects, 1946]. He wrote a book that explored cultural factors in fertility [Culture and Human Fertility, with others, 1954]. But in the classroom presentation of algebraic materials, he often got kind of mixed up; I'm not sure how to say it. And he had his peculiar ways of speaking. I remember his habit of starting sentences and never finishing them. Frank had a way that could drive you absolutely crazy; you weren't quite sure what he was saying. His writing was beautifully done, but in his speech, if you recorded it, you wondered, is any sentence here ever finished?

VDT: In other words, it was difficult to make notes from him?

SIEGEL: Extremely difficult.

VDT: Was that just a one-semester course?

SIEGEL: Yes. I was flattered because, when he came around to talking about population estimates, he asked me to talk to the class. He said, "Young fellow, you work in this area, you must know something about it. Why don't you talk to the class?" So I found myself getting some notes together, back there in the mid-1940s--could have been 1944, 1945--explaining linear extrapolation and curvilinear interpolation and component methods of estimation and stuff like that. So my experience in the teaching area grew as I grabbed the opportunity that I had. There was another course that Frank taught relating to population trends, problems, and policy, and he called on me to come in and pinch-hit sometimes.

VDT: That's, of course, a tradition at American University in general. One reason it was established in Washington was to draw upon the expertise in the federal government, and there they were doing it.

SIEGEL: I later taught such a course in the Graduate School at the Department of Agriculture. At one point, I thought I wasn't covering enough in one semester and thought I should extend it to a two-semester course. I asked Henry Shryock whether he would like to join me over the year, so we alternated in teaching the classes of the same course. That was a course in population statistics.

As you see, I got into teaching rather early, in the late 1940s, and more or less continued teaching at the Graduate School to 1968. There were years or terms when I didn't teach, either because there weren't enough students or I was away. I followed the policy--I'm not sure if it was a conscious personal policy or just seemed to be--of leaving the Bureau periodically to work somewhere else, while keeping my home base. I did that with the blessing of the Census Bureau, as when I went off to CELADE, the Latin American Demographic Research and Training Center of the United Nations, even though it was clear that I was an active agent in arranging the leave of absence, because I applied for the job. I had to apply for this job of teaching and research adviser at CELADE.

VDT: When did you go to CELADE?

SIEGEL: 1962--for a little more than a year.

VDT: The Census Bureau gave you leave of absence?

SIEGEL: At that time, once you had been selected by the United Nations, they would petition the State Department for your release, and it was either a matter of tradition or regulation that the department you worked for was expected to release you for international assignments. So on the surface it all seemed to be agreeable, but in fact when I got back, I had some problem because of a technical detail, that is, I didn't return exactly as approved in 365 days. There was a one-day or so difference in the two periods and that had some impact on my accumulation of months of service in the federal government. It took several months before this administrative legal quarrel was finally straightened out.

VDT: You said you made this a regular practice, to take leave from the Census Bureau.

SIEGEL: It looks this way in retrospect. When the Census Bureau received a request in the late 1960s for someone to teach a summer course in population statistics at the University of Southern California, I offered to go. So, I'm saying, in retrospect you can see a history of someone who, while maintaining a base, went off from time to time. Now, some of these excursions were sponsored by the Census Bureau. Some of the early trips were very short. The trip to Cuba in 1959 . . .

VDT: The very year of the revolution!

SIEGEL: Exactly. I was the first new foreign consultant to Cuba under Castro. It came about this way. Our man in Cuba was Ben Gura.

VDT: What do you mean by "our man."

SIEGEL: The Census Bureau then, as now, had statistical consultants around the world in its training and consultation program. Ben Gura had spent many years in Latin America and his post was in Cuba, under Batista at the time. I knew Ben quite well; he came into Washington from time to time; quite fluent in Spanish. He was an important and close lieutenant to Cal Dedrick. Dedrick was assistant director for international programs at the Census Bureau, but in the historical archives of America, he may be better known as the man who superintended the statistical operations relating to the internment of the Japanese. That was his wartime assignment.

Gura in his role as field rep for the Census Bureau said they wanted in Cuba someone to give a course to government employees in population statistics. Ben on one of his trips here talked to me about doing it and I said, "Well, you know my Spanish is not very good." I was reading a lot of articles in Estadística and talking to friends in Spanish whenever I could, but . . . Anyway, I got the job.

Now, the contract had been signed with Batista's government in the month of November 1958. In November and December, Castro's forces were marching into Havana. The question was, would any of these previous arrangements be continued? And it turned out that Castro approved my coming.

VDT: Personally?

SIEGEL: I can't tell you how personally, but I arrived there in late January of 1959, the month of Castro's entry into Havana. Every day there was an intense experience. I learned that this government was going out of its way to make Americans think that we were all friends.

VDT: You mean that the Cuban revolutionaries and Americans were friends?

SIELGEL: Exactly. You may recall that Castro's first cabinet seemed acceptable, reasonable, to the American government. They were not radical. Castro was doing everything he could not to antagonize the United States.

VDT: So then what happened?

SIEGEL: Exactly. After I'd been there for several weeks, into March, a new newspaper was established which was called La Revolucion, and in the newspaper they began calling Castro by a name that seemed awfully foreboding to me: el lider maximo de la revolucion. That translates, Top Dog in the Revolution; "lider" is just an adaptation of an English word. That language was suspiciously like the language of authoritarianism, either Fascism or Communism. There was an announcement that terrorized, or let's say, deeply troubled my landlady, who seemed to be a nice lady--that there would be rent control, that all of her apartment rents would have to go down. The middle class--you could almost sense it--began worrying what was going to happen. There was another event; Castro fired four members of the cabinet, one of whom was the mother of one of my students. She was Secretary of Health, Education and Welfare. She had been appointed by Castro originally but he fired her, for no obvious reason, except later you could infer it was because she was not following the party line.

VDT: You were in Cuba until when?

SIEGEL: I was in Cuba for just a few months, but by the time I left, the signs were clear that the publicly stated position of the government was changing. And by July, they were throwing out the U.S. embassy staff.

VDT: So the friendship was very fleeting?

SIEGEL: It was disguised, I would say, at first and then openly changed when Castro came to this country and spoke to the United Nations. I knew that they were trying to cater to Americans, because one day my family . . . My wife and daughter were with me. My daughter was two years old or so.

VDT: You must have been nervous.

SIEGEL: No, it wasn't like that. You got used to the barbudos--bearded soldiers--going around with their sawed-off machine guns. You recognized the military of Castro and they carried their little machine guns and rifles around with them. Just as you see a policeman here patrolling the streets, you got used to it. But you could see that they were anxious in the early days to cater to Americans because they gave the three of us a private tour of the capital.

VDT: Did your wife and daughter accompany you on these various other times overseas, as at CELADE?

SIEGEL: At CELADE, sure. My daughter was in first grade then. Her name is Lorise. She went to first grade in Santiago, in a bilingual British-Chilean school, and in the course of the time we were there, she became fluent in Spanish. That was an experience which taught me how invalid are all the arguments supporting official bilinguality in this country.

VDT: Why?

SIEGEL: Because children have no problem in learning a foreign language in the context of its actual

use. The burden is on you to prove to me that a five-year-old child can't learn geography and history and whatever else in the course of a few months, i.e., be able to understand the instructions in that subject, in the native language, with total immersion in the native language and some bilingual support. **VDT:** So you think that immigrant children should learn English, the language of this country?

SIEGEL: I'm simply saying that I begin with the proposition that the burden is on you--and it's a heavy burden on you, in my mind--to prove that there should be official support of bilinguality after a short period. I didn't say anything opposed to private support. After all, you see how interested I am in learning other languages. Now, where should we pick up?

VDT: The things that you did while at the Census Bureau.

SIEGEL: I spent most of my years at the Census Bureau in the area of population estimates and projections. Then there were the trips away. We mentioned Cuba, a summer at the University of Southern California to teach population statistics, CELADE. There were many occasions when I went off just for a day or a few days to lecture. I've lectured at many, many American universities.

VDT: They would come to you; by that time you were getting well known?

SIEGEL: They would invite me to come. Even after I came here [to Georgetown, in 1982], I was getting calls to come lecture at one university or another. In 1976 one of my friends at the University of Connecticut in effect arranged for me to come there. I had thought I was going there for a day to lecture about something or other, but when she called she told me that they had a visiting professor's program, she had thrown my name into the pot, and I had won the prize. So could I come for the semester? I said, no, I couldn't do that, I had made no arrangements for that, but if we could work a compromise, I would come for half a semester. So I went off for two and a half to three months in the fall of 1976 or 1977 to the University of Connecticut and taught a course in population statistics and did some other things, that is, I had to lecture to some six or seven departments.

VDT: Was that the longest stretch you had at a university, longer than the one at Southern California?

SIEGEL: Southern California was a summer course; it ran for a month or so. All along, as I said, I was teaching from 1948 to 1968 at the Graduate School. Now, by 1970, Methods and Materials of Demography had been finished; it was published in 1971.

VDT: That enormous work, that you and Henry Shryock had been doing over many years.

SIEGEL: No, not really. In a way yes and in a way no. Margaret Hagood and Henry and I had a contract with John Wiley and Sons in the late 1950s to write a book on techniques of demography, and the thing foundered. The three of us worked at entirely different rates in rather different ways.

VDT: What's your way?

SIEGEL: Well, it's intense and relative to what Margaret Hagood was doing, it's slow and detailed. Henry probably showed the best balance of timing and detail. Margaret Hagood was writing rather general material that needed a lot of filling in, and my rate of production was not very good. You know we all had full-time jobs.

VDT: You each had a part to do?

SIEGEL: Different chapters. But we were not producing chapters fast enough to feel that we ought to hold John Wiley to this pace, or at least put ourselves in the position of having the editor frequently check up on us. There's a price you pay and that is that they keep calling you and asking, "Where are you now?" So that foundered. But we had these pieces of chapters around.

VDT: Didn't Margaret Hagood die in the late 1950s [1963]? Wasn't that part of the reason the project was never finished?

SIEGEL: Partly, but the project really, as I recall, foundered before she died.

VDT: Why did you take it up again in the late 1960s?

SIEGEL: Right--in 1967 or so. Well, for my part I recall conversations with people at AID who said they were interested in having a textbook for their consultative work and training programs around the world. I was dealing with people who may once have been Census Bureau people. There was Milton Lieberman, who had worked in the international branch at Census for a long time, and Joe Cavanaugh was involved.

Anyway, AID called me and/or Henry and said, "Would you like to do it?" If they called me I probably reminded them of this earlier work and said, "Maybe Henry and I could work on it together." We got official approval to make it a regular project, with a grant of some funds from AID. Henry was free for one year to work on this entirely; 1967 to 1970 were the years we were involved in part or wholly. I had to continue my regular work, but I could find time to work on it. I had some good people, among them, Sylvia Quick. Sylvia is today a high-ranking person in international statistics at the Census Bureau. And, of course, since it was official, in principal I had access to all the people in the Population Division to check or look at things.

But more than that, we had the group of people outside who submitted drafts and who were paid, though modestly. Some of these several associate authors wrote very good material, others wrote material that needed very heavy editing. They were not paid very handsomely. One author wrote a chapter that was just handwritten on long yellow sheets of paper. He was the last one. We kept pressing him and he came through with a pack of yellow sheets of paper and the writing was beautiful. The writing was beautiful then as it is today. Paul Demeny.

VDT: Ah, ha! You know, he's jumped into the word processor now. I interviewed him in New York a couple of weeks ago and he's got a word processor. He explained that he could never type, but somehow he was able to jump from longhand, legal-sized paper, and he now uses the processor.

SIEGEL: I don't suppose it's affected his ability to compose, because it is to me a wondrous thing that someone born abroad can handle the English language better than most native sons and daughters that I ever met.

VDT: You're absolutely right--elegant style.

SIEGEL: In that case, my work consisted primarily of adapting what he wrote to textbook format and that meant reducing his material so that there were specific examples in the text with numbers that could be tagged to the tables. I had to do that kind of editing.

VDT: You and Henry were editing and writing?

SIEGEL: We were writing several chapters and we were responsible for certain chapters. All the chapters were assigned either to Henry or to me, by us. We then were the primary editors of certain chapters if we had other authors submit manuscripts for them. Sometimes our principal role was to extend the chapter because the author very frankly, and maybe properly, said, "Well, that's not my thing." There was an example of that with Francisco Bayo; he's the deputy chief actuary of the Social Security Administration. I knew Frank well from work contacts and Frank is an excellent mathematician/actuary. But I had to edit what he did for the purposes of a textbook. Frank said to me, "You asked me to write also about the uses of the life table in demography and that's not exactly my thing." I wanted him to explain how you calculate and apply survival rates of various kinds; how you average and combine survival rates; how the life table is applied by demographers in connection with the idea of model populations.

Furthermore, we wanted this not to read like there were 12 or 13 authors, but like one person wrote every chapter, since one person would be reading from chapter to chapter. I think we achieved that pretty much. It's very troublesome to a reader when he/she reads ten articles in different detail, overlapping, and in different styles. We didn't try to eliminate all the repetition, but I think we achieved a coherent, internally consistent document.

VDT: I've forgotten whether these associate authors are given credit at the front.

SIEGEL: Yes, they're named on the second title page as associate authors.

VDT: And it says somewhere who wrote which chapters?

SIEGEL: Yes, in the preface.

VDT: But in some cases they were heavily edited or added to by you two senior authors.

SIEGEL: There were some that had to be heavily edited and rewritten. There was one chapter for which there was no precedent and the management of the chapter bounced around between Henry and me and other people in the office. That is the one on marriage and divorce. There was no precedent for a textbook chapter on that subject at the time.

VDT: Really? But there've been whole books on it.

SIEGEL: You couldn't find a book on the measurement of marriage and divorce, or even a summary chapter on it. You couldn't find any place that said: Here's what a crude marriage rate is, in combination with a range of related measures.

VDT: What about Paul Glick? He didn't have measurements then? Who finally wrote that chapter?

SIEGEL: I started out. I outlined the chapter for a new employee who had just turned up in my office, whose background included a doctorate in sociology. His name is Charles Kindermann, and he is given credit for the chapter. However, I don't think Charles was very interested in that subject. It wasn't long after that that he went off to the Bureau of Justice Statistics. The chapter then was worked on by a number of people in successive stages.

VDT: I remember that the Georgetown people at your Saturday morning classes said you tried out the techniques of the book with them.

SIEGEL: The first time the book was tested as a text was at the University of Southern California in the summer of 1969. The students had Xerox copies of drafts of the chapters. I started in 1971 at Georgetown, at Henry's invitation. I don't know if I've said that.

VDT: Not yet, no.

SIEGEL: Well, I'm saying it now. By that point, I didn't have printed copies of the book and I remember giving out galley proofs. I had several copies of the galley proofs for certain chapters and I was unloading these galleys on the students.

