# Full transcript of video interview with C. West Churchman (PDF)

*Below is the full transcript of a 2-hour video interview with C. West Churchman (1913-2004), a key figure in social systems thinking. The interview was recorded on April 30, 1987, on occasion of Prof. West Churchman's sabbatical guest stay at the department of Informatics of Umeå University. The interviewer is Prof. Kristo Ivanov. The videos are perhaps best downloaded from www8.informatik.umu.se/~kivanov. A suitable video player (VLC Media Player) for the .VOB format of the videos can be downloaded from http://videolan.org. The discussions are wide ranging. They really show who Churchman was and how he thinks and why, especially why. Don't miss it! There is great deal of wisdom, humour and honesty in the man. The images are screenshots from one of the videos (see also archive.org). There is a great deal of written material by or about Churchman available online, but this seems to be the only video. It's free.*

*This transcript is stored at https://csl4d.wordpress.com/, which is the blog about social systems thinking by Sjon van 't Hof, who is also the transcriber, and who is currently (July 2018) working on a second, more theoretical book about Churchman's systems approach, which is scheduled for 2019.*

## Transcript of interview with Churchman

**VIDEO 1 0m0s** [on-screen introductory text] Professor C. West Churchman [CWC] of the University of California, Berkeley

Interviewed by professor Kristo Ivanov [KI] on April 30, 1987, at the University of Umea, Sweden – Department of Administrative Data Processing.

This interview was made during a visit of professor Churchman as guest researcher at the University of Umea in April-June 1987, following his being rewarded a honorary doctor's degree in economic science in the autumn 1985.

A summary of professor Churchman's life and work is given at the end of the recording. The background song "Der Lindenbaum" – music by Franz Schubert and text by Wilhelm Muller – is sung by professor Churchman himself! [end of on-screen text, start of the interview]

1m50s KI: Yes, I welcome professor West Churchman from the University of California, Berkeley, who is visiting us in Sweden today. And my first thought on such an occasion is to think about how many people during these years I have met who after reading and studying your work begin to think more and more intensively about the man behind the pages, who is this man and how does his life look like? What does he hope for and how he looks at his work and how he looks at his future work. I think perhaps it is best if I leave the introduction of the person to you yourself.

2m53s CWC: Well, thank you Kristo. I wish I have a 'good' introduction to myself, I might sound a bit more appreciative than I am at times. I guess I'll describe what has bothered me as a philosopher all my life and that is what Hannah Arendt called the human condition. I think what she meant by that was the ways in which people live out their lives and in particular the lives they cannot live, they might have wanted to live because of social and environmental forces. After a bit of thinking about that, which I have to admit began in High School, a number of years ago I don't want to mention, where I was taught by the Quakers to be concerned about the human condition as far as war is concerned. As you probably know the Quakers were not only anti-war, they were what we call peaceniks. But they also felt that one of the difficulties with the world today is the particular form of nationalism that has grown over the centuries. Each nation feeling that they at least ought to have the power to determine their own destiny and that thought led to their feeling that they ought to have the power to stop other nations from interfering. And if they felt that very strongly then they went to war on the matter if both sides felt that way. I think the Quakers did a reasonably good job of me and that I am agreeing that seems to be serious defect in the world systems. Not so much whether we have nations or not, but the kind of powers they have to decide whether to invade or defend against another nation. I don't mind that I live in the area that I live in, Berkeley California, because it is beautiful and marvellous. But I don't think I would go to war with Los Angeles if they decided to invade northern California. That's not the feeling of nationalism I have. And then those reflections led to other reflections until I finally got to college and in my freshman year I took a course on ethics. That's what it was called 'ethics' and as freshmen we had to figure out what that meant. And I took it from a man who was a highly successful philosophy teacher, Tom Cowan, and he would get us tremendously excited about these problems.

6m46s KI: So your thoughts were already about peace and war by that time?

