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I read that you began your career as a psychologist studying the brain. Was there a specific turning point to focus your attention on gerontology?

In 1947 I accepted a position with the National Institutes of Health and I was assigned to a gerontology unit in Baltimore, Maryland. Later, at the Institute of Mental Health we did a study of aging in relatively healthy older men, and it got me more involved in the role of the nervous system in relation to aging, and also aging itself. As a result of the research project we published a book called *Human Aging, A Biological and Behavioral Study*. It was published by the Public Health Service about 1960.

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When did your career as a psychologist begin?

At the same time. Its two mixed things. In the past the nervous system was regarded as sort of a bystander to aging. It wasn't considered important. Even in such issues as cardiovascular disease, the nervous system wasn't given a serious position. Increasingly, it was apparent that the nervous system was the primary regulatory organ of the body and regulates everything from respiration, temperature, blood pressure, and heart rate. In addition to that, the nervous system modifies its behavior as a function of the experience of learning, but it took a long time for that to be accepted.

I heard that your son is also a well-known scientific author in another field. What field is he working in?

He is one of the Assistant Directors of the Human Genome Project at MIT.

Do you have other children?

I have a daughter who married an Englishman and lives in England, and I have a son who is a lawyer for the Oakland Raiders football team.

And your wife is also a gerontologist?

That's correct.

You're known as the father of gerontology. What is it about the impact that you've made in the field to make people think of you in that light?

I realized that there were many different factors contributing to human aging, it was not just a single thing. Certainly genetic background contributes to human aging, but the expression of our genetic inheritances is modified by the environments in which we grow up in and the experiences

we have over a lifetime. So you get a modulation of genetic expression in relation to the environments in which we grow up in and grow old in. I call this the ecology of aging. My contribution to the field has been an emphasis on the integration of influences on aging.

Is one variable stronger, between lifestyle and genetics?

It's difficult to pick a single variable as a major influence because it varies with what you are trying to express. It depends on what one is predicting; length of life, life expectancy, the quality of life, mental abilities, depression, etc. There is vagueness in the field in defining what you are talking about when you're talking about aging.

What has been the highlight of your career so far?

One of the things I got very interested in was the speed of behavior changes with age. The processes of the central nervous system seemed to slow down with age. That was not taken seriously early on, and was thought to be due to peripheral factors. Now it seems to be a function of the central nervous system and it's often called speed of information processing.

Processing slows down but a person's ability to learn never stops with age, correct?

Right. One thing that was overlooked in the early days was the fact that your vocabulary size continues to grow throughout adult life. The amount of information that is stored inside the nervous system increases with age. You know many more words. What changes is the speed of access to that great store of information.

What are the biggest areas of research that will be addressed in the next 10 to 15 years in gerontology?

I think one of the themes coming up is the integration of influences. In fact, we were talking about that more in biology today. We've become experts at taking things apart, but we don't put much energy in putting the picture back together again. One of the issues for integrated gerontology is how the different systems of the body interact; the immune system, the nervous system, the cardiovascular system, and the endocrine system. The next step is to learn how the systems interact with an environment. For example, a child overeats and it leads to the production of oxidants. Oxidants bind together collagen fibers. Collagen fibers exist in the arteries of the body, and the arteries get more rigid. In a sense, the behavioral aspect and an environmental aspect of adolescent is carried forward into late life which gets expressed as cardiovascular disease. That is an interaction of a whole series of causal events. We need to get a better picture on this.

Every individual is so different, it seems almost impossible to get a controlled group to study aging.

The growth of knowledge is coming from the longitudinal studies that are going on in various countries, including the United States. These studies will open windows on new variables and interactions that we've overlooked. Individuals are being followed throughout their life span. At the Karolinska Institute in Sweden there are studies of identical twins raised together and raised apart. They are looking at similarities and differences in identical twins and the affects of environmental influences. How much the genetic background explains is a function of what you are trying to explain. For instance, genetics may explain 75% of cognitive changes in aging, but when you vary what things you're explaining and it goes down to 25%. It's a very complex picture.

How has the changing demographics in the population of industrialized nations affected the interest in funding for gerontology research?

The growth of research in gerontology really began about 1950. More research was done in the 1950's than was done in the previous hundred years.

Why the 1950's?

Infectious diseases were being controlled by the use of penicillin and antibiotics, which meant years were added to the human lifespan. More years were added to the human lifespan between

the year 1900 and the year 2000 than were added from the Roman Days up to 1900. Life expectancy went up from 47 years in 1900 to 77 years in the year 2000. Aging couldn't be all about genetics because a genetic modification couldn't take place that fast, so more interest in the study of aging followed. Then, just as the worry of infectious diseases diminished we were faced with chronic diseases (cardiovascular disease, cancer, arthritis, etc.).

What is the "agequake" that people are referring to these days?

There is an article published through the United Nations about the agequake. The whole idea is that in about 25 years we are going to be experiencing an international transition where the number of older persons in the world will exceed the number of young for the first time in history. The agequake will shake up our social customs and institutions and expose lag effects. Most institutions are not used to dealing with older members. They are used to dealing with setting up Sunday schools, programs for teens or young singles and so on, but very little for the older persons because their traditions were laid down a hundred years ago when the population was young.

How has the agequake influenced U.S. institutions?

You can see it in almost every conceivable institution. In the past you left school at 22 and that education lasted your lifetime. Now, with the growth of information being so rapid you take continuing education. Careers don't last as long, and technology is replacing some careers. It's not uncommon now for people to have three careers in their lifetime. Entertainment will also begin to change as the group over 65 becomes the biggest group numerically.