VDT: Talk about giving out something hot off the press!

SIEGEL: "Here, I have the galley proofs for this chapter and that. Great, I want to get rid of these anyway." It had the errors corrected on different pages. So we finished the work over the course of three years, with the assistance of a number of people, and I must say, one of the persons who contributed heavily to this was Sylvia Quick. The reason I mention her particularly is that it was her work which essentially made the selection of countries and examples for many of the problems. She would say, "How about Iran for this?", and it was often a very wise choice that made the point. She's the one who did all the library and bibliographic hunting and extraction for many of the chapters in the book. Also at the Bureau, particularly for a chapter that I worked on, Wilson Grabill drafted the heart of the material on interpolation methods, a subject which he had been teaching me in part 20 years earlier when I first got to the Bureau.

VDT: He was still at the Census Bureau at the time you were working on Methods and Materials?

SIEGEL: Yes, he was there in the late 1960s.

VDT: Another thing I've heard about you and your work--and I know--is that you are meticulous about your work and writing and expression. I'll be asking you who have been the leading influences in your career--you've mentioned many of them. But first I want to tell you that Art Campbell called you the Number one influence in his work, from the brief time he was at the Census Bureau, working with you [1952-56, in the Foreign Manpower Research Office of the Bureau]. He said in part you were such an excellent teacher. You were meticulous about writing and you expressed yourself so well.

SIEGEL: Well, in this record, I should thank Art for his generous remarks and mention how fine a scholar I thought he was and is.

VDT: Have you always made a conscious effort to be careful about your writing and expression? You mentioned Frank Lorimer not being able to finish sentences; obviously, you must have been aware of that kind of thing.

SIEGEL: Well, that was a rather extreme thing, but I'm also aware, as I said, that Frank wrote beautifully. I have no question about that. I do have a real interest in seeing the English language used correctly. So I do kind of balk at many of the popular tendencies to change the spirit of the language. There are some popular tendencies which are gross, like making every word into an adverb by sticking "wise" on the end of it. There are also a couple of others which I balk at, because I feel they so change the spirit of the language; for example, the tendency to make nouns into verbs, like, "The population will peak at 422 million," rather than say, "will reach a peak." It isn't simply that I object because it's

an innovation, but one has to be very careful about changing basic usage, particularly, for example, intransitive into transitive verbs, like, "this will impact that." Or freely resort to jargon, such as, "The bottom line is." But the commonest abuse of the English language is to give it the character of German. That is what the grammarian calls the "nominalization error," that is, crowding several nouns together in a single phrase, using them as adjectives.

VDT: I'm not quite sure what you mean. Have you got a favorite bad example?

SIEGEL: I'll make one up. Here's one that in a jargonish context might be acceptable because everybody would know what you're talking about, but if you do this to a general audience it would be extremely burdensome, as when you say, "the undercount improvement extension program." Now that one you know, because you happen to know the way I'm using the words "undercount" and "improvement" and all that. But English is constructed more like Spanish and French than it is like German and we should learn--perhaps it's a little awkward otherwise--to use prepositional phrases. I can give you examples from an article I gave to my class this summer in which the English is unfit for students to read. It was published, I think, by OMB.

VDT: Bureaucrat reports are often anonymous. Still, you cared.

SIEGEL: Sure. But on the other hand, I did often have to tell editors at the Census Bureau that they should not be so hidebound and restrictive in what they did as not to allow us to invent a new technical word. I know I've invented one word in the English language, if not more.

VDT: What's that--the word you know of?

SIEGEL: The word I know of, that I announced in a public forum and then began seeing used in articles by the people who were present, is "gerontic."

VDT: That's your word? Everybody knows that word!

SIEGEL: I could tell you the year, the public forum, and so forth.

VDT: We'll talk about your work on aging, but first on the undercount. That must have been an offshoot of your work on population estimates and projections.

SIEGEL: When I felt that I had gone about as far as I could in estimates and projections, the field I was assigned to--I don't mean that the field was completely developed; obviously, lots of things have been developed since--I thought I had better work in a different area instead, or in addition. So I then went on to explore the whole undercount issue. When I left estimates and projections per se, the next general area that I saw as an area for the Census Bureau to do research in was demographic measurement of the undercount.

VDT: What census did you work on first?

SIEGEL: First I worked with Don Akers, who did some work on the 1960 census. I think my first publication had to do mainly with the 1960 or 1970 census.

VDT: Were you the first to draw attention to the undercount, which has become such an issue now?

SIEGEL: No, no. That was noted by George Washington!

VDT: Oh, yes! That's true.

SIEGEL: That is to say, the probability of being omitted from the census; many census directors have commented on that. I believe there was a study by Warren Thompson relating to the 1920 census, or was it the 1930 census, which specifically discussed the undercount question, considering the consistency of the counts in successive censuses, and when I came on the scene, already it was clear from the publications of the National Resources Planning Board and all the work of Thompson and Whelpton in projections. They were showing two estimates of children under five: the estimated true number and the census consistent estimate.

VDT: Do you think we'll ever get an undercount really built into the census--the 1990 census seems it might come close to that--so we'll have the official "true" number?

SIEGEL: Are you saying that you think the Census Bureau will officially adjust the numbers?

VDT: Yes.

SIEGEL: Well, you're asking me more of a prediction. First, instead of answering your question directly, you understand that one of the key dilemmas that people working in this now must face has to do with the fact that in 1980 the important coverage improvement procedures added millions of persons to the count, but many of the additions might be described as spurious, because they were duplications. The improvement procedures, a few of them, included many duplications or persons erroneously included, that is, people were added who had already been enumerated or shouldn't have been. And while the count was closer to what may have been the true number, it should be troublesome that you got to that by a procedure which raises serious concerns as to its acceptability.

So, if you are familiar with the position now taken by Barbara Bailer, she is saying that we need to take a counter-intuitive position--my words, maybe her idea--that is, to sharply restrict the coverage improvement procedures of the 1990 census. That is, to keep incorporating into the census coverage improvement procedures which would tend to make it appear to approximate the truth, tended in fact to add people spuriously and not contribute to the diminution of the difference between the coverage of blacks and whites or various racial and minority groups. So one of the purposes of the coverage improvement procedures is not achieved, and, indeed, is defeated by that effort. So she's now taking a position that the census counts should be adjusted, instead of our spending as much money as formerly on coverage improvement--a logical, but counter-intuitive, position.

Now, do I think the census will be adjusted? No--not if you mean the entire census in its use for apportionment, allocation of funds, and for its general-purpose uses. I can more easily imagine the possibility of there being an official count, however achieved, without an adjustment, but maybe with coverage improvement procedures built in, used for the apportionment of the Congress, as in 1980. I can even believe that there will be a minor adjustment excluding illegal aliens for the apportionment.

VDT: You consider that minor!?

SIEGEL: Well, I say minor in the sense that numerically it wouldn't represent a major modification in the count, but it might affect the representation in some states, certainly. I'm almost saying that what I think will happen may be something which I think would be okay to happen. That is, that the census count, combined with some coverage improvement procedures incorporated into the count, would be used for the apportionment of the Congress, subject possibly to the exclusion of illegal aliens--a

demand being made by FAIR [Federation for American Immigration Reform]. And that the census data could be adjusted in specific cases where there was an allocation of funds by Congress, as required by specific legislation. In other words, if an act calls for the allocation of funds, the law could either incorporate the requirement for adjustment or be amended to require an adjustment for this particular allocation. That seems reasonable to me. Now I would not want the Congress in that case to specify the arithmetic of the adjustment, but simply that the Census Bureau should use its expertise to make the adjustment in certifying the numbers for that allocation. So I'm saying that I don't think there will be a general adjustment of the numbers of the census, and yet, under certain circumstances, adjustment could be called for. You were asking about my shifting from subject to subject.

VDT: Yes. Now into aging.

SIEGEL: Art Campbell was, in an important sense, instrumental in my getting into the aging area. Along about 1972 or 1973, he called me from NICHD and invited me to give a paper at a meeting being held at our nearby retreat, the one in Elkridge, Maryland, on what is called the "epidemiology of aging." There were a few sociologists there, but just a few in a large group of people who were mainly specialists in one or another area of medical research, whether neuro-muscular or neurological or digestive or whatever. I prepared a paper on the demography of aging, which was incorporated into the proceedings of that meeting. I subsequently decided to elaborate the paper into a Census Bureau report, because I'd done the work on Census Bureau time, more or less. So the first of the P-23 reports on the demography of aging appeared shortly after that [Bureau of the Census, "Demographic Aspects of Aging and the Older Population in the United States," by Jacob S. Siegel, Current Population Reports, Special Studies, Series P-23, No. 59, May 1976].

VDT: That became another bible of the trade, like Methods and Materials.

SIEGEL: That's right. That was the first time that the Census Bureau was in the business of the analysis of aging. In fact, if you'd asked who was in charge of "age," you would have a problem. Age wasn't thought of as a subject of analysis the way marital status or internal migration or education or income or fertility were thought of. "Everybody owns/knows age"--right?

VDT: You certainly became known as "Mr. Aging." You are known as the leading authority in that field now.

SIEGEL: Then in the years that followed, there was a second NIH conference on the "epidemiology of aging" and I gave an update of that paper in that conference. I updated the P-23 report. Two more have come out in that series [Jacob S. Siegel, "Prospective Trends in the Size and Structure of the Elderly Population: Impact of Mortality Trends and Some Implications," Current Population Reports, Series P-23, No. 78, January 1979; and Jacob S. Siegel and Maria Davidson, "Demographic and Socioeconomic Aspects of Aging in the United States," Current Population Reports, Series P-23, No. 138, August 1984]. Each accumulates and elaborates the earlier material. You don't need to refer back to the earlier reports.

VDT: Now you're working on the 1980 census monograph on the elderly population. Are you doing that on your own or with Cynthia Taeuber?

SIEGEL: No, she bowed out. It's on my own.

VDT: But you have done a few things with Cynthia Taeuber on aging?

SIEGEL: Yes. We wrote two papers, mainly on data sources and limitations of data on aging in the censuses and a general summary of the demography of aging ["Demographic Perspectives on the Long-Lived Society," Daedalus, Winter 1986]. And she is now the nominal expert at the Census Bureau. Now there is an office. When I left the Census Bureau [in 1982], aging became a subject. It never was a subject while I was there officially. In other words, there was no one who had a title related to aging. My title was whatever it was at the time [Senior Statistician for Demographic Research and Analysis]. But now the aging population is a subject, like internal migration. Cynthia Taeuber is the expert [later shifted to the homeless population and followed by Arnold Goldstein as the "expert" on the aging population]. And the international branch at Census has received lots of money from NIA [National Institute on Aging] to develop a data bank on aging and the two divisions are also working together.

VDT: And all of that originated with your input?

SIEGEL: First it was really under the table. There was no appropriation for that work; I just worked on it at the office, at home, wherever I could get it done. We're supposed to work on assignments in government agencies; we're not supposed to just sit there and dream up we would love to work on.

VDT: And that was something you thought you'd love to work on?

SIEGEL: Well, Art asked to write the paper and I simply agreed. Strictly, in a bureaucratic context, you've got to go to your boss and say, "Can I devote time to this?" Whether I did that or not I'm not sure. I can only tell you that in the first several years, there was no money for it, and then finally NIA gave me an annual grant. By the late 1970s, I was receiving a small amount of money from NIA for the work that I was already doing.

VDT: Did you also continue to work consciously on this because you realized it would become an issue of U.S. society--an aging society?

SIEGEL: That certainly was true. I kept saying, "Where could I go now to deal with the up-front subject?" In making population projections in the days that I worked on them, the big issue was fertility. You had to think of yourself as a fertility expert in the 1940s, 1950s, and 1960s. In turning to aging, you had to become a mortality expert, and I was saying, "That's really 'where it is' now. There have been fluctuations in mortality that have been missed and these need attention."

VDT: You mean the time the mortality decline got stalled, in the 1960s to the 1970s?

SIEGEL: It certainly did; it stalled for 14 years, 1954 to 1968. Life expectancy for men went slightly up and for women slightly down.

VDT: Were you the first to discover that--the famous plateau?

SIEGEL: I can't say that. I only know that I wrote all about it in that first paper and have since grouped my data specifically in 14-year blocks. In that way, you get the death rate declines sharply outlined.

VDT: In addition to the mortality decline patterns, all demographers knew that the American population was aging. The median age is going up. It will be sort of on a level for some time, but then

it will jump up because of the baby boom's aging.

SIEGEL: And there were other things that we focused on, that is, that the elderly population itself was aging, that the 85-and-over population was growing most rapidly. But the other thing we chose to point out was that the aging wouldn't continue. When the baby boom group entered the elderly population, it would get younger. And also that the new declines in mortality, from 1968, are really spectacular. These declines were to be described either as more evenly spaced over the age span or as including sharp declines at the older ages from causes that were believed previously to be very resistant to any control or progress. We're talking about a one-third decline in mortality from heart disease between 1968 and 1985.

VDT: Which you've written about a lot, whether it is from life style changes or better medical treatment.

SIEGEL: The basis is not clear, but at least we're getting more people to recognize that these changes are not mechanically attributed to "medical developments." In fact, in the broad history of medicine, medical developments don't play a major role in the declines. You have to look to socioeconomic developments, that is, public health in a sense, and more recently, perhaps to the changes in life style, including responses to mass efforts to get people to check their blood pressure and to exercise and change their diet. And that is not a medical development. The medical development has already occurred, that is, say, establishing the relation between blood pressure and cerebrovascular disease and control of blood pressure by medication.

VDT: Well, you've gotten famous for how you treated what some might consider a deadly subject.

SIEGEL: I have gotten to be very--not active in, because I'm not seeking office--but I have gotten to be very much a part of the Gerontological Society, the professional society of gerontologists. I attend the meetings regularly. I was made a Fellow this spring. So I have some credentials.

VDT: Indeed. Then there was your PAA presidential address of 1980--"On the Demography of Aging". That was one of the most memorable that has ever been done, in part for what you left unprinted--I won't say unsaid--the part that was left out of the printed version that appeared in Demography of November 1980, but which was picked up by American Demographics in the September 1980 issue, and which we were all talking about on the plane on the way back from the meeting in Denver. That was your recommendations or suggestions for what to do about the tremendous excess of women at older ages. You were really saying, in effect, "Cherish the men." You suggested free health examinations for men only, higher deductions for medical expenses for men on income tax returns, bumping rights--this is the one I really remember--that men should be allowed to bump women in getting medical appointments, then, polygamy too! Now, that was lots of fun. Didn't you enjoy that? And why did you leave it out of the printed version?

SIEGEL: I want to back up for a moment to say that I was striving merely for survival in 1980.

VDT: You mean survival as PAA president?