6m53 CWC: By that time, yeah. But then, when I took that course on ethics I saw that generalized to a lot of other issues that I also had an ethical overtone to. For example, Tom introduced us to this whole question of altruism versus egoism. Most of us being young men and women of age eighteen had about discovered that there were lot of people who went about saying "number one is all that counts", I being 'number one'. But then there seemed to be a lot of people saying "No, that's not true. One has to worry about the social system that you live in. And that's probably more important than number one." And so we had in that course almost violent arguments. We almost got to war on peace within the course, depending on whether we believed in egoism or altruism. And I was a good man, a good boy.

8m15s KI: So you also voted for altruism.

8m17s CWC: So I voted for altruism. Huh. And that led me over the years to the question "What is it to be an altruist, what does it [really] mean?" It seems simpler to say what it meant to be an egoist,

because living in a country like the United States of America an egoist accumulates wealth, then he can use the wealth in any way he or she wants to. But what is to be an altruist? It is to love thy neighbour as thyself. But that didn't seem to help me very much in describing the world, in which people had deep concerns about other people. And how was it .. that world constituted? I didn't know at the time that it was the same question as "what is a system?" I didn't find that out until much later. That those two questions "what is it to be a true altruist?" and "what is a system, a social system?" were about pretty much the same thing.

9m36s KI: Did you find this word system so to say by yourself during your search or did you already … it somewhere else?

9m45s CWC: Oh, I guess I heard it somewhere else. I read a lot of books. By the time we got down to twenty, twenty-five years ago it was being used for human societies. Of course one of its earlier uses was solar system, as the astronomers got interested in how the planets behaved with respect to the sun and how their moons behaved with respect to them and began writing down the laws of the solar system and then they thought of the word "system", because *it all seemed to hang together in some sensible way*. So by the time you get to Kepler and Newton you seem to have a pretty good description of how the solar system works. Then it gradually dawned on people that it would be a better word than nation or organization or whatever, to use the word system for it. So I began thinking like a lot of other people did and ask "what makes a good system?" And that took me back to that word ethics. What does make a good system, anyway? And certainly during my lifetime I had a chance to see a lot of different systems. Nazi Germany was a system and that was run by a bunch of gangsters at the top who pretty much decided what people should be doing and if they were doing totally the wrong thing, like being Jews, then they ought to be eliminated. I didn't like that definition. I grew up under FDR (Franklin Delano Roosevelt) and he was faced with a huge systems problem, when he came into office in 1933, because we just had a depression, the bottom had dropped out of the stock market, people were standing in soup lines [waiting for] food, railroad cars were dumping potatoes along their tracks and people were starving. That didn't seem to be like a good system.

12m28s KI: Would you also include the word, not only organization, but also administration in this idea of systems understood as a way of improving the human condition?

12m44s CWC: Well, you are an expert on administration so. It's a funny word. Ad-minister. When you are running a farm, you administer, you administer the cows, right? And traditionally, when you were administering, you were administering the people in the office, the typists, the accountants and so on. What did you do to them, when you administered to them. You made them do work that you that had to be done. That didn't quite sound right to me, as a good definition. You made them do the work?

13m26s KI: I think that etymologically, if I am not mistaken, the word administer has to do with serving, it has to with minister, but minister in its turn has to do with serving.

13m42s CWC: I see, that's how you defend your job, then. Make it sound better. You are serving somebody, not being made to do it. So, the boss comes and gives the secretary a letter and – she has to type the letter – but as she is typing it, she thinks: "I am serving .. my master."

14m08s KI: I have the opportunity to serve.

14m10s CWC: That's part of a system all right. It finally began to dawn on me that there was a central question about the system, because all my colleagues were talking about 'how the parts

worked together to serve a common purpose.' And that's how systems got defined, after a while in the 1960s. A system is something consisting of a group of parts, including administrators, that serve together a common purpose. What was the common purpose? And naturally a lot of us younger people said that: "is the mafia a system?" They have a common purpose. Accumulation of wealth of some kind. Or General Electric. Or General Motors. And then, God help us, is the government in Washington a system? And I did a lot of thinking about that. I wondered how the parts got put together in Washington? And so I had, I went down to parts. They didn't seem to work together in the way the carburettor with the gas tank works with other parts in the automobile to make it run. We have a department of the treasury, and that seems to me to be sensible enough. There is somebody worrying about money. And then we have a defence department, that seems all right, you need somebody to worry about our defences. And then we have a department of interior. That doesn't say what it is. It just says it's interior. It's in the country. It's worried about things inside the country. But it doesn't say what it does. That's like something in the automobile, called the 'interior part'. That doesn't make any sense.