How would you define the term "successful aging"?

I don't know that I would bother to define it. You see, successful aging is one of those metaphors that came up to put a positive spin on the later years of life. There are other terms like "vital aging" or "productive aging". Productive aging is an interesting one because it tries to say in a way that there is value in the older adult because what they do has a monetized importance. For example, they may take care of their grandchildren. But these approaches are metaphors and they implicitly stand for things, but I think they have to be more explicit on what they mean.

What makes the older population remarkable?

One of the interesting things about the older population is its diversity. I was the outside examiner for five masters students at the UCLA School of Business, which conducted 33 studies of the older consumer in America. They did an analysis and defined about six or seven different subtypes of older people. One group was called "the explorers". This group wanted to explore and try new things. They had good enough health and income, and were adventuresome and wanted to try new things. Another group, who had the same amount of money and health, had a different approach and wanted to hold on to what they had. The great diversity of the older population has been one of the things that has been overlooked.

Do you believe a large percentage the older population is having a difficult time adjusting to retirement?

The ambiguity of transition is one of the problems coming up to retirement when we have few models that we can borrow from. I am 87, and I've lived longer than anyone in my family. I don't have any models to look back on to find out what I should do next. Within the last century we have added twenty years to life expectancy, so now the question is what to do with this gift of long life. A traditional model was to retire and buy a rocking chair. That model is changing.

The perception of older people is also starting to change.

Yes. You see, previously in medicine you didn't get older people to exercise. The whole theme was "use it and lose it". So when you got older you took it easy. But then about thirty years ago they began to recognize that maybe the issue is "use it *or* lose it". I started to jog when I was 60 and the school kids on the corner would sort of snicker when I went by, but now that's commonplace. The acceptance of exercise as a useful activity for older adults was a dramatic change.

Is there a particular country or culture that seems to adapt to aging better?

The United States is doing pretty well, because we are not so bound by culture. Our culture is not that old and we are used to change.

Who is the audience for the *Handbook of the Psychology of Aging*?

It's for graduate students and professors in psychology. It is also for adjacent professionals, such as social workers.

Have you been involved in all six editions of this Handbook?

Yes.

What new areas of interest have opened up since the first edition?

The increase in longitudinal studies, the increase in the knowledge about memory processes, and now the growth of information about how the neurosciences are contributing with the magnetic resonance imaging and looking at how the brain functions and the localization of function. The neurosciences have contributed a tremendous amount.

How has the sixth edition changed from the previous edition?

We deliberately tried to get new authors so that we don't keep recycling the old points of view. We want to continue to get new points of view.

You developed an approach to life review known as "guided autobiography", and you wrote a book titled, *Telling the Stories of Life through Guided Autobiography Groups*. Can you explain what guided autobiography is?

The whole idea is that we have so much more in our memories than we realize or think about in daily life. Other people's memories begin to sensitize and prime your own memory when you do autobiography with a group. You start to remember through other people's recollections. The first thing you do in guided autobiography is to determine what the major branching points were in your life. With sensitizing questions you begin to think about the events that led your life to flow one way rather than another. Each week there is an assigned writing theme. The first theme may be your family life, and we begin to think about things like who the power figures were in your family, who made the decisions, who were the misers or spendthrifts, and so on.

Is the point to have these memories give you a sense of accomplishment for what you've been through in your life?

Yes, the autobiography group tends to help people recognize that they have been able to cope with quite a bit in their life, and their self-esteem goes up. They usually want to keep up with the group once they have shared their life story. It's a release factor.

How long have you been doing guided autobiography?

I started about thirty years ago.

You're one of the biggest scientists in gerontology, you've raised successful children, and you've been married for many years. What's the secret to your success in both work and family?

I go back to life stories. This is another aspect of how my interest in autobiography feeds back to how life flows and its outcomes. My interest is how people express causality in their life. I had a reunion recently of an autobiography group and I assigned the theme of the role of luck in their life. Four of the people in the group said they couldn't do that because God was in charge of their life. So now you get involved in the issue of how you project causality and its outcome.

Do you believe you are in charge of your life, or have you been lucky?

I take a middle position on this. I heard the knock on the door when luck was there. Life isn't a straight arrow. I grew up in the great depression in Chicago. I didn't think about going to school. Eventually I decided I should, so I did two years of pre-engineering but instead of becoming an engineer I eventually decided to go into teaching and went to Chicago Teachers College. A

psychologist there got me interested in psychology and suggested I go into graduate work in psychology, so I went to Northwestern University. When World War II came along and I got involved in a study on the use of amphetamines and keeping soldiers awake, and then from there went to the Naval Medical Research Institute in Maryland and I worked on sea sickness and other problems. It's like a step of a ladder, but each step was different. Eventually I got into the field of aging, and it was just opening up. During a seminar for graduate students in psychology at the University of Southern California I introduced several themes that they could follow up to do research for dissertations. One theme was creativity, one was wisdom and one was love. The issue being they had to come up with ways of conceptualizing that so it would lead to research. Three of the students produced dissertations on those topics. A traditionalist in psychology would question how you can conceptualize creativity, wisdom or love, but you can, and through research you begin to bring it into the knowledge area. That's what my career has added up to, putting structure on vague areas that are just opening up. Aging is one of them.

What are you looking forward to in 2006?

We will decide if we want to do another book on autobiography. There are people out there with new ideas about what it tells us about life and what it means to the understanding of life. Ideas still intrigue me.

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