SIEGEL: Survival in the total sense of social, intellectual, and physical survival, looking to 1980 as having to oversee the meeting program of the Population Association, prepare a presidential address, and carry out my responsibilities in connection with the 1980 census, including the court cases. Add the summer of 1980 in Detroit; I was a witness in the Detroit suit against the Census Bureau.

VDT: Was Detroit the first to sue the Census Bureau?

SIEGEL: No, there was a suit that I was a witness in after the 1970 census. That is the case that nobody remembers: East Chicago versus the Census Bureau. That was the first big case. East Chicago, which is a suburb of Chicago in Indiana, sued the Census Bureau on the ground that the count would be inadequate because of the heavy concentration of blacks in East Chicago. I can't remember whether they were petitioning for an adjustment or not. They must have petitioned for something, since the law would suggest that if you want to win a suit you not only must show injury but you must also show that the defendant is responsible for the injury and has it in its power to do something about the injury which you consider a suitable remedy.

VDT: You were a witness for the Census Bureau?

SIEGEL: No, I was an adverse witness; I was subpoenaed by the city of East Chicago to testify about the extent of undercount in censuses. They subpoenaed me, and the government tends to honor such subpoenas of its employees. Then after I testified for them, I actually changed where I sat in the court to become a consultant to the Census Bureau.

So 1980 was the year that all this happened, including a grand conference that we had around Labor Day, a brainstorming session, to discuss all the issues relating to the undercount. In any case, I wanted to say that I had great difficulty in deciding what the topic for a presidential address would be. I asked myself: Would I talk about some aspect of population estimates, the undercount, or aging?

VDT: The three leading issues of your life.

SIEGEL: Yes. Of course, I have a fourth one now. Now I'm into applied demography.

VDT: That's right. I was going to ask about that at the very end of the interview, but now we're still on aging.

SIEGEL: And I couldn't really decide, so I started to write something about aging and barely finished by the time I had to stand up in front of the audience. I spent that morning in my hotel room writing and throwing out paragraphs or stuff that had been written; I just hadn't had enough time.

The job of preparing the program had been a massive one, but I was ably assisted by three ladies in my office, who wanted me to remember them and who gave me a T-shirt with their pictures on it, which says, "Siegel's Angels." There was Mary Kisner, my secretary, her assistant, and another staff assistant. They're the ones who did all the checking in of the papers and most of the telephone calling that is required.

VDT: The PAA president assumed responsibility for the program in 1976 [with Sidney Goldstein's tenure]. Prior to that it was the first vice-president. It was then that they switched to the president having to do everything.

SIEGEL: Nowadays, mostly, they appoint a large committee. I appointed a few people, one of whom did some work and the others of whom did nothing.

VDT: So really you and your three angels handled the program for that year?

SIEGEL: I must say that I and the three angels did nearly all of it.

VDT: You must be the first who ever did it without a large committee. Plus, you weren't at a university.

SIEGEL: Somehow I find myself trying to do many things alone or reinventing the wheel myself, without consulting.

VDT: So you're really saying all these things came together for you in 1980, so you can't be held responsible for what you said that day?

SIEGEL: This was by way of historical background. I believed in what I said. First of all, I do want to say very seriously that I consider the inequality in the numbers of the sexes at the older ages one of the leading demographic facts of our time. And one of the serious problems of our time is the inequality in the level of mortality of the two sexes. This difference in mortality or survival has many consequences of social import. They're not fully measured but easy to speculate about generally, including a lot of orphanhood, of course a lot of widowhood, and at least up to the present and to some extent in the near future, a lot of poverty. Certainly, a lot of solitary living among women. And while we can say that women manage to do well alone, I think that statement is very much in the spirit of saying that a person can do without classical music because they're enjoying rock music well enough: leave them alone. Okay, if you want to adjust to a limited life. But from my experience--and I speak not from research--I'll say that, while some studies may show that women adjust adequately to solitary living, my sense of it is that in truth most solitary elderly women are unhappy and lonely. That is the gutsy fact of the thing; that what we have here is merely an adequate adjustment. You can be adequately adjusted and still have a lonely life.

Anyway, my point there was simply to underline the facts, to emphasize the point that I saw this as a serious problem, and then simply to elicit the audience's interest by suggesting a number of alternatives, some of which were extreme for our society at this time, but some of which could be taken as serious suggestions. I have invented a word now--I recently invented it while at Cornell--and I simply say that in this I am a "masculinist" as opposed to a "feminist."

VDT: That's great!

SIEGEL: I'm not a male chauvinist. I'm simply trying to say that we should look at this problem more as a problem of prevention rather than treatment. If you talk of old age as being mainly the problem of women, what you're simply implying is that most old people are women. Of course, this is true. But I'm saying no to this as a way to see the problem constructively. The problems of old age are problems arising from the fact that men die prematurely, to a large extent. Of course, there are some problems relating to old age that are not so intrinsically related to sex. And that extra effort needs to be devoted to try to diminish this difference to change the picture. We're talking about men dying in their forties, fifties, and sixties.

VDT: Is that why you go out and get your exercise, playing tennis last Sunday, even though it was too hot to be doing that?

SIEGEL: You would think that was a foolish thing. But I do try to maintain a life style that will keep me physically fit.

VDT: We've talked about several things I had on my list. I was going to ask about your fluency in Spanish; you've explained that. Both Andy Lunde and Con Taeuber had told me you learned sign

language to communicate with a deaf person at the Census Bureau, but neither told me it was Wilson Grabill.

SIEGEL: Wilson Grabill and another staff member. He had an associate named Rex Loman, who became a professor at Gallaudet. But it was mainly Wilson; I didn't work much with Rex.

VDT: Who have been leading influences in your career? You've mentioned Wilson Grabill and Norman Lawrence.

SIEGEL: Well, of course, Henry Shryock. Henry's influence began as a kind of "tough lov" influence, somewhat like Norman Lawrence's and Hope Eldridge's in the sense that if you're a kind of self-effacing person that I tend to be, you're not comfortable with bosses perceived as severe. But you also profit a great deal from them, especially if you come to believe that they're fair in their judgments and they recognize when you do something okay. Self-effacing people tend to need supportive statements, like, "You're doing this or that okay." They react excessively badly if they're criticized, but over the long run it comes out well for them if they feel their boss is basically supportive of them. And Henry Shryock has been very supportive. It was Henry who said, "Do you want to come teach techniques at Georgetown?" He didn't have to do that. Of course, if there's a spot open, you need a teacher, but you're not going to offer it to somebody that you think can't handle it.

VDT: You mean the Saturday morning class?

SIEGEL: I said that the only way I could do it would be on Saturday, because I could not so disrupt my ordinary day, living where I do, to come downtown. I'm a kind of nut about the fact that you ought to live a kind of regular day. I'm doing something now which I describe as uncivilized; I'm teaching my class from 6 to 8 p.m.--an uncivilized time. It spoils your dinner time.

VDT: But weren't the Department of Agriculture classes at uncivilized times too? What hours were they?

SIEGEL: Uncivilized.

VDT: And you did it for 20 years?

SIEGEL: Right. Perhaps as a younger guy I was more flexible. I had a pattern which adapted to the situation. I worked to 5 o'clock. At 5 o'clock each Tuesday, I would put out the lights in my office, take off my glasses, maybe even kick off my shoes, and put my head on the desk for 15 minutes.

VDT: And take a nap?

SIEGEL: Whatever. I might even have locked the door. Then somewhere about 5:30, I would pull out a sandwich dinner that I had brought. I couldn't survive otherwise. There was no time to go to a restaurant before a 6 o'clock class and my metabolism then--and even more so now--would not permit me comfortably to talk for two hours without having dinner. That was the routine: that day I packed a sandwich dinner and sat at my desk from 5:30 to 10 of 6 and ate my sandwich. Everything was timed to the minute. Then I ran out to the car and by 6:20 or so I was at the class. Then I could have a second late dinner at home. At Georgetown [regarding Saturday morning], people were not opposed, but doubtful. And, of course, history has proved that it was a very judicious choice.

VDT: That's right; it became a famous class.

SIEGEL: The students were fresher. I was in a good state of mind. I had no traffic problems getting there; no parking problems. The students didn't feel they had to sneak a bite out of a chocolate bar. And everybody began to realize that Saturday morning usually gets wasted anyway; this was productive use of Saturday morning.

VDT: And Con Taeuber said in his introduction to your PAA presidential address that you also led the class jogging down the corridor, halfway through. Are you a jogger?

SIEGEL: Well, not in the formal sense. I know people who jog in marathons, some of them in their fifties and sixties. It's only that, from way back, I found that exercise had a rather exhilarating effect on me, if it also--I'm pragmatic about it--helped me get something done. So that while I would beef often about mowing the lawn, seeing it as a job that got you nowhere--when you were finished, the lawn was mowed but that darned grass was going to come right back--after I'd mowed the lawn--and I nearly always have mowed the lawn myself for all these 30 years--I was pleasantly tired. I simply was in a different mental state after; I could concentrate and do my work. I have experienced the mental cloudiness--I don't have a better word for it--that comes over you from persistently trying to work. So I have made a point of regular exercise. Not as a fanatic, but I try three times a week to exhaust myself physically in one way or another. These methods include dancing. I'm an addict at rock dancing, meaning, you can't put me in a room with rock music and expect me to stay still; you can't expect me to go to a musical and sit still while they're playing that kind of music on the stage--it's unfair treatment. And I'm a fair expert in ballroom dancing, as dancers go.

VDT: Let's go back. Henry Shryock was your boss as well as coauthor?

SIEGEL: He was my immediate boss a good part of the time from, I guess, the late 1940s or early 1950s on through the middle 1960s. But, of course, I was associated with him at the Census Bureau from 1943 to 1970--all the years we worked in common at the Census Bureau.

VDT: And you worked well together. Any other influences?

SIEGEL: There were some people whose gentle nature I appreciated, like Don Akers, Henry Sheldon, and Dick Irwin. Dick Irwin was a Census Bureau employee who worked on state and local estimates with me for several years. There were people outside the Bureau whom I have had tremendous admiration for in the work that they were doing. They set a goal for me, not always one I felt I could reach but one which inspired me. Among those, certainly, were Nathan Keyfitz and Ansley Coale.

VDT: You knew them best through their writings?

SIEGEL: Yes, but not solely. I had work associations with them, in the sense of talking about substantive matters with them over the years.

VDT: They are both mathematical demographers, which, of course, you became. You never felt the lack, obviously, of--well, frankly--a Ph.D.?

SIEGEL: Yes, I have. All these years I've felt I might go back and get a Ph.D.; I felt it's necessary. In the meantime, I had to go ahead and work, so I just did what PhDs do: I wrote books and papers and I taught college. But the fact of your not having it is something which you are quite aware of because

of the way the system works. It is not that I disagree with the system. I do believe that you have to deal with certificates and formal methods of stating who is qualified. I don't have any objections to the system; it's only that it is quite influential in how you think or are treated or the alternatives that are available to you.

However, as was said, in practice it hasn't resulted in any tremendous restriction on me, because when I wanted to teach I was able to teach. Of course, in this process I had to have a home base and often had to go away to teach--to the University of Connecticut at Storrs, to California at Berkeley, and just a few weeks ago I came back from Cornell at Ithaca. These were only visiting professorships, but, you see, I was able to do what I wanted.

VDT: Indeed, you did. But you do stand out, somewhat, as a leader in the field who did not have a Ph.D.

SIEGEL: I had two models of an earlier period to inspire me; neither had Ph.Ds. They didn't know that they were models for me, but I was acutely aware of the fact that Pat Whelpton didn't have a Ph.D., and I worked with him, and the other was Fred Stephan.

VDT: Fred Stephan? I don't know that name.

SIEGEL: Just talk to the older generation. He was a professor of social statistics at Princeton. I was quite aware of that in my junior days--that in academia, you could get around the lack of a Ph.D. It was known that you could get around it if you had some other professional degree. For example, if you had a law degree, you wouldn't have any problem in the area of business administration, say. But in the more academic fields, it seemed like that the Ph.D. was the necessary thing, except that there were exceptions. The exceptions are made possible by the fact that you write the text that the others use in their classrooms or you write documents or papers--instead of a formal dissertation that was reviewed by a committee in a specific field--documents of a kind that they find themselves drawn to use in their classrooms beyond all the competing possible articles that they could use for the purpose.

Of course, in this it's all-important to write for so-called peer-review magazines, not just to get the stuff published, though that's all right for some universities. For the prestigious universities, you have to have a record of writing for journals requiring peer review. Or have other credentials which identify you as being professionally competent. So I felt quite pleased--more than ordinarily--for being chosen as a Fellow of the Gerontological Society, because I don't have the usual academic credentials. If you saw the list of people who were made Fellows this year [1988], you would see that we're into a new academic era. When I was a college student, it was an uncommon thing in my circle to have a degree.

VDT: Any degree?

SIEGEL: Yes. It was not common in 1941 for someone to be a college graduate, and you were academically outstanding if you had an M.A. By the 1960s, to be academically distinctive, you had to have a Ph.D.; an M.A. alone was no longer good. Today, you're not academically distinctive merely with a Ph.D.

VDT [looking at list of persons appointed Fellows of the Gerontological Society in 1988]: The list includes people who aren't just plain old Ph.Ds. What are those other letters?

SIEGEL: They are medical people. I often now meet or read of people who are PhD./M.D.s. A Ph.D. is not enough to be different. You were in front of the crowd in 1940 if you had an M.A. Then

you had to have a Ph.D.; today it's run-of-the-mill. In the circle of applicants as graduate college instructors or people that are distinguished in the academic crowd, I now see lots of people with these double degrees. Look at all of these.

VDT: Ph.D./M.D., Ph.D./LL.B.

SIEGEL: Yes. For example, this is what you do if you want to become a specialist in legal medicine or bioethics.

VDT: Well, how many of these have got the publications you have? Let me throw out this big question: What accomplishments in your career have given you the most satisfaction? Now, you've got so many it might be hard to single them out, but--off the top of your head.

SIEGEL: You notice that I'm speechless. I don't know that I have any way of singling them out. I'm certainly tremendously pleased and flattered by all of the attention that The Methods and Materials of Demography has given me. I think perhaps I've gotten an undue share of it, because I am now easily the most visible part of the machinery that produced it. Henry is less visible [being retired]. I still participate generally in all the professional activities. The associate authors may never have been given their just share of attention and are easily forgotten. I don't think our third author, our editorial associate Elizabeth Larmon, was even named in the condensed version [prepared by Edward Stockwell, published by Academic Press, 1980]. And I don't think that Ed Stockwell has gotten his fair share of attention. I'm the most visible person, I would say.

VDT: Methods and Materials goes on being reprinted?

SIEGEL: No, the original is no longer available. The two-volume book was printed four times and is now out of print and will never be printed again, barring a miracle. The Census Bureau was simply unwilling to put up what may have been merely a thousand dollars to assure the fifth printing, although I understand from having talked to people in the Data Users Services Division only yesterday that they get requests every week for copies of the original two-volume version. The condensed version is a commercial operation and I imagine that the publisher has reprinted that as needed. It's never been re-edited, so they reprint as often as they wish.