16m28s KI: You were never tempted by that time to begin to study these things from inside a discipline, for instance political science or statistics, perhaps, in the old sense of the knowledge about the state?

16m44s CWC: Yeah, I did. I started out being the most utter disciplinarian you can imagine and that's a logician. Boy, do we define that discipline. We said that we are basic, naturally, because if you are not logical then, God help you, you can't do anything else. And so we had the boundaries laid out, and we had what you could do, and what you couldn't do. Very specifically laid down. No discipline is nearly as precise as symbolic logic, [which] is what I worked on. And then I came to the conclusion that wasn't getting anywhere.

17m29s KI: Would you have been a computer scientist, now, if there would have been computers by that time?

17m33s CWC: That might have happened to me, yeah, I might have gotten transformed into a computer scientist. God help me.

17m45s KI: Because people also think that computer science is the materialization of logical mathematics, is the basis of anything else.

17m51s CWC: Yeah, so I decided that I had to do something useful. You see, we didn't have computers in those days. We had hand computers of Marchant and Friden. Buy you didn't need much logic to find a language to work those two machines. They were all manual. It might have happened to me, Kristo. I might have turned into a computer scientists. Sometimes I wake up in the middle of the night and sweating all over that it might have been my fate to be a computer scientist. What I did decide to do was study mathematical statistics because I thought I could go out and help people in laboratories to handle their data better. And it was at that point that World War II came along and I did join the US Army Ordinance Laboratory and I preached the gospel of mathematical statistics to ignorant chemists and metallurgists and also developed inspection procedures that made ammunition in the field much safer. You get fewer misfires. But then World War II came to an end. And I had a great time in it. I sometimes feel ashamed of myself for enjoying it so much. And then the question was, now what I do in the world with this mathematical statistics, which is very confining too. And I decided that, no, I was going to learn how to plan. To really try to see how, well, let's say, how a city is a system. How it is and how it should be. So I was back to my ethics. And I got a group together at the University of Pennsylvania, Philadelphia, and we worked on the slum area of

Philadelphia, South Philadelphia, trying to figure out why conditions in that area of the city were not satisfactory, trying to understand that. And I then discovered as I did during the war, that even if you have a good idea, "I know something you don't know, you Kristo don't know, and I know what to do to improve your conditions", it doesn't do me any good to tell you that, because you go on doing the same dumb thing. I don't mean you, Kristo, it's just a generalization. We call that implementation. And we had good ideas for South Philadelphia, but they weren't implemented, by the mayor or anybody else.

20m53s KI: Is this something that psychoanalysts I suppose have been doing and those who substituted them before they came here.