VDT: And you say that in the sense of being visible, you are identified as the author of Methods and Materials, which is the bible in demographic techniques.

SIEGEL? Well, I'm not the first-named author. I'll tell you why I could be most visible today in another sense and that is that it's probable that the use to which the book is most commonly put involves chapters with which my name is most commonly associated. I am not particularly associated with how censuses are taken or with the collection of vital statistics or the concepts in the census, but these topics are not usually included in courses in formal demography. But I was responsible for the chapters on the life table, the analysis of death and birth statistics, the mathematical material, estimates and projections, and the measurement of international migration. I did not do the ones on internal migration or reproductivity. So I think that may be another reason.

VDT: So that has given you a lot of satisfaction. Any other of your accomplishments which you can pinpoint? You've obviously had great satisfaction from your teaching.

SIEGEL: Well, I think I share the feeling of most people who teach over long years that they enjoy

the lecturing and the classroom situation, including the sharing of knowledge, but they hate to mark papers. I find grading papers, unhappily, sometimes a depressing experience. You're troubled that you have to give a low grade to someone you think may be a nice person or a good student or who needs a good grade. You're troubled because students sometimes give you back so little of what you thought you had given them. But, of course, I am tremendously pleased by what I can almost now say are the hordes of successful students that I have had. As I sometimes say, if all of the students I have ever had got together, we could conquer the demographic world!

VDT: Lovely! You have one right here at Georgetown, Betsy Stephen, who is now on the faculty of Georgetown. Have you got some other outstanding ones?

SIEGEL: Some have gone to high places. Judy Seltzer is an official at AID.

VDT: She did her Ph.D. at Hopkins.

SIEGEL: And Catherine Pierce is second in command or something like that at UNFPA. And there are many, many others who have gone on to doctorates. We have several people now or previously at NCHS who have come through Georgetown, who were my students: Bill Mosher, Barbara Wilson, and Deborah Dawson. One is a professor at UNC in sociology: Margo Koss. Come to think of it, many of them are ladies. There are just tremendous numbers of them and they work in all fields of demography. People who've gone abroad for years--people who work for international agencies; foreign students who are officials in their own countries. And some work for state and local governments; I had Bob Scardamalia, the state demographer of New York. And what of all the established technicians who came by for the techniques course--Sylvia Quick, Cynthia Taeuber, Charles Jone, Signe Wetrogan, etc. They're all around.

VDT: Now we must touch on PAA--which, of course, is what this oral history project started with--your connections with it. Do you remember the first meeting you attended?

SIEGEL: It would be back in the 1940s. It would be at the Princeton Inn, back in that little inn, where I first met those notable people like Frank Notestein and the rest of them, all of these names that I had read about. Everybody that attended could stay in the Princeton Inn. Maybe the attendance was a few hundred.

VDT: Oh, less than that. We don't have a record, but some people think it was no more than a hundred.

SIEGEL: Could be--actually attending--sure. So those were unusual days because the thing about the PAA that we mention, among the first things about it, was all the more true then, and that is that you could get to know everybody in the PAA if you attended the meetings. It certainly was true then, and it was how I felt from the earliest days. I could meet "all" the demographers in the country.

VDT: And that was a great advantage of being in that field?

SIEGEL: It certainly was--that somehow or other it had a certain exclusiveness. At the same time, it would never become the grand organization of the American Statistical Association or American Sociological Association.

VDT: Grand in the sense of numbers?

SIEGEL: Grand in the sense of numbers, yes--that you belong to a massive organization that was commonly recognized. But, of course, in recent years, demography has been recognized, if only the word itself, including the unfortunate word "demographics."

VDT: You felt it was an intimate association; you could know everybody; and it wasn't grand in the sense that maybe ASA has more clout in the public eye?

SIEGEL: Well, I felt, of course, and still do, that somehow because of the limited recognition of the field of demography and the size of the organization, it does have less clout. But certainly it's more intimate; certainly it's more exclusive.

VDT: That was the word I heard. Do you think PAA is still elitist, exclusive? What do you mean by that?

SIEGEL: Exclusive in the sense that it includes as members a rather limited segment of the people who are involved with population work. We know that, because there are many more courses taught in population than would be reflected by the membership in PAA.

VDT: You mean that the people who are teaching those courses are not PAA members?

SIEGEL: I did a study on that once for a paper I presented at PAA--the relation between population courses and PAA membership at that time, back in the 1950s ["The Teaching of Demography," presented in a session on "Methodology and Teaching," 1951 PAA meeting]. The majority of people who teach population courses are not members of PAA. A member of a sociology department, responding to the needs of the department, has to teach a course in population because that's what's coming up in the rotation of courses. The typical situation is that that person accepts the assignment, takes a textbook, and simply follows the book. I imagine it's true in most fields. The number of people who are researchers and creative practitioners or involved with the advances in the field as such are relatively few as compared to those who merely practice it or even just teach it.

VDT: So you think that PAA was confined to those who were the researchers?

SIEGEL: Yes--at least in the early years. And I imagine it's still true. The bulk of the people who do some kind of population work or teach a course in population are not in the PAA, partly because population is still thought of, unfortunately, as inter-disciplinary rather than a discipline. I have again and again said that there are no necessary inter-disciplinary fields or, alternatively, no detached disciplines, meaning that the way the pie of academic knowledge is sliced is arbitrary. But as it stands, demography is thought of as inter-disciplinary and, as such, is not a field in itself. So you're an economist or an historian or a sociologist; you're only incidentally a demographer. And that can mean that there's somewhat less prestige and recognition of the field.

VDT: Do you think demographers brought that on themselves? Most American demographers traditionally came out of sociology, like yourself. You mentioned the discussion group of sociologists that you had. You thought of yourselves as sociologists and perhaps demographers second?

SIEGEL: Can't say. Of course, all of them were in demography as well.

VDT: You define yourself as what?

SIEGEL: I have to define myself as demographer; I have limited credentials as a sociologist. Unlike some other people, I don't consider the fact that I'm a member of the American Sociological Association as giving me credentials. I don't know exactly what credentials are needed. Well, I do have an M.A. in sociology, but I have done very little writing in that area. Most sociologists would say what I write is not sociology; it's applied demography. Some of them have contempt for that, my even hinting that it's sociology. So I find myself most comfortable in saying that I'm a demographer, because I have written in that area, taught in that area, and have some organizational accomplishment in that area. Similarly in statistics. I'm a Fellow of the American Statistical Association, so I may say they have recognized me as a statistician. In gerontology, again, I have taught courses specifically in aging and I have this particular--call it award--as a Fellow.

Let's put it this way. I taught in departments of sociology; of course, you have to have a locus of these courses and demography is not usually a separate department. But the kinds of things I do, the associations I have, are not primarily with sociologists. And so I don't have a comfortable feeling of thinking of myself as a sociologist. Maybe someday.

VDT: Let's go back to PAA. You mentioned the thrill of being able to see the great names come to life, like Frank Notestein. Who were the leading personalities that particularly struck you at the early meetings of PAA that you attended? Here are some of the PAA presidents back in the 1940s. Phil Hauser [president 1950-51]; did you ever work with him?

SIEGEL: Sure. He was assistant director of the Census Bureau [1942-46; deputy director, 1946-47; acting director, 1949-50] when I was there, so I worked with him indirectly for a while.

I joined PAA somewhere around the mid-1940s. I guess by that point I knew Frank Lorimer [president 1946-47]. From almost 1945 I worked with Pat Whelpton [1941-42]. Incidentally, later I worked for T.J. Woofter [1940-41] indirectly, when he was director of research for the Central Intelligence Agency [1949-58]. During the 1950s, I was in the international population analysis branch of the Census Bureau, working directly under Parker Mauldin, and we were doing studies of Soviet bloc countries, so I wrote a monograph on Hungary ["The Population of Hungary," International Population Statistics Reports, Series P-20, No. 9, 1958]. T.J. Woofter was general director of this project in a sense, as director of research for CIA. Earlier, he was director of research for the Federal Emergency Relief Administration, the predecessor of the Departments of Health, Education and Welfare and of Health and Human Services, and director of research of the Federal Security Agency.

[Looking at list of PAA presidents.] I can't dissociate the role of outstanding president from the role as outstanding scholar and it does put me on the spot. Partly I would make preferences in my personal associations because of their association with fields that I myself was interested in. I'm not going to think about outstanding presidents, but just use these names as a kind of suggestion list. I really felt considerable admiration for many of these people, partly because I appreciated my association with them, partly because of the fields they worked in, partly because of the particular contributions and innovations that they made. I don't want to slight anyone here; some were good friends almost. Some I also admired tremendously as persons, like Everett Lee.

Okay, I'll single out some names. There was Frank Lorimer. I had tremendous admiration for Joe Spengler as a scholar. If you ever read anything he's written, you must be impressed. I found Harold Dorn personally a very charming and scholarly man, and Dorothy Thomas, of course, a very intense scholar.

VDT: Did you have her at Penn?

SIEGEL: No, she came after I left. I knew her only sort of in the Washington scene, the short time that she was here. Then there is that admirable couple with the complementary styles--Irene and Con Taeuber. John Durand, another very intense, scholarly person. Tremendous admiration for the innovative thinking of Kingsley Davis; very conservative, but I'm impressed always by the kinds of things that he can continue to deal with. I'm tremendously impressed by just the grand production of Don Bogue. It's of good quality as well, and he's still a powerhouse. Ron Freedman and Norman Ryder I just know in a personal way; I don't follow their stuff. I have just tremendous admiration for the technical virtuosity of Ansley Coale and Nathan Keyfitz.

The next person whom I would single out and who is clearly going to be--if he's not already there--one of the really grand contributors and scholars is Sam Preston. He's still got a way to go and he's got all the makings of a Keyfitz and a Coale.

VDT: You once remarked to me that getting to be president of PAA is not always a sign that the best man or woman wins.

SIEGEL: Yes. What I was saying is this: Consider the process by which elections occur. It is unreasonable to believe that, in an election in which two candidates of "equal" stature are pitted against one another and one wins while the other loses, that the one who loses is not the next best, if not the best. And yet that person may disappear from organizational history.

VDT: I think there's been a tendency for that to happen, yes.

SIEGEL: Some people are brought back, but do you remember the many efforts to make Christopher Tietze president?

VDT: Ah, he was the one I was thinking about.

SIEGEL: And he never sort of made it. Are you going to imply that Christopher Tietze was not on a par in his field with many of the people on this list?

VDT: You're so right. He was a bit of a mentor of mine; wrote the foreword to the only book I ever wrote on my own [Abortion, Fertility, and Changing Legislation: An International Review, 1974].

SIEGEL: It's partly a popularity contest, as is the presidency of any organization. If you write Methods and Materials of Demography and a lot of copies are used in classes, you get many of the students voting for you, because you tend to vote for whom you know. If two names are on a ballot and you know the credentials of neither but one is a name which has been frequently mentioned, you'll vote for that person--name recognition. Alternatively, if there are two names and you don't know anything whatever about them, you will tend to vote for the first name.

VDT: Or if you're a woman, you'll vote for the woman.

SIEGEL: Ah, you have said it! We recognize the situation, you and I. We just had an election [for PAA president of 1989]: Harriet Presser versus Joe Stycos. There's no principle except the arbitrariness of personal contact and sex polarization in voting that makes Harriet--whom I admire--win, and Joe--whom I also admire--lose. If you ask some of these older characters, they would tend to say, "You have to get Joe in now, because if he doesn't win now, he'll never win; you're not going to put him up again." And they would say, "They both have been tremendous scholars, but Harriet would have a chance again [being younger], but not he."

There you have the idea. In political contests, you have at least policy differences. So it's partly a popularity contest, subject to knowledge of the names. And now we have the gender business and it's kind of unfortunate. I don't believe that in an earlier era voting for the officers involved as much of an issue of sex discrimination or preference.

VDT: You mean in the days of Irene Taeuber and Dorothy Thomas, they were on a par with the men?

SIEGEL: What I mean is that if a woman was up as a candidate, I don't think that the men tended to vote against a woman and that the women tended to vote for the woman. I think in that sense the elections were more just.

VDT: Many people have said that the early women stars in PAA were indeed accepted just for their scholarliness and personalities. And we've now become much more gender-oriented.

SIEGEL: Sure. I would have no question about Irene Taeuber. I mean, I wouldn't think I've got to vote for her or against her because she's a woman. It's ridiculous. This whole sex business is new to me personally; it got imposed on my thinking.

VDT: Can you date the time?

SIEGEL: Within the last few decades, simultaneous with the sex revolution. I'm not saying that my vocabulary was not sex-oriented. Sure, all my sentences when referring generally to both sexes would say "he" and "his." But I'm trying to say that at least in my upbringing and practice, it had no clear impact. One of my early bosses was a woman. I have hired many women, and I have virtually a preference for working with women. But now the sex factor has introduced its ugly head, perhaps in ways that didn't affect me earlier.

VDT: I had a question on what changes have you seen in PAA over the years and have the changes been for the better or worse. You've just put your finger on one of them: We've become more gender-oriented. That's not for the better, you're suggesting. How about other issues? What about the size of the meetings, which have gone from the small, intimate, one-session meetings at Princeton to the New Orleans meeting we've just been to [1988], with over 1,100 people there [1,115], eight simultaneous sessions?

SIEGEL: Like all organizations, the PAA is suffering from the problem of members' need to present papers as such. So, with the practical rule of the Board to keep the days of the meeting to two and a half, the crowding is just tremendous. The overlap of sessions which could be of interest to the same person is just very difficult and troublesome to deal with. In fact, given the varied interests of many of the members, every time you attend a session, you are making a decision not to attend another session that you would like to attend. And I don't know the solution now, except to extend the number of days and that seems to be a taboo with the Board.

VDT: Would you mind that--going to one more day?

SIEGEL: No, I think I would support that, although we must remember that any extension on the last day of the meeting tends to bring about a rather poor attendance at these late-hour sessions--the Saturday afternoon sessions. Maybe the trick is that you have to introduce the extra hours at the beginning, not at the end. The last day is always the last day. People will fly away in the morning and therefore sessions on the afternoon of the last day, as well as most of the morning, are not well

attended.

VDT: What do you see as the outlook for demography in the U.S.? This brings up the question of the shift to applied demography which you in your own career have made. Do you think the world is open to applied demographers?

SIEGEL: Well, the acceptance of applied demography as a sub-field by the Association certainly is aiding in the recognition of demography as a field. On the other hand, I think that most of the demographers in the Association as well as academicians outside still tend to think of applied demography as--not quackery--but a kind of dollars-and-cents business, a mechanical business, which is separate from serious demographic research and scholarship. In fact, that's reflected in the fact that most jobs in applied demography call for an M.A. degree and most jobs in demography call for a Ph.D.

So it is important for applied demographers to be sure to extend the range of their efforts to incorporate elements that one could call research demography and not simply be thought of as people who grind out numbers on short notice for arbitrarily defined areas for business uses. Rather, they need to show that they can bring to bear the full scholarship and research tools of demography to the problems, which would then mean, perhaps, tightened requirements for this sub-field as for any other--that is, a doctorate.

VDT: So we get some more degree inflation.

SIEGEL: More generally, I think the evidence is showing loud and clear that demography has begun to blossom in ways--especially mathematical--that would have delighted Lotka and Kuczynski.

VDT: What are your own plans? Obviously, you're not about to retire. You're involved in teaching and writing that census monograph and the new field of applied demography.

SIEGEL: Well, I have tremendous admiration for people who retire from the field and then turn to other pursuits. I have heard that Otis Dudley Duncan, for example, has turned to computer production of music; I have great admiration for him. I knew a Census statistician who on so-called retirement became a thespian--an actor. So I have that as an option.

But in the meantime, I will continue to do writing and consulting. I have as possibilities the updating of The Methods and Materials of Demography, the condensed version, and the production of a textbook, since an acceptable one is not at hand, in applied demography. And continuation of teaching, but not likely on a term-to-term basis; perhaps on a kind of irregular, ad hoc basis.

VDT: Like Cornell?

SIEGEL: Yes, picking up on the invitations, but maybe less likely going as far afield from where I live, since that process proves even under the happiest of circumstances--as they were in going to Cornell--disruptive for your private life and otherwise.

VDT: Well, good luck with all those future plans. May Methods and Materials of Demography go on forever!

CONTINUATION

VDT: I forgot to ask about your work on the International Demographic Terminology Project. Who's doing that?

SIEGEL: That was originally supported by the Census Bureau and carried on by the IUSSP. INED finally produced the basic version in French. In some sense I've worked on a few international terminology/glossary projects which involved demographic or gerontological terminology. In the case of the gerontological project, I worked in English and Spanish, but in the case of the demographic terminology project, I worked in English, French, and Spanish.

VDT: Any other afterthoughts?

SIEGEL: I may need a copy of this interview so I can write my autobiography.

Below is the obituary that Dudley Poston, as Chair of the PAA Memorial Service Committee in 2021, obtained from Jay Siegel's niece Cheryl Boyd. She said that it had been penned by Jay himself. Note the date of death that Jay entered for his death, his birthday July 25th of 2022, which would have made him 101 years old at his death. Sadly, he didn't make it to July 25, 2022.

JACOB (JAY) S. SIEGEL

July 25, 1921 -- July 25, 2022

Jay Siegel was an internationally known demographer and gerontologist. He holds an M.A. degree in Sociology from the University of Pennsylvania. He has had three overlapping careers, former Senior Statistician for Demographic Research and Analysis at the U.S. Census Bureau, former Senior Research Scholar and Professorial Lecturer in the Department of Demography at Georgetown University, and most recently private demographic consultant. In his 40-year career at the Census Bureau Siegel received the Gold Medal Award and the Silver Medal Award from the U.S. Department of Commerce. Siegel was President of the Population Association of America in 1980 and is a Fellow of the American Statistical Association and the Gerontological Society of America. For the past 40 years has been working privately as an expert witness, commissioned author of various technical documents in applied demography and gerontological demography, and visiting faculty in a host of universities. Jay Siegel is the author of several text books, including: *A Generation of Change: A Profile of America's Older Population*, *Applied Demography: Applications to Business, Government, Law, and Public Policy*; *The Demography and Epidemiology of Human Health and Aging*; *Demographic and Socioeconomic Basis of Ethnolinguistics*; and co-author or co-editor of the so-called bible of demography, *The Materials and Methods of Demography* (2 vols.), and the First and Second Condensed Editions under the same name. At the time of his death he had just completed a revised second edition of his *Applied Demography* text.

As a youth, Jay was an accomplished volleyball player and harmonica player. He taught himself a half dozen languages, and became literate in them and bilingual in English and Spanish. This knowledge of Spanish led to assignments in Puerto Rico, Mexico City, Havana, and Santiago, Chile. He developed an aptitude in preparing glossaries in demography and gerontology, and was solicited to work on a number of works of this kind. In his more than 45-year career as college teacher, he trained legions of students in the techniques of demography, applied demography, and gerontological demography. He will be remembered for his assiduity and concern as a teacher for the progress of his students then and in their later careers.

Hines-Rinaldi Funeral Home

OBITUARY

Jacob S. Siegel

JULY 25, 1921 - OCTOBER 26, 2020

Jacob S. Siegel was born on July 25, 1921 in Philadelphia, PA and passed away on October 26, 2020 and is under the care of Hines-Rinaldi Funeral Home.

You may leave a message for the family by [clicking here](#).



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NOTIFICATIONS

Memories

Jacob S. Siegel

ADD A MEMORY

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James McNally

May 5, 2021

Jay was a beloved mentor when I was a fledgling student at Georgetown. He became a beloved friend over the following 30 plus years. His presence at meetings was always a joy and he added so much to all of our lives. His research continues to inspire and my well-thumbed Methods and Materials continues to be my constant companion. He will be missed, but his memory will live on in so many of our lives.

Thank you Jay!

Judith Treas

March 27, 2021

In the 1990s, Jay lent his considerable intellectual stature to the fledgling Sociology Department at the University of California, Irvine, where he taught demography courses one term. A quarter century later at PAA meetings, I would still introduce him to our latest, first-year cohort of demography students. He always lingered, asking them about their interests or projects and offering a few keen insights and suggestions. Beyond my personal

appreciation of Jay, his ceaseless encouragement of new generations of demographers will always be close to my heart.

Gregg Robinson

March 26, 2021

Jay Siegel was my first supervisor at the Census Bureau, when I was an intern during the summer of 1974 (I was in the Demography program at the University of Pennsylvania). He assigned me to a project that shaped my 40-year professional career at the Bureau—developing experimental estimates of coverage for States in the 1970 census based on vital statistics and census data on State of birth. I learned so much about demographic analysis techniques from Jay (that Methods and Materials guy!), and about rigorous evaluation of census data (we discovered problems with the 1970 State of birth census data). I remembered that influential summer and mentoring by Jay during my participation in demographic evaluations of the subsequent five decennial censuses.

We miss you, Jay.

Paula Schneider

March 26, 2021

It was an inspiration to work with Jay, a man of great intelligence and friendly nature.

Jay Olshansky

March 25, 2021

I am very sad to have just learned of the passing of Jay. He was not only a mentor in my early training days, but later he became a great friend and confidant. He defines successful aging as he was active and engaged right up until the last time I saw him -- which was in January of 2020 at a living to 100 symposium in Florida. His plan was to come back to speak at the next meeting as perhaps the only person aged 100+ to attend one of these conferences.

My fondest memories are the dinners Jay and I shared at GSA every year with Len Hayflick. The three of us would spend the entire evening enjoying friendly banter and discussing current events in science. Our most memorable dinner was at Berns Steak House in Tampa -- a ritual every time we attended a meeting in Orlando. He was just brilliant and I've looked up to him my entire career. He will be missed.

CHARLES B NAM

March 25, 2021

When I first went to the Census Bureau in 1950, Jay was responsible for population estimates. On my second tour with the Bureau in 1957, Jay and I became good friends and were part of a demographers group that met monthly for discussions of population topics. When Shryock & Siegel was being developed, I was recruited to write the chapter on educational characteristics and worked with Jay on the book. It was always a treat to go to dinner with Jay at PAA meetings. He had a good humor and a sharp mind. He will be missed.

Dudley Poston

March 25, 2021

I learned today (March 25th) that Jay Siegel died last October. I was a friend of Jay's since the mid-1970s. I am sending to Jay's family my deepest sympathies. I am so very sorry to learn that Jay has died.

I knew Jay fairly well, all the way back to the mid 1970s. In the late 1970s or so Jay gave a brown bag lecture at UT Austin, where I was then a faculty member. We had a reception for him that evening at my house. I kept up with him over the years, exchanging books and messages through the regular mail, and seeing him and occasionally having dinners with him at national and international meetings of demographers. Jay was always a fun person to be around.

Jay Siegel was one of the most pre-eminent demographers in the world. I will miss seeing and chatting with him at demography conferences in the years ahead.

RIP, Jay Siegel.

Peter Morrison

March 25, 2021

On behalf of all of us who knew Jay as our coauthor, colleague, friend; relied upon his work; and socialized with him at the annual Population Association meetings: We miss you, Jay, and will always remember you as our friend across generations!

RIP from your coauthors David S., Tom B., and others; and admirers among demographers nationwide too numerous to list.

Paul Meyer

November 1, 2020

I lived in the same condo as Jay for many years and although I really didn't know him that well I thoroughly enjoyed the infrequent discussions we had. I found him to be a very intelligent, observant and bright and I will miss our engaging discussions.



A thought to hold on to

A funeral service filled with compassion and detail brings comfort and healing to family and friends. Planning ahead gives peace of mind to those closest to you. We're here for you and your family when you're ready to think about pre-planning final arrangements.

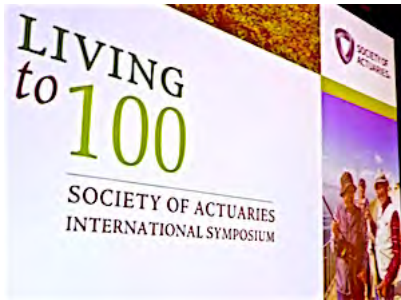
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Extreme Longevity? He Lives It

By Kerry Pechter Fri, Jan 17, 2020

Nearing age 100, social scientist Jacob S. Siegel is still vigorously lecturing and writing. He spoke about the 'demography of retirement' at the triennial 'Living to 100 Symposium' in Orlando, Florida, this week.



Relaxing on a patio in the mild Florida air after lecturing at the Society of Actuaries' "Living to 100 Symposium," 98-year-old demographer Jacob S. Siegel was living proof that human beings can be mobile and productive well into their tenth decades.

Just two years ago, Siegel, who goes by Jay, published a 719-page [textbook](#), "Demographic and Socioeconomic Basis of Ethnolinguistics," which synthesizes topics that have intrigued him since he entered the University of Pennsylvania 80 years ago.

"Clinically, I'm in good shape," said Siegel (below), wearing a sky-blue sweater over a white shirt, khakis and soft leather shoes. "For the first 10 yards, I can walk as fast as anybody. But at this age, I'm a mass of symptoms."



Siegel

Siegel gave a slide presentation on the “Demography of Retirement in the U.S” to a roomful of actuaries and others on the first morning of the symposium—the seventh in a series that since 2002 has showcased contributions to global aging research. The SOA hosts it every three years in Orlando.

As superbugs are to epidemiologists and warming seas are to climatologists, so is global aging to actuaries and demographers. All of these professions employ statistics and calculus to extrapolate from current trends so that governments, insurers and individuals can anticipate and prepare for the risks of the future.

Our DNA ‘clocks’ tick at different speeds

On Monday, a prominent researcher in a relatively new field of epigenetics—the study of chemical modifications of genes—presented his work on aging and [DNA methylation](#) rates. These are the rates at which methyl compounds ($-\text{CH}_3$) attach to or detach from the 28 million cytosine sites in human DNA. Cytosine, guanine, adenine and thymine are the four

main bases of DNA.

The rate of this mysterious but essential process is now used to measure biological age, as opposed to chronological age. For instance, DNA methylation has shown with precision that the body's tissues age at different rates. The cerebellum, the neuron-rich region where the brain meets the spinal cord, ages most slowly.



Horvath

"DNA is not just the carrier of genetic information," said researcher Steve Horvath, a Harvard-trained professor of biostatistics at UCLA. "It's one gigantic aging clock that measures aging in all of the cells that contain DNA. It's the 'Grim Reaper's' hourglass."

Tip-of-the-chromosome compounds called [telomeres](#) were once considered the body's most accurate timepiece. But DNA methylation looks more promising, Horvath told *RIJ*. It can be used to make insurance underwriting and pricing more accurate or to measure the efficacy of anti-aging drugs. It has already been used to identify behaviors—like exercise or vitamin E intake—that retard aging.

Impossible savings goals

How much money would American workers need to save in a retirement plan (defined benefit or a defined contribution) over a lifetime of work to save enough to replace 40% of their final pay each year for a 35-year retirement—from age 65 to age 100?

Jonathan B. Forman, who teaches tax and pension law at the University of Oklahoma law school, addressed those questions in a presentation at the symposium. His grim calculations showed that it would take nearly ideal conditions—steady employment, savings, raises, and

capital gains over a 40-year career and low annuity prices—to reach adequate savings.



Forman

To simplify his calculations, Forman started with round-number assumptions. He posited that, based on final salary replacement requirement of 70%, people finishing their careers with \$100,000 incomes would need \$40,000 a year from savings, plus Social Security benefits, to meet their annual spending needs in retirement.

To buy an annuity producing \$40,000 a year, they would need at least \$400,000 in savings by age 65, he assumed—erring generously on the low side to start with. To accumulate \$400,000, they would have to save at least 7.27% of their income each year for 40 years, earn 5% a year, experience an annual inflation rate of 2.5%, enjoy 3.5% annual salary growth, and vest immediately in their savings plans or pensions.

But Forman demonstrated that the average person would have a difficult time hitting even those low numbers. Americans routinely experience career interruptions, including layoffs in their 50s that deprive them of critical savings years. Many people retire at 62 and dip into their savings immediately.

At the same time, \$400,000 isn't likely to produce an inflation-adjusted \$40,000 a year. Today, according to immediateannuities.com, a *fixed* \$3,300 per month joint life annuity costs about \$750,000. As possible solutions to the savings dilemma, Forman listed a fully funded Social Security program, Social Security add-on accounts, and mandatory defined contribution plans with auto-enrollment and auto-portability.

Life insurers fall short

On the last day of the symposium, a reinsurance expert and inventor of the [Vita mortality bond](#), Ronald Klein, gave a wide-ranging talk entitled, “The Insurance Industry’s Response

to the Worldwide Aging Crisis.” He told the actuaries, “The response has not been very good.”

Klein enumerated the life insurance industry’s mistakes, including:

- Few people understand what the word annuity means.
- Life insurers are pitching annuities as investments when they’re insurance.
- Life insurers are chasing digital distribution when consumers need personal handholding
- A lower percentage of the public (23%) has a favorable view of the insurance industry. That’s worse than their view of banks or drug makers.



Klein

“Annuity issuers should be calling people when they reach age 59½ to ask if they’ve thought about turning tax-deferred savings into income,” he said. “But they don’t. I’m 59½, and nobody’s calling me.”