21m03s CWC: No [well] analysts and doctors in general. If you tell a patient what to do, he is not necessarily going to do it, especially if you tell him to stop taking drugs or alcohol or whatever. So then I realized that I was in the whole business of that what we called operations research, but now we call systems, systems theory, systems approach, whatever the word is. And I tried to figure out what goes into the study of a system, a human system, now. Not an astronomical one, because I had some idea how that worked, but what about a human system, like a traffic system, like a postal system, or in this country [Sweden] you have a fascination with food, you are not the only country that does, but you have a system to handle the handing out of food. It is different from my country. You have to learn, like learning a new language, to go to one of these service stores, find you way around. Why are there different systems for the same thing? And what is the role of authority? You asked about administration. What's the role of authority in the system? Should there be people you what to do? And you have no choice. If you don't do what they tell you to do, then you get punished. Is that part of the system? I wonder about that. Is that appropriate? In my country we talk, in the USA, we talk about freedom a lot, but there are an awful lot of things that are not free to do. You are driving an automobile and there is a red light in front of you, you cannot say "Oh God, I am tired of being told what to do. I am just going to go right through it." Or you can do that, people do that in my country. They go right through the red light. When comes April 15th, we all have to pay income tax or else you get punished for not doing it. So that puzzled me too. When do you have authority and when do you have freedom. And then, Kristo, in my office one day came some young man from NASA, as we call it, the National Aeronautics and Space Administration, and a friend of mine who was at the faculty of Berkeley and I introduced ourselves and said "what are you here for?" And he said "we have been assigned to a new application for NASA's work for the satellites." "Now, what's that?" And they said "Well, the nuclear plants that we have put up since the late 50s and 60s and so on have a waste and that waste is, no matter what we do with it, using present technology, is dangerous [for] radiation, so we have been assigned the task of thinking what to do with it. Because you could bury it, but then an earthquake might occur and there it would be again, or you could take it to the South Pole and dump it through the ice and snow of the South Pole. But we have been assigned space applications." And this friend of mine and I said, "Well, how long does this waste [stay] dangerous?" thinking they would say "a few years" that it would be all right again. The answer was "25.000 years" at that time. It has varied since. "25.000 years!!" I said. And then it just hit me, like that [snapping his fingers]. I hadn't in my thought about systems thought about thousands of years to come. Isn't this generation obligated to think about a thousand years or ten thousand years? What kind of world would future generations want to have? All because some character told me that this waste would go on for that period of time. And subsequently I got because of my colleagues at Berkeley interested in hunger. And I discovered that something like a billion people are starving in the world today. And naturally by that time I began to ask my questions in a different way. Are they going to continue to starve? Is there going to continue to be not enough food to feed them? Oh no, said my respondent, there is already enough food. That isn't the problem at all. I said,

you mean there is enough food to feed everybody and we are starving a billion people? Yes, he said, that's right, we are. And as far as the future is concerned we are going to continue to do that for hundreds of years. Now I was learning about systems, at last. It wasn't a little matter of who administers, who sets the rules, who puts down freedom and so on. But future generations are being given a world, which is so bad, so lousy, as far as being a good system is concerned, it's incredible. Naturally, I asked how this had happened, that we have enough food in the world to feed everybody and yet a billion people are starving. They are not all starving to death, but they are hungry all the time. And the answer was, the glib answer was 'distribution'. He didn't need to tell me that. Obviously, if there was enough food nearby, you ate it. So, how did it happen?

28m13s KI: As you put it, it sounds that it was then a problem of economics, or a problem of reason at least. Isn't it that it could be understood by many people as a problem of evil, a problem of wisdom. And how does one approach the problem of evil. I am reminded that you are also philosopher from the beginning. You said something about logic, and you said something about statistics. But at the bottom there is the problem of wisdom and philosophy and even the problem of evil and religion, I guess.

28m54s CWC: Well, when I was a kid I used to watch Ronald Reagan, not as president of the United States, but as the town marshall of a Western town. And his task as marshall of the town, according to the movie, was to identify the good people in town and the evil people in town. So his systems problem was fairly easy. He was to figure out how to get rid of the evil people. Either run'em out of town or shoot'em. And then when you got rid of all those evil people you had a good system. Because that's why, all that was left in town were the good people. That's how I was educated about systems. Identify the evil people and then get rid of them, then you have a good system.

19m56s KI: I guess this does not work if you begin to think about the evil in each one of us. The evil inside ourselves.

30m06s CWC: You don't want to think about that. Yes, not only that. But if you take a typical village in India, I am told, some people have the land, own the land, and some people do not. The people who own the land decide what to grow and who to hire. The people who don't own the land have to do what the people who own the land say. And for a while the culture said that the land owners should feed the non-land owners, so that nobody starved in the village. It goes back to the principle enunciated in the New Testament and a lot of other sacred books: if one person is all in the community than all are ill. It is most explicitly stated in St. Paul's Romans as a principle of how to live together and they lost that. And now the land owners ex-(**VIDEO 2 0m0s**)-port the grain and keep the workers in a semi-starved state. Are they evil? I don't know. They are misguided, maybe? There's no way it could be broken. I think the Indian government in New Delhi would like to have broken that and made sure that everyone in the village was adequately fed before you exported anything. But then there's a caste system in India. Is that evil?