As for software that tries to scare young people into saving more by showing them how they’ll look in old age, he said, “This is a great idea. I love it. But it works for only one person at a time. It’s not going to move the needle on annuity sales.”

Self-reliance

Before the symposium ended, Jay Siegel talked a bit more about his almost century-long life. Asked if living for a century had been a specific goal of his, he dismissed that thought with a sharp wave of his hand. “Not at all,” he said. “When I was 25 I thought I might live to 35.”

Siegel’s father fled pre-revolution Russian pogroms in what is now Latvia and recorded those events, along with poems, in a diary that Siegel still has. Arriving in Boston and

migrating to Philadelphia, his father opened a grocery there. His mother kept what Siegel called a “filo-centric” household; she fussed lovingly over her children’s health and happiness.

Reaching age 98 wasn’t easy: Good fortune and grief struck Siegel in roughly equal measure. Among his early successes: while at Philadelphia’s selective Central High School, he won a full scholarship to Penn by acing a city-wide test.

Siegel has worked at the U.S. Census Bureau, written textbooks, and taught at, among other schools, Cornell, Georgetown, and the University of California at Irvine, as well as abroad. He co-authored “the bible” for his discipline (“The Methods and Materials of Demography”) in 1971. At age 90, he published “[**The Demography and Epidemiology of Human Health and Aging**](#).” He is currently revising his 2001 book, “Applied Demography.”

As a demographer, he observed that “individual lives are often like miniatures of vast social movements.” His personal motto has been, “Don’t dwell on what you can’t do. Instead, think about what you *can* do.” He recommends self-reliance; whenever the need arose, “I became my own lawyer, psychiatrist, and stockbroker. Never let other people do for you what you can do for yourself.”

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ON THE DEMOGRAPHY OF AGING*

Jacob S. Siegel

U.S. Bureau of the Census, Washington, D.C. 20233

I had a great deal of trouble deciding what to talk about on this occasion, assuming I had to go along with the tradition and give a talk at all. I thought of talking about the role of politics in the compilation of demographic statistics, or about errors in census data, their measurement, and their implications for public programs, or the measurement of immigration, legal or otherwise, or problems in estimation and projection of population. Or I might have given a polemic about the deplorable plight of old people. But I didn't go those ways. I held a contest and offered a prize of \$500 to the individual writing the best Presidential Address. I won the prize myself since I was the sole applicant and the judge. Accordingly, I am pleased to bring you the following extended remarks, concerned with the contributions of demography to gerontology or the demography of aging and identified by the code name GERONTOL or DEMOGAG. I speak to you as your President, not as a resident employee of the U.S. Bureau of the Census.

The demography of aging brings demographers to focus holistically on a population group, the elderly, and a demographic process, aging. The same question of scope concerns us here as in the case of demography in general, i.e., where does the central discipline of demography leave off and such other multidisciplinary disciplines as sociology, economics, statistics, psychology, and geography take over alone or with one another?

I want to identify the major interests of an "aging" demographer, i.e., a gerontological demographer, and to consider

some of the outstanding issues and problems to which demographers have contributed and can contribute in the study of aging. Time permits only a very illustrative treatment. It is important to recognize that gerontologists have not confined their interest to old age but have been concerned with the process of aging and have been examining the life course or life cycle familiar to sociologists. The concern with the process is important because the status of the elderly cannot be understood without an understanding of antecedent experiences in their life history.

DEFINITION OF OLD AGE AND AGING

Questions persist as to the definitions of aging and old age. There are social, psychological, and biological aspects of the aging process and these give rise to alternative definitions and measures of aging. There is still no universally acceptable definition of normal biological aging (Borkan and Norris, 1980; Brown and Forbes, 1976). Hence, any reference to the "aging process" still has an uncertain meaning. Researchers are asking whether biological components wear out and at the same or different rates for different individuals (Abernathy, 1979). The genetic and environmental factors in differential aging are also being explored (Schneider, 1978; Finch and Hayflick, 1977).

Cultural definitions of old age vary according to the longevity of a population, the proportion of persons in the older ages, and the degree to which persons at different ages are engaged in useful activities. In these terms a redefinition of old age is now occurring in the United States.

The demographer commonly uses simple chronological designations to define the bounds of old age corresponding

*Presidential address presented at the Annual Meeting of the Population Association of America, Denver, Colorado, April 11, 1980.

to those ages cited in the principal legislation affecting older persons. These may be 60, 62, 65, or 72. Then there are other bounds for young-old age, middle-old age, old-old age, and frail old age (Neugarten, 1974).

Old age has typically been fixed in terms of years from birth, usually an arbitrary fixed number of years. An alternative concept is linked to the level of longevity. Progress in longevity has also been measured traditionally in terms of years from birth. A very different concept of old age being advanced is based on the average number of years until death (Ryder, 1975; Jackson, 1980). Like average life expectancy, it applies to population groups rather than individuals. According to this concept, old age covers the period of life beginning with the age after which the particular groups has a specified average number of years to live, say 10 or 15 years. Accordingly, groups with lower life expectancies have lower ages for the beginning of old age. For example, the age at which males have 10 years until death on the average is lower (72 in 1977) than the corresponding age for females (78 in 1977). Blacks have lower ages when they "have 10 years to go" than do whites. We men are older than we think.

This concept can have important economic, social, legal, and ethical implications. The concept has been used in some recent court decisions (Cain, 1979; Cain, 1974). Should the economic and other privileges of old age be accorded to men and blacks at an earlier age than women and whites, respectively? A chronically ill person could claim the benefits of old-age legislation at a younger age than a healthy person. To implement the idea of old age based on age at death would pose serious problems as to the adequacy of current data and methodology. It would require a wide variety of life tables, including tables for classes of persons in various socioeconomic categories (e.g., income, marital status) or with certain types of health conditions. Life tables of this kind do not exist and would have to be

developed; in fact, the basic data on mortality and morbidity needed to construct them are lacking.

AGE STRUCTURE

The demography of aging is firmly grounded in the theory of the growth and structure of population developed by Lotka (1939), Coale (1972), Lopez (1961), Keyfitz (1977a), and Pollard (1973). Their studies and others (Lorimer, 1951; United Nations, 1954; Bourgeois-Pichat, 1979) have shown that populations age as a concomitant of the demographic transition and that, in the aging of populations, fertility tends to be the primary determining factor, overshadowing mortality and net immigration, barring unusual circumstances (Coale, 1956; Coale, 1957; Lorimer, 1951; and United Nations, 1954).

U.S. demographers have been concerned with the measurement of the relative contribution of these factors to change in the number and proportion of the elderly in past intercensal periods in the United States. A preliminary analysis of the relative contribution of fertility and mortality to the growth in the number of the elderly in the United States, by decades over the last century, shows that the actual or potential effect of changes in the number of births far exceeds the effect of changes in survivorship. Although a much larger percentage of babies born 65 to 79 years ago reach old age today than did so under mortality schedules applicable to birth cohorts which reached these ages 50 years ago, the number of births in the corresponding cohorts has shifted sharply upward also. Most lay persons and many social scientists still believe that increasing longevity, i.e., "medical progress," is the primary factor that accounts directly for the rise in the numbers of the elderly. The emphasis on the size of birth cohorts does not, however, rule out an important role for declining mortality.

A similar error of interpretation is commonly made with regard to the basis of the past trend in the proportion of elderly persons and differences between popu-

lation subgroups. The greater importance of the role of fertility than mortality is applicable both to explaining the rise in the proportion of elderly in the United States (Hermalin, 1966) and the differences in age composition between the main segments of the U.S. population. Since many government officials, journalists, and social scientists, including gerontologists, still impute the rise in the proportion of elderly largely to increasing longevity, the demographer has a responsibility to convey this message more widely.

Providing national and subnational estimates and projections of the population (including its distribution according to sex and age) is a fundamental part of the work of demographers. These figures permit an analysis of trends in aging and of the size and composition of the older population and serve as the basis of the gerontologists' studies of needs for services to and facilities for the elderly. Population projections also serve as the basis for estimating the supply of specialized personnel available to serve the elderly.

The prospects for the United States in the next half century are for generally rising numbers and proportions of elderly persons, sharp fluctuations in the increase in the numbers (reaching a low in 1990–2000, when the depression-born cohorts arrive, and a peak in 2010–2020, when the baby-boom cohorts arrive), and the more rapid growth of the extreme aged. Demographic analysis clearly establishes the fallacy of assuming that the numbers and proportions of elderly will continue to grow at past rates or even an attenuated version of these rates. Moreover, it has been the demographer who has often taken the lead in identifying the socioeconomic implications of fluctuations in the past and future numbers of births and in the future numbers of elderly.

Both "actual" and model calculations for the United States show that, potentially, if not in fact, for the next several decades the past record of births is expected to dominate the changes in the future numbers of elderly, and that the pro-

jected birth rates, in combination with the past numbers of births, are expected to dominate the changes in the future proportions of elderly (Siegel, 1978; U.S. Bureau of the Census, 1978a; and McFarland, 1978). Mortality declines will play a secondary role. Unlike past experience, mortality declines are expected to raise the proportion of elderly since, under the conditions of very low mortality prevailing in the United States, the declines are likely to be concentrated at the older ages.

Given the trend of recent and prospective fertility, there is the possibility that the U.S. population will cease to grow sometime in the next several decades and the proportion of elderly will reach unprecedentedly high levels, perhaps in excess of 17 percent (U.S. Bureau of the Census, 1978a). What are the consequences that may flow from this fact? It may be surmised, for example, that the higher prospective ratio of aged persons to persons of working age and the smaller ratio of children to their elderly parents will necessitate a greater role of government in the provision of services to the population in general and the older population in particular, but what will actually happen is uncertain in view of pressures for balanced budgets. It is important now to explore rather fully the demographic, social, economic, and psychological implications of slowing population growth, zero growth, and population decline for society as a whole and for the elderly in particular. Several important studies of the implications of slowing population growth and a stationary population have appeared, among them studies by Day (1978), Espenshade and Serow (1978), and Spengler (1978), but little work has been done on the implications of population decline (Council of Europe, 1978).

Balance of the Sexes

One of the more salient facts and problems of the older years in the United States and other highly industrialized countries is the large excess of women, an

excess which mounts rapidly with increasing age in later life. The excess has been growing and promises to persist into the foreseeable future. If we can accept the proposition that most older people do not want to live alone and that they live more happily with a marriage partner, we should seek to implement ways of reducing the imbalance of the sexes in later life or, at least, of adjusting institutionally to it.

To correct the balance demographically would involve manipulating sex differentials in fertility, mortality, or migration. I have not been able to think of any feasible policy that would have the desired effect without creating at least as many new social problems as it would solve. Many "demographic" and "institutional" solutions can be imagined but they would not generally be viewed as realistic (Siegel, 1980b). I would like, however, to send you a clear message that I am seriously concerned about the physical and emotional isolation of older women and am groping for ways to mitigate the problem through the avenue of balancing numbers. Even though I anticipate increased economic independence of women, this change will not greatly affect the situation.

MORTALITY TRENDS AND PROSPECTS

Necessarily, matters of mortality and longevity figure heavily in the demography of aging. Death rates determine the proportion of births surviving to older ages. Deaths figure prominently as a factor in the gross change in the number of elderly and account for the high "turn-over" of the elderly population. Key issues are the analysis of factors in past declines in death rates, the possibilities and prospects of extending life expectancy and even life span, the problems of measuring socioeconomic differentials in mortality, and the possibilities of reducing group differences, particularly for the sexes.

Analysis of Recent Trends

We have witnessed in the last several decades some dramatic variations in the

trends of the age-adjusted death rate and life expectation, variations which are perhaps not as spectacular as those shown by the fertility rate during the same period, but still notable. Specifically, we saw a rapid decline in mortality during the post-war years 1945-54, relative stability between 1954 and 1968, then a resumption between 1968 and 1979 of the decline at a more rapid rate than in the 1945-54 period. Little attention has been given to the analysis of these broad swings in the trend of mortality. How do we account for them and, particularly, for the stability in mortality in the 1954-68 period? Would a time series analysis of the data, such as the ARIMA-type analysis that has been applied to fertility data by Lee (1974), Saboia (1977), and McDonald (1979), be useful? Research has been initiated in the application of structural equation models to the analysis of changes in mortality in the post-war period (Land and McMillan, 1980).

Secular and cyclical analyses of mortality and identification of the social and economic correlates of mortality changes deserve a share of current attention. For purposes of planning the use of health resources and the financing of research on health matters, it is important to determine the extent to which the declines are due to new medical developments and the extent to which they are due to other factors, such as changes in the system of health care delivery, life style, and public health practices. For example, the death rate from heart disease declined sharply in the 1968-77 period even though there were no new basic biomedical discoveries; this suggests the greater role of changes in life style or in health care delivery as illustrated by the mass screening for high blood pressure.

Prospects for Longevity

Demographers have tracked the rise in life expectation from the earliest historic times to the present. Taking off from the important distinction between life expectation and life span, they have charted the increasing rectangularization or, to

use a really fancy word, orthogonalization, of the curve of survivors in relation to the human life span of about 95–105. For much of the prehistoric and historic period the techniques of historical demography have had to be used to measure the rise in life expectancy (Howell, 1976). Increasingly sophisticated methods of constructing life tables have been devised so that we can now measure life expectation with increasingly spurious precision. You see, nothing much has been done to correct for the errors in the basic data—a bigger task remaining to be done.

Projections of life expectancy have been made to fill the needs for population projections, public health planning, and insurance planning. Projections of mortality based on a deterministic age-specific death rate model or, more specifically, an age-sex major-cause-of-death rate model have long been employed in official studies, made under the sponsorship of the National Resources Planning Board, the U.S. Census Bureau (1977), and the U.S. Social Security Administration (1978). Underlying the explicit assumptions for these categories are implicit assumptions regarding biomedical developments, socioeconomic developments, environmental changes, and their interrelations. These projections have tended to be too conservative and, like fertility projections, have been unable to predict both the trend and cyclical swings in mortality very closely (Siegel, 1978; Myers, 1978a; 1978b).

We should now be ready for new approaches to the projection problem. In addition to providing alternative series of projections defining a range of uncertainty or a confidence interval, we could try deterministic cohort models, macrodynamic or stochastic structural-equation models (Land and McMillan, 1980), time series analysis by the ARIMA technique (Lee, 1974; Saboia, 1977; and McDonald, 1979) or some combination or merger of these. We could try to take explicit account of probable biomedical developments, changes in life style, etc. Will interferon, prostaglandin, and DMSO turn

out to be the hoped-for wonder drugs? Suppose everyone modified his/her life style to accord with present recommendations regarding smoking, nutrition and exercise? Can we integrate the new information on joint or multiple causes of death and the new theoretical developments on competing risks (Manton, Tolley, and Poss, 1976; Manton and Poss, 1979; Manton, Stallard, and Poss, 1980)? Projections which eliminate current socioeconomic differences, following Kitagawa (1977), or which reach the lowest current level of endogenous mortality, following Bourgeois-Pichat (1978) and United Nations (1979), should prove useful as projective tools.