0m42s KI: Is that religion? Is that religion, I wonder? This takes us into the difficult matters of ultimate values. And what would we ourselves do in a similar position?

0m56s CWC: I get the feeling that if you give something a label, you got a solution.

1m01s KI: No, [might be]. But it implies that we should go then – if I understand it right – back to these basic discussions, which are being held about the nature of evil, for instance. It's more than reason, I mean.

1m20s CWC: There's more than individual people. No doubt, the world as a system, we now call the human wold, has a lot of evil in it. People are starving, future generations will be subject to the danger of pollution, and then the other thing we haven't mentioned is that future generations are going to be subject to holocaust, nuclear holocaust. So look at the world as it is. There is militarism, it certainly is an evil, but who are the good guys and who are the bad guys in militarism. And I know people that are working for military establishments. And they say, "West, we are working for peace, because the enemy will not dare attack us, because we will have the best weapons in the world." And then we have hunger, [food], poverty, and we have pollution and we have a growing population. These are our gifts to future generations. And so I began thinking to myself, "Supposing you think of the human system in terms of generations to come, shouldn't you be doing that?" [Then] the old ethical question came back. Shouldn't you be doing that? Now, you would say "It's a matter of religion." Well, it's a matter of religion, but it is also a matter of ethics, too, a combination of the two, if you like. We are having children. We don't seem to have figured out a way to stop that. And we are having children that will want to have children. That's what we are creating. And those children will want to have children. There is no stopping the proliferation of the human species as long as there is any left. That seems to me to imply axiomatically that we have a moral obligation to the future generations as 'the' primary ethical, and I give you religious too, problem of today's human system. And I can only find one agency in the Government of the United States that admitted that as a principle and that was the Fish and Wildlife Service. And their principle is: "We are in the business of preserving wildlife so that future generations will have the opportunity of seeing it and enjoying it." Not to hunt so much, but just to appreciate its variety and its .. The deep interest we have in other forms of life. And they say we are simply the caretakers of wildlife today.

4m47s KI: I know that in your work you have been paying much attention about ethics, politics, religion and aesthetics, too. Would you say that this last dimension you mentioned, about appreciating wildlife, it has as much to do with ethics [as] with aesthetics?

5m10s CWC: It has much to do with both. It's only because philosophers like any academics have to divide it up. Or like anybody else who is trying to do a job, we divide it up.

5m33s KI: Because we believe in reason, isn't it.

5m35s CWC: I hope that isn't reason. It's a funny kind of reason. When, like you, you like to cook cakes. You divide up the job. First you prepare the yeast and so on. Then you [tadada] Then you [tada]. And in fact cook books are made that way. They tell you what to do first, second, third, fourt. That's human nature, divide it up. So then we say: "What kind of world do we want ethically. What kind of world do we want aesthetically. What kind of world do we want in terms of plenty. And then we look at each problem separately. And, hence the disciplines. I don't want to do that. I want to do it altogether! I want to say: "There is no difference between aesthetics and religion." They are one and the same.

6m27s KI: I asked that because I reminded myself that it looks as if you have chosen in order to approach all these problems and contribute as a way to understand the solution, that you have chosen the way of science or/and of philosophy, but that's not the way of politics. I guess that many people who listen to us now, they would say: "Yes, yes, we can talk about these things, but what is required is action, political action especially." But you have chosen the way of science. And it would be very interesting to hear more, to know your opinion about how young people who are preparing for science and to be scientists. What kind of science could we need in order to be able to grip these problems?

7m22s CWC: The reason I got to politics was very simple. At one point in the history of this I have to explain that by no means I have been alone in all this concern about future generations. There are thousands of people who have that, there are millions who have that same concern. And a group of people met together in Rome and decided to call themselves the Club of Rome. And they had as their concern exactly mine: "What's the future going to be like?" And what are next generations going to have to face. And the first book they put out was called, what was it called? Limits to growth. And it was based on a computer program that Jay Forrester and his students made up at the Massachussets Institute of Technology. And I went to a conference at St. Gallen, Switzerland, and there was the head of the Club of Rome, Peccei, and he was really red in the face with anger, because the leaders of the world had not paid much attention to the message of Limits to Growth, which was that: "If the world is run the way it has been in the last 75 years, you can expect a huge holocaust in 200 years to come, in the next two centuries. And I thought to myself: "But the […] is dominated by politics. And there isn't anything said about politics in Limits to Growth." I wasn't saying that politics is all there is to it, but it is certainly central. And that ought to be included. So I wrote a book called 'The systems approach and its enemies'. I wouldn't call it that anymore. I would just say that there are forces at work that up to now have been ignored by systems thinkers. Because perhaps they are too difficult. And one of them is practical politics that goes on all over the world. It's partly dominated by power, but also dominated by a lot of other reasons, including friendships. And that ought to part of the discussion and study of systems people. Above all we ought to drop all the curtains between the disciplines and allow people to mingle who know mathematics, languages, history, tadada. And among those should be people who study the political process. And people who study the religious process.

10m31s KI: And they would be called political scientists?

10m34s CWC: No, they wouldn't be called that anymore. Or they would, probably. Because nobody knows how to run a university without subdividing it up. So I was anti-disciplinarian. Not just inter-disciplinarian. Interdisciplinarian means grab this guy out of the math department and put him together with this guy overhere out of the history department and get them talking together. I don't want to them to think they are either historians or mathematicians. I just want to think they are there having a common – scientific, if that's what you want to call it – interest. Now,science, see. They have to tell you that the word 'science' and 'scientist' is a little over a 100 years old in English. Maybe it's older in Sweden.

11m30s KI: Perhaps in Germany, I don't know.

11m32s CWC: It's new. It is a new idea. To differentiate between people who engage in the accumulation of scientific knowledge from bosses who run grocery stores or whatever. That differentiation was a deep mistake. It for example turns up in the case of hunger. Who knows best about the subject of hunger. The answer that my university gives is nutritional scientist. And you know what they do. They go out and measure the height and weight and intake of the people in the villages. None of them are hungry when they do that. They have never been hungry. Who knows best. Who is scientific about hunger. People who have been hungry. They have an expertise in the matter. So, drop it. Drop the word scientist.

12m43s KI: So you are an anti-disciplinarian, but I have seen you like to call yourself a philosopher. And is this not still a disciplinarian approach?

12m53s CWC: That's because I am a reactionary. I go back to the time was it, the word for it. That's before the disciplines came along and grabbed pieces out of philosophy. Look at one of my favourite

philosophers, Immanuel Kant. He discovered the Big Bang theory. It was philosophy for him. A love of nature, the origin of the universe was the problem he had. He was also deep into psychology, because he wanted to find out how the human mind learned. And he discovered that part of the learning process was unconscious. He wanted to bring that out, the unconscious aspect of it. He was also a sociologist. In fact a utopian sociologist. He tried to image what an ideal systems society would look like. And so it went. He was also a historian and a geographer and all the rest of it. People in that period, the 18th century, 17th and 18th century, did not make a careful distinction between the disciplines. There was no dean to call them in and say "Immanual, I think you are spreading yourself kind of thin. Why don't you concentrate on something?"

14m30s KI: Many people would say then that Kant could do that, but you yourself, you poor little boy, you are not a genius so try to concentrate on something in order to be able to do something at all.

14m43s CWC: And he gets bored as [dogowish]. When you tell the PhD candidate "You got too broad a subject, narrow it down. Don't consider laws of governing international trade in the 19th century. Why don't you just concentrate on 1890-1900. Then you have something you can handle." And so he does, and he finds out one of the most boring periods it was. And he comes out often thinking "I don't want to spend the rest of my life doing this."

15m27s KI: Still this is considered as a moral virtue or as a sign of modesty and humility. Just to recognize the limits of your intellect and not try to grapple with things, which are too big.

15m42s CWC: Why not grapple with things that are too deep? Both you and I admire Carl Gustav Jung. Among others there was a Jungist Campbell. And Campbell wrote a book "The hero with the thousand faces." And what he gathered from mythology was the typical story of the hero is this: once upon a time there was a young man who was a prince in a palace and he had horses and food and young ladies and all the rest. One day, is this mysterious sentence, one day he decided to go out and see the world. And he went into the deepest forest with the most dangerous monsters in it. Why? What is there in psychological motivation theory that accounts for that sentence. In all of these stories, a thousand stories, he goes out and grapples with that which threatens to kill him, to destroy him, make the whole thing meaningless. That's the story of the hero. Why not tell the young PhD candidate: "You go out and study hunger. And work on it for four years. And write up what you found out." Because hunger is the monster. Don't confine it just to India. Explain how come there is starvation in southern Sudan, which is one of the richest lands in the world, potentially. Go and study and tell us what you found out. And you don't have to have a thesis. Wouldn't it be a lot more challenging.

17m43s KI: I suppose that many people would react by saying: "Yes, but this destiny of a hero is for one among one thousand people. And we could never expect ever a PhD student to think ever a PhD student to think about becoming a hero. But the one who is supposed to become a hero will anyway do that.

18m08s CWC: We have less than one in a thousand PhD candidates anyway, so. This is a new criterion. It wouldn't reduce the number of PhD candidates, it would just increase their happiness. At least I suppose it would be the wrong word to apply to the hero that Campbell talks about. It isn't happiness, it's challenge. And all kinds of things are discovered by the hero. One of the things that Campbell tells us is that if he befriends an animal he will succeed. The animal could be a fish or a dog or a wolf or whatever. That's not a bad hint. To be a hero is to be friendly, even to those who

threaten you. You computer people know that, because I understand you are now around to having friendly interfaces with computers so that they don't scare you anymore.

19m19s KI: Yes, that's the last fish in our field. The friendly human-computer interaction.

19m30s CWC: In any event, there it is. It is too bad that we in academia not only have invented this word science, which this has affected the social sciences so deeply that they think that unless they are statistical they are not scientific. And we have squelched the curiosity of millions of PhD or potential researchers by insisting that they go into something that is fairly dull, namely statistics. Why haven't you asked me about economics? Is it not a wonderful word, economics? It comes from a Greek word 'oikos', which means 'home'. I don't think that's a bad definition of economics. How do you turn a system into a home? Like into a good home? Turn the system into what happens in a good home. It seems to me a perfectly good ambition for economics to have. And then we wouldn't have that micro-economics. We would have a home to worry about.

21m00s KI: I guess nowadays the question could be extended to ask ourselves: "What is a good home?" Many people have no homes, really. And the family is breaking down. But this then is a kind of advice – returning to my earlier question – an advice that you could give to young students, both undergraduate and graduate students, who wonder what kind of science they should be making, they should be attempting to make. And this is the kind of advice that could be given from inside the discipline, it seems. There we are nowadays, often.

21m40s CWC: Since I have arrived in Sweden I have been told it must have been at least 50 times, now that I have been here a little over two weeks, that the main interest of undergraduates is what job they will get after they graduate. And part of the message that they get is: "That's not up to you to decide." You won't be able to get any job that interests you. So they translate that to mean: "What kind of a job can I get which will have a decent salary, considering how expensive things are here in Sweden?" That means enough salary to pay for myself, my marriage, my family and so on. And therefore their perspective on their future life is the job that they are going to get and that's not in their hands. Therefore they are not free to chose their own destiny. Or have I come to a conclusion too quickly.

22m56s KI: Yes, it's right. The interaction between the market and ..

23m04s CWC: The market is all there is, no interaction.

23m08s KI: I think many people will think that there is the market and the state government. The godfather.

23m18s CWC: They are more than godfathers. Godfathers don't have much to say. That's too bad, isn't it? That they don't have the opportunity to choose the life they want to lead? Or even what they want to study. Suppose a student comes to the university here and wants to study wildflowers.

23m46s KI: It's not useful.

23m48s CWC: They won't get a job. But that's what drives his soul. His understanding of wildflowers, how they grow, how they are sometimes threatened by radiation and so on.[i] Where do they grow. Why do they grow that way.

24m10s KI: This is not ethical that somebody could say it. Because there are many people starving this moment. They should not study wildflowers while so many people are starving.

24m19s CWC: Well, I didn't say at the beginning of this that everybody should have this concern about future generations. It might be kind of boring. No, I just meant that what I would hope for my grand-children is that they had something to say about the quality of the life they want to lead. And that would be part of the educational programme, .. is to create a generation where people are more apt than they are now to be able to select whatever kind of life they decide. And if they can't do that, when they find that overwhelming, then people should help them in finding the kind of life they want to lead. Then that takes us back to some kind of psycho-analysis or psychology or whatever. It's just too bad to think that they are going to have to lead the kind of life that the economic and political powers would decide what kind of jobs were going to be open, be available.

25m42s KI: Considering the kind of knowledge which should be required for approaching these questions in the future and thinking about your own work, I wonder whether you have any thoughts about what possible ways there are in order to expand and to build upon your work. I have been thinking about American pragmatism on which you have been building your own work, I understand, and European continental philosophy. There are so many directions, so many profits nowadays. And many people, I think, not the least students, they find themselves almost lost in this maze of -isms and schools and philosophies and whatever.

26m32s CWC: Well, I used to think that was very important. When I grew up, with Edgar Arthur Singer as my mentor I discovered that he was a student of William James and that made him a pragmatist. And pragmatism meant "Truth is what works out successfully" and not just what is written down as a demonstration. And then the -isms grew up, positivism and rationalism, empiricism, all the -isms that philosophers use. And I think now a lot of that was a waste of mental energy, arguing with it. And I think probably all of this concern that is now going around about the future of the world is making even professional philosophers realize they have much more of a common concern, a school concern.

27m45s KI: Since you expressed your feelings about these -isms, and I [will forget] for the difficulty that many young people have to orient themselves in these different schools and streams nowadays and wondered to what extent they should keep up with the debate, the so-called intellectual debate, going on, then I think you attitude towards isms is very related to how operations analysis developed into systems thinking. And I think many people would like to grasp its history, the way in which isms can – so to say – be done away with, by relating to the meaning of systems thinking in this historical perspective. Perhaps you would like to say some words about that.

28m47s CWC: I find that one of the problems that methodologists of history must face is: how accurate is someone's account of the history who has lived through it. As I did with that one. And part of the difficulty and part of the advantage is, you saw a lot of things directly, more or less directly and the disadvantage is, you didn't see everything, you know. You only saw the [parts] of the story that were impressive. I remember that Joe McCloskey, I don't know whether you know him, not?, was active in the beginnings of operations research. And he said to me [in that area …]: "West, what would you say in the first decade were the main contributions that were made." And I thought a bit and said: "I guess that certainly the development of the models was important. But also the discovery of the difficulties of implementation." Well, then, he said: "Which models would you say are the most important in that period?" I said: "Inventory, linear programming, queuing." He said: "What about search theory?" Well, I had forgotten all about it. It had just not hit me. There was one piece, a major piece of mathematics that was done by a guy called Koopman during the war and it had to with finding submarines, German submarines, and what data that you needed and how to use it. Subsequent to the war it disappeared out of the literature. Nobody could (**VIDEO 3 0m0s**) make the analogue to hunting for a submarine in order to kill it to anything. So there were still

articles appearing, I think the journal that I edited had a couple of months search theory, but it just simply disappeared. Just as bargaining models were some time the hot subject, and then they disappeared. If you pick up the most recent issue of Management Science you won't find any articles on bargaining. There was much more to say about it. So Joe's idea of what was important in history is what he lived through, he lived through that search theory part. I never did. I could have said inspection models. That's what I did. It's interesting to have people who lived through history, give their account of it, and I am sure the