The rectangularization of the curve of survivors is likely to continue in the future, but opinions differ as to whether it will continue at a slower or faster pace than in past decades. Even the more sanguine demographic futurists find it difficult to believe that the progress of the last decade in the United States can be maintained (Keyfitz, 1978). Endogenous mortality in the best countries has moved forward haltingly in the last quarter century (Bourgeois-Pichat, 1978).

A question can be raised as to whether the prospects are to be considered simply in terms of rectangularization in view of the current explorations by molecular biologists of the possibilities of extending life span (Gordon, 1979; Bourgeois-Pichat, 1980; Rosenfeld, 1976; and Havighurst and Sacher, 1977). Some biologists, such as Comfort (1979), confidently anticipate a substantial extension of life span by the end of the first half of the next century. Others, such as Strehler (1979), see this extension merely as a hopeful possibility and still others, such as Hayflick (1979; 1977), reject an expansive view, seeing such possibilities as visionary and Panglossian.

We can accept the notion of a fixed life span for each animal species, including humans, in historic and late prehistoric times, but was there a previous period, in the evolution from the anthropoid apes (*Pongidae*) to the ancestors of modern

man (early *Hominidae*) to modern man (*homo sapiens*), when hominoid life span advanced to its present level? Paleodemographers and evolutionary biologists have given us some interesting but conflicting insights here (Acsádi and Nemeskéri, 1970; Beaubier, 1979). If such evolution occurred, we should have a more receptive view of the possibility of further biological evolution, especially since such evolution may be culturally influenced to an important degree. Society may develop the know-how to intervene in effecting genetic change, possibly with increased longevity as one of the goals.

A major policy question is how to allocate public resources between efforts to "conquer" specific diseases and efforts to slow the aging process. Even more important is the question, do we want to succeed in extending life span, if there is no assurance of a better quality of older life?

The implications of an extension of life span are so tremendous that demographers and other social scientists should begin to explore them in their multifarious aspects without further delay. The whole structure of society would undergo a metamorphosis of a major sort. Among other things, we would see many five-generation families and the concept of retirement would undergo a radical change (Gordon, 1979). Assuming that the level of fertility will remain low, the proportion of elderly persons in the population will be tremendous, but then what is elderly?

Measurement of Mortality Differentials

Another concern in the general area of longevity and survival is the matter of sex, race, size-of-place, and socioeconomic differentials in mortality—their measurement, the findings, and the interpretation of results. The basic facts of sex and race differences in the United States are well known. For the former the puzzling and intriguing issues are the extent to which the monumental excess of female longevity is biologically determined and the prospects for a significant reduction of the male-female difference. The evidence on

the first issue is mixed and authorities differ in their views (Madigan, 1957; Retherford, 1975; Waldron, 1976; Waldron and Johnston, 1976; and Pressat, 1973). I have concluded from this evidence that women do have a basic biological superiority, preventing complete closure of the gap. An opposing point of view is held by some gurus of the feminist movement who reject all differences between the sexes except a little anatomy, even when they are to the advantage of women.

I do anticipate a significant reduction of the male-female difference in the United States in the next half century because of the importance of environmental factors in accounting for the present gap and the change expected in the role of these factors. I do not think that this will come about simply because some women are now working at more hazardous occupations or more responsible jobs. It will come about largely because the new generations of boys and girls are being reared with a unisex outlook, in particular the "work or perish" ethic that boys have always been reared by. This socialization of girls for holding responsible jobs, smoking like chimneys, and using four-letter words will finally do them in—up to a point. However, you cannot easily beat the biological odds, especially the natural protection of the hormonal changes and blood-clotting factor provided during the female reproductive period, and this period has been steadily lengthening. So some difference in longevity will remain.

The interesting research issues about race differences in longevity include, first, the extent to which the white-black differences are accounted for by socioeconomic factors as compared with genetic factors and, second, the theoretical basis of the well-known "crossover" phenomenon whereby death rates of blacks cross below those of whites at about age 75. In these days when racial politics is intruding into scientific research, investigation of the first question, the basis of race differences, can be dangerous to the health of your research grant. In the analysis of the

crossover of the death rates of whites and blacks at the older ages, the role of errors in the data is being minimized in the light of the observed widespread occurrence of the crossover phenomenon between paired population groups with data of good quality; hence, other, more substantive explanations are being sought (Nam, Weatherby, and Ockay, 1978; Nam and Ockay, 1978; Manton and Poss, 1979; and Manton, Poss, and Wing, 1979). The prevailing explanation for the lower mortality of elderly blacks sounds like the Darwinian theory of natural selection, i.e., survival of the fit. A refined version of this hypothesis offered by Manton (1980) is that in populations which are "heterogeneous with respect to their endowment for longevity, a crossover or convergence of the age-specific mortality rates can occur if one population has markedly higher earlier mortality." This may be the ultimate answer but the matter merits more study.

The last national study on the topic of socioeconomic differentials related to 1960 (Kitagawa and Hauser, 1973) and, although some local studies have been made since then (Lerner and Stutz, 1976), there is need for an up-to-date national study. Several methodological proposals have been put forth. They include a replication of the 1960 census—death certificate match study, a retrospective study of a sample of deaths, ecological correlation analysis with county areal units, and a longitudinal follow-up of a sample from the census. The research is important because of its bearing on public health planning, particularly in the area of occupational and environmental health, prospects for reducing mortality, the preparation of projections of the socioeconomic characteristics of the older population, and the construction of life tables for these groups to assess their relative longevity for legal and other purposes. Each of the procedures mentioned has serious problems of design, interpretation, and cost, but I hope a new national study can be initiated soon.

Implications of Variations in Mortality for Variations in Longevity

Demographers have long recognized the important difference in the variation between death rates and the variation between the corresponding life expectancy values. The broader implications of the difference in the way measures of mortality and measures of longevity vary have only recently been explored. These implications involve the design of standardization formulas in comparative mortality analysis, the relation between general declines in mortality and increases in longevity, and the effect of reduction in specific causes of death on future life expectancy. More specific questions posed are: What is the effect on life expectancy if age-specific death rates are reduced by a fixed percentage? By percentages varying with age? How does this relation vary with the general level of life expectancy? How do the alternative measures of mortality and longevity differ in their indications of the comparative mortality of two groups, e.g., males and females? What is the effect on life expectancy when death rates from cancer or heart disease are reduced by a stated percentage or eliminated? Keyfitz and Golini have made an important contribution by formulating these relations mathematically (Keyfitz and Golini, 1975; Keyfitz, 1977b), and Siegel and Fonner (1976) have analyzed the relation between changes in age-adjusted death rates and changes in life expectancy empirically on the basis of data for the United States since 1900.

Health of the Elderly

I have never been sure whether health is an appropriate segment of demographic study, but most demographers interested in the elderly population think so and surely there are important interrelations between the health of older persons and demographic changes. Demographers have given attention to the health status of the older population, the health care delivery system, the allocation of re-

sources for health care, the relation between morbidity and mortality, and, particularly, the anticipated demographic changes which would affect the demand for health care and the provision of health services (Kovar, 1978; Morrison, 1979; Brehm, 1978; and Rice, 1978).

Indexes of health status indicate greater health problems and needs among the elderly than other age segments of the population. Most elderly people could be in much better health if they received the best care available and followed a more healthful life style, apart from new medical developments. Prominent among the obstacles to the receipt of better care are the health practitioners' lack of up-to-date knowledge and skills (resulting at times in iatrogenic illnesses), the maldistribution of health care resources, the philosophy of health care which stresses treatment rather than prevention, financial barriers, and attitudes which keep persons, particularly men, from seeking health care when needed (Antonovsky, 1979). Some measure of these obstacles could be secured by a KAP study on health care—yielding information on the public's knowledge of the existence of treatment methods, personnel, and facilities, their attitude toward securing health care, and their actual practice in this regard. These obstacles exist in greater degree for the inner-city and rural population than for the remaining urban population. There are signs of changes in the recent emphasis on "wellness," self-care, and prevention and in the increased tendency to adopt life styles which are healthful (weight reduction, exercise, avoidance of smoking).

Many important bioethical issues impinge on the demographers' studies of aging. Bioethical issues arise, first, in the decisions regarding the provision of health care to elderly people. Public and private budgets, involving as they do the allocation of limited resources, usually make explicit decisions as to various health programs on prevention, maintenance, and treatment and, hence, implicit decisions

as to who shall live or die. We need to face more directly the issue whether it is more useful to allocate funds to maintain the "life" of some old people at all costs or to apply funds to preventive programs affecting younger adults. The latter course could, in the long run, be more effective in maintaining and improving the general quality of life among the elderly and reducing the inequality of male and female death rates. The question is not "How can we save everyone?" but "How can we apply the most reasonable rule of triage?" Should we finance more life support systems, more mobile cardiac units, or more highway safety improvements? Should we have more cancer research or more heart disease research? We are beginning to have the demographic information in terms of lives saved and years added by the elimination of specific causes of death (Preston, 1974; Keyfitz, 1977b) and the economic information in terms of costs, to guide us in some of these difficult planning and policy decisions. Will they be used?

Other bioethical issues arise with respect to the individual's decision as to the amount and type of health care he or she wishes to receive. As the proportion of older persons in the population increases and the older population itself ages, the relative frequency of persons with incurable and intractable conditions, both physical and mental, including terminal and hopeless conditions, will increase. This prospect adds impetus to the desirability of pursuing intensive research into the complex bioethical issues relating to "life with dignity" and the "right to die" and suggests the need to explore these concepts in the context of basic human rights (Haug, 1978; Pressey, 1977; and Williams, 1973). In this view we expand the concept of the right of every child to be born wanted and well, entrusted as a correlative obligation to every prospective parent, and add the principle of the right of every adult to decide whether he or she shall live or die, limited of course by certain general obligations pertaining to all

basic rights. I urge the National Institute on Aging to begin to consider the "right to die" as a basic human right and to explore how this concept can be integrated into its goals for the improvement of life for the elderly and society in general.

GEOGRAPHIC DISTRIBUTION AND MOBILITY

Population geographers conducting gerontological research have directed their attention to analyzing the spatial distribution of older persons, including the role of migration, and evaluating the effect of the natural and physical environment on the demographic behavior of older persons. Wiseman (1978) has presented an introductory synthesis of the field.

Demographers, among them Kennedy and DeJong (1977) and Cowgill (1978a; 1978b), have noted the emergence of gerontic enclaves—concentrations of elderly persons—in the central parts of large cities and have measured the residential clustering of age groups in cities. Others have shown, however, that the bulk of urban elderly do not reside in urban "ghettoes." Reconciliation of these studies depends on the meaning of the concept of concentration. Some analysis of the dynamics of neighborhood changes which lead to gerontic enclaves have been made (Golant, 1979). Principal factors accounting for them include low income (which inhibits desired out-migration) and voluntary decisions to stay in the same area with friends and neighbors of the same ethnic background and age class. Residential clustering of the elderly in cities can be expected to continue (Cowgill, 1978a).

With the aging of the post-World War II pioneer settlers in suburban metropolitan America, we would expect to see the emergence of gerontic enclaves there also. In fact, several researchers, among them Golant (1979) and Gutowski and Feild (1979), have observed and analyzed the concentration of elderly persons in suburbia. Measurement of the "natural" concentrations is confused by the "artificial"

concentrations in congregate housing, retirement villages, and nursing homes, but these artificial concentrations can be removed from any analysis. The history of the inner cities is repeating itself with a variation. As the family grows older, the young members leave the parental family to work or attend school elsewhere, and the oldsters remain behind in their old neighborhoods. Although many drive automobiles, soaring gasoline prices and the cutting back on special services to the aged augur an old form of isolation of the elderly in a new environment.

We lack detailed data on the level of and reasons for mobility at the older ages. The reasons for movement at the younger ages do not apply (U.S. Bureau of the Census, 1979); conditions related to job and career are obviously far less applicable than noneconomic determinants. Moreover, earlier retirement is freeing a larger proportion of the population from living where opportunities for work are located. Changes of residence related to family and housing needs, albeit important at the younger ages, begin to dominate at the older ages, along with reasons related to climate, recreation, and health, especially for the part of the older population that has the necessary wealth to move. The changes in housing needs associated with the stage of the family cycle have been charted in some detail (Foote et al., 1960).

The geographic location of the elderly is typically not a result of active voluntary adjustment on their part, however. As Golant has noted, at the older ages, inertia, in addition to low income and neighborhood ties, retards adjustment to desires and needs, and geographic concentrations of the elderly tend to result from immobility rather than mobility (Golant, 1972). Elderly people are generally just left behind in the old, usually decaying areas—in the small rural towns and in the inner zones of large cities—while younger persons migrate out to improve their lot. Florida and Arizona retirement communities are the exception.

The myth of heavy migration of elderly persons to attractive retirement areas persists and turns attention away from the real need to deal with the problems of the elderly in the rural communities and older urban areas of the United States.

While mobility and migration rates appear to decline steadily with increasing age after youth (U.S. Bureau of the Census, 1978b; Shryock, 1964), we do not know exactly how mobility and migration rates vary at the oldest ages. There is some evidence that they turn up again at extreme old age, possibly because the very old move to nursing homes and other institutions or to the residences of their children or siblings (Heltman, 1975). The migration of the elderly—patterns and characteristics—and their community impact apparently are quite different from general migration and yet have received little attention. Carefully designed models of migration and residential change of the elderly, including models of the decision-making process, could be valuable additions to the body of research on the movement of the elderly. The state of knowledge concerning the migration of the aged in the United States is discussed in a special issue of *Research on Aging* (Longino and Jackson, 1980).

THE LIFE COURSE

The measurement and analysis of the life course or life cycle are of special interest to gerontological demographers, particularly because of the relation of the process of aging and the life course to the characteristics of the older population (Riley, Johnson, and Fonner, 1972). The basic pattern of the life course is childhood, adolescence, adulthood, and later life, or, in functional terms, participation in education, work, marriage, parenthood, and retirement. However, the characteristics of each cohort (e.g., its size) and period changes (e.g., specific historical events, including social and environmental changes) modify the basic pattern of the life course and make it quite variable, as Riley (1979) has forcefully indicated.

Variation from the "normative" ordering of events has been analyzed by Hogan (1978) among others.

We can then identify three general factors affecting the life course: age, period, and cohort effects. The problem posed for the demographer has been to identify these sources of variation in specific demographic aspects of the life course, to try to separate their effects, and to analyze the relative contribution of each factor to the demographic change under study. The problem applies, for example, to the analysis of labor force and retirement patterns, marital patterns, migration, and mortality, etc. Some scholars, including Uhlenberg (1979), Ryder (1965), Riley (1979), and Robin et al. (1979), have dealt with the conceptual problem; others, among them Ryder (1964), Honig and Hanoach (1979), Farkas (1977), Duncan (1979), Pullum (1978), Clogg (1979), and Glenn (1976), have worked on the disaggregation problem. Farkas, and later Duncan, for example, have estimated the separate effects of age, cohort, and period factors on labor force behavior by regression methods using data from the Current Population Survey.

Another important contribution to life course analysis is the work by demographers in the construction, extension, and generalization of multiple decrement tables. Such tables have proved useful in the lifetime analysis of a wide range of demographic, social, and economic variables, e.g., labor force participation, migration expectancy, and family formation and dissolution. Commonly, these tables represent the experience of a synthetic cohort subject to death and other factors of change and describe the complete lifetime or partial lifetime experience of the cohort with respect to the variables. New developments involve use of data for real cohorts, as in the tables of working life prepared by Fullerton (1972a and b), the extension of these tables to include increment-decrement components, as in the tables of working life prepared by Smith (1980), the design of a generalized model

of multiple increment-decrement tables by Schoen and Land (1979), and the construction by Trussell (1980) of life tables with socioeconomic covariates applied as proportional hazards in tables of marital dissolution.

LIVING ARRANGEMENTS AND FAMILIAL SUPPORT

Marital Status and Living Arrangements

One of the principal areas of the interface between demography and gerontology is the study of the marital composition and living arrangements of the elderly (Glick, 1979; Soldo, 1978) and the associated process, the family cycle (Ryder, 1977; Spanier and Glick, 1980). A characteristic feature of the older population is the large proportion of women living alone—typically widows—as compared with men. The great majority of elderly persons have living children but only a small proportion live with them.

As is well known, the sharp difference in the marital status of older men and women results from the higher mortality of men and the cultural norm of men marrying somewhat younger women. These factors account for a long and increasing period of widowed life for women, now about 16 years for women who become widowed at age 65. We know a lot about how the longevity gap has been widening, at least for all men and women if not for married persons separately. We know less about the changes in the gap in the age of married couples at mid-life or in the age of partners in second marriages, in which a large and increasing proportion of couples find themselves. Can and should society provide incentives to reduce or even reverse this gap in the interest of extending the years of joint married life? How many men would be willing to marry a woman several years older than themselves, for example?

The proportion of older women living alone has increased sharply in the last few decades (Michael, Fuchs, and Scott, 1980). What are the social causes and

consequences of this change? It is not a result of a rise in the death rates for older married men although it does correspond to a decline in past fertility rates. Have children been ungratefully abandoning their aging mothers? Not really. We have evidence that elderly people prefer separate homes; yet they want to, and do, maintain close ties with their children and grandchildren (Soldo, 1979; Shanas, 1979). Older people prefer the assistance of their children to the assistance of neighbors and the organized community when they need help.

We can speculate whether the economic and social changes of recent years will lead to significant changes in the living arrangements of older people. So far as expansion of private housing is concerned, the relative superiority of age-segregated housing (e.g., retirement villages) and age-variegated housing remains an unresolved issue, but this is a question where consumer preference should probably prevail (Golant, 1980). In spite of the pressure on budgets, it is to be hoped that greater public support will be given to programs which permit older people to live alone independently in their own homes, such as meals on wheels, home health aides, and visiting homemakers. Many older people may want to move in with their adult children as a result of the spiralling cost of living, including particularly the high cost of fuel for home heating and private transportation. Some incentives, such as tax rebates, and other social "supports," such as more gerontic day-care centers and "granny sitting" arrangements, will be needed. The developments in semi-independent living, such as congregate housing and foster homes for older persons, will mean more widespread living with nonrelatives, but they may help retard the trend toward institutional care.

Much attention is being given to the utilization and financing of long-term care facilities because of the problem of high costs and doubts about the appropriateness of institutionalization for many el-

derly persons (Soldo, 1978). The size of the institutional population has been growing rapidly because of the rapid increase in the numbers of older persons, the aging of the older population, and the diminution of the relative numbers of persons in the family support system. Some of these factors should shift within the next few decades and the institutional population may grow more slowly.

There is now considerable information regarding the size and characteristics of the institutional population (U.S. Bureau of the Census, 1978c), but information is lacking on some key parameters such as the proportion of the population at age 50 that can expect to spend some of its time in an institution and the average number of years people who have entered an institution after age 50 will spend in an institution. These measures will supplement the less informative figure on the percent of the elderly population in institutions at any particular time (Kastenbaum, 1973). We should engage our trusty multiple decrement tables to work these out.

Support Systems and Familial Dependency

Gerontologists are concerned with the personal support systems and "social convoys" of older persons since these support systems have important implications for the social, psychological, and economic well-being of older persons. Information on such support systems are best secured through demographic surveys calling for data on intra- and extra-household relationships (Gokalp, 1978). Such surveys can tell us directly the proportion of older persons who have living siblings, children, grandchildren, and even parents, and their "linkages." Although a number of small-scale surveys have been conducted to determine how older persons relate to their relatives, friends, and neighbors, up-to-date national data are not available (Shanas, 1979).

The need for national measures of the social and economic dependency of older persons has partly been filled by de-

mographers by the use of various measures of "age dependency" and relative intergenerational size (Clark and Spengler, 1978). These measures simply relate the numbers in various age categories to one another. Some of these serve as measures of dependency of the elderly on their families, particularly their children, while others serve as measures of dependency on society as a whole. The former tend largely to be surrogates for measures of social and psychological support of the elderly, whereas the latter tend largely to be surrogates for measures of economic support. The ratio of persons 65-79 to persons 45-49 is a type of familial dependency ratio relating the elderly to their middle-aged children. The ratio of persons 80 and over to persons 60-64 is a type of familial dependency ratio relating the extreme aged to their young-old children. The prospective shifts in the age structure of the population suggest that the extent of the problem of familial support of the aged will fluctuate in the future, reflecting mainly past trends in fertility rates, and that, in general, it will tend to become greater than at present and at times serious (e.g., about 2020).

Age ratios are not very good indications of the level of familial dependency and serve to provide only rough indications of its trend. We can now derive only crude estimates at best of the direct measures, such as the proportion of elderly persons with one or more living children, especially daughters, or the proportions with one or more living siblings, one or more living grandchildren, or one or more living children who are themselves elderly. Direct national information on these important aspects of social support is needed. The decennial census is not a suitable instrument for securing information about relatives of household members not resident in the household and a national survey on kinship networks is needed. Such a study would not only identify the kinship networks but also measure the social contacts of elderly persons, including the effect of distance

and migration and the role of a variety of forms of communication.

SOCIETAL DEPENDENCY, WORK, RETIREMENT, AND USE OF TIME

Societal Dependency

Measures of societal dependency in the form of age ratios tend largely to be used as surrogates for measures of economic support even though they should be seen merely as representing the contribution of the age composition of the population to the economic support problem. The ratio of persons 65 and over to persons 18 to 64 is the commonest type of societal dependency ratio. Where the data are available, the ratio of elderly nonworkers to workers should be employed in lieu of mere age ratios to represent the economic dependency of the elderly. In either case, the level and trend of the economic burden of the dependent elderly needs to be considered in the context of the level and trend of the economic burden of the total dependent population, including children (Schulz, 1980; Clark and Spengler, 1980). While the rising dependency of the aged has been more than "offset" by the falling dependency of the children, the economic support problem of the elderly is the greater one when one considers public support only.

Work Experience and Retirement Prospects

The potential impact of the changing work experiences of women on their prospective situation in old age has been subjected to little analysis as compared to studies for men (Rix, 1979). Furthermore, the data available for assessing these impacts are inadequate. For example, past projections of labor force participation of women have persistently tended to underestimate the actual levels (Flaim and Fullerton, 1978). This may be a result of the fact that underlying theory has been lacking or defective. Rix predicts, for example, that there will be substantial increases in female workers ratios, even if the future rate of economic growth is low,

as a result of inflation, divorce, growing insecurity, coping with "enforced leisure" and loneliness, need to support an aged parent, lack of private pension coverage, and a possible statutory rise in age at which persons may receive benefits. By the time the baby boom cohorts begin to enter the retirement ages after 2010, we can expect greatly increased employment opportunities for women, if not a general labor shortage.

An important issue is the relative occupational status of males and females as it may affect the economic status of women in later life. Women may remain occupationally disadvantaged for more than a brief period if this disadvantage is measured in terms of the male-female difference in earnings. The signs are quite favorable for a rapid diminution of the inequity gap, at least with respect to educational opportunity and possibly with respect to the willingness of employers to hire female workers. The signs are less favorable for an early end to the inequality gap in the work status of the sexes. A major obstacle may be the limited availability of jobs in the professional and managerial job areas. Most of the new jobs that will be created are likely to be located in job areas where women have traditionally worked—ones which are neither remunerative nor prestigious. Up to now, women have been socialized to go into such jobs rather than professional and managerial jobs. A new task in counselling women is to impart to them a sense of responsibility for their own destiny, so that they will choose to prepare for occupations that provide greater rewards.

We can anticipate an evolution in the traditional life course pattern of education, work, and retirement which could result in substantial changes in this pattern (Morrison, 1978). The pattern is being reexamined in many quarters, especially by the National Commission for Employment Policy. Other patterns being considered involve alternating periods of study and work, punctuated by periods of leisure and keeping house, or simultane-

ous combinations of them. Periodic retraining will be essential to keep up with new technological developments and the "knowledge explosion"; by the year 2000 the average worker will have to be retrained at least twice in his/her lifetime to be able to continue in the "same" job.

It appears to me that a major revolution is in prospect with respect to the retirement situation of older women. This prospect is now adumbrated by rising labor force ratios, more continuous work history, more full-time work, changing attitudes about the employability of women, more remunerative occupational roles, and changes in domestic and labor law. Women may, in fact, actually tend toward an older retirement age than men in their efforts to put in enough years to qualify for adequate pensions (Sheppard and Rix, 1979).

The retirement situation and outlook for men are also undergoing change. More and more men are choosing early retirement as Social Security coverage has been extended, private pension plans have become more widespread, and the workers' pension status has become legally protected through ERISA. At the same time the nature of retirement has been changing as many employees "retire" to new full-time, part-time, or intermittent jobs, quit a principal job to continue in a second job previously held, or take on volunteer work on a regular basis. This outlook should be qualified by the prospect of countervailing influences, such as a possible rise in the "mandated" age of retirement if problems of financial solvency plague the Social Security system.

Measurement of Retirement Changes

There are a number of questions relating to retirement that merit the demographer's exploration. First, the concept lacks a standard operational definition. After specifying a lower age limit in later life, say age 50, and excluding withdrawals from the labor force due to deaths, the definition should still incorpo-

rate a particular concept of retirement because so many "retirees" continue to work part-time or even full-time. Retirement from the principal job of one's work career or receipt of a pension or annuity could be one basis. The data would only be useful if the "retirees" are classified according to their work status after retirement. The concept of retirement of women presents special problems which promise to diminish as worker ratios for women rise and become less irregular.

We need also to improve the basis of measuring the change in retirement age, now roughly inferred from changes in worker ratios. Tables of working life could be a useful tool for this purpose. They could be improved by incorporating separate mortality rates for persons in the labor force and those not in the labor force (prior to joining the labor force and after retirement); however, the basis for this refinement needs to be developed.

Generation tables of working life, such as those of Fullerton (1972a and 1972b), can give a more realistic assessment but, as for any cohort analysis, such tables require data over many years and the results cannot be assigned to a particular year. Kestenbaum has used the Continuous Work History Sample of the Social Security Administration to measure trends in retirement age (Kestenbaum, 1980). Longitudinal data on retirement, such as obtained in the Social Security Administration's retirement history study, are ideally informative about the process and experience of retirement (Irelan, 1972; Sherman, 1974). While it is costly to repeat such studies, we continue to need the kind of information which only such longitudinal studies can effectively provide.

Retirement Policy

The prospective changes in labor force participation and retirement practices and other prospective demographic changes, including particularly the increase in aged dependency ratios and in life expectation, have profound implications for retirement

policy. Because many demographic elements are involved, this is a particular area in which demographers can make a contribution. Demographers can identify and quantify the demographic factors which affect the solvency of the Social Security Trust Fund, can aid in evaluating their relative effects, and can help clarify the policy options relating to the management of the fund. This effort could include the trend analysis and projection of total and aged dependency ratios, economic dependency ratios, life expectancy, years of expected working life, and years of expected non-working life. It would be useful to have projections of employment (full-time and part-time work) and post-"retirement" labor force participation, in addition to the basic projections of the age-sex distribution of the population and the labor force.

The Social Security Trust Fund will be under increasing pressure as a result of economic (e.g., inflation), demographic, and social factors (e.g., rising expectations); however, the real crunch will come after 2010 when the baby-boom cohorts enter the older age bracket. To bolster the solvency of the Social Security Trust Fund, public policy could conceivably be designed to manipulate various demographic factors such as the death rate, the birth rate, labor force participation, the retirement age, and the pattern of work after "retirement." We need to design models of the effect on Social Security funding of extending life expectancy and work life for varying periods of time, in combination with shifts in the other factors, in order to evaluate these possible policies.

Contributions to retirement-age policy are also being made by those demographic analysts, among them Keyfitz (1973), Cantrell and Clark (1979), and Stewman (1980), who have examined the effect of demographic factors such as population growth rates, death rates, and worker ratios, and mandatory retirement and hiring-exit policy, on prospects for promotion. Cantrell and Clark have ana-

lyzed the extent to which rapid population growth contributes to opportunities for promotion and the extent to which raising the retirement age retards them or lowering it accelerates them. Their model can hopefully be extended so that it can be used to project the effect of prospective mortality, worker ratios, and mandatory retirement ages on the trend of promotion opportunities.

Use of Time

There is need for national data on the use of time by the elderly. The demographer can play an important role by applying his/her skills in the design of an appropriate sample survey which would secure a variety of relevant demographic data in addition to data on the use of time. The orientation on the concept of major activity usually applied in censuses and surveys needs to be restructured for the elderly. The traditional classification on major activity includes working or looking for work, enrolled in school (graded system only), keeping house, unable to work, or retired. For elderly persons the categories of work need to include or distinguish volunteer and paid work; pre- or post-retirement work; enrollment in school outside the graded system; shopping and business visits; personal visits to friends, neighbors, and relatives; home entertainment; other leisure activities, etc.

A FINAL NOTE

If you have followed the main drift of this discourse, you will recognize that, in addition to the confessed gerontologists among you, there is a little bit of the gerontologist in all of you. Nearly every one of you has dealt with time or age as a variable in demographic analysis, has been a student of the dynamics of population structure, or dabbled in subject fields having a particular concern with aging and old age, such as mortality and health, family structure and living arrangements, labor force participation, and income and poverty. As you see, you are all actual or

potential contributors to the demography of aging.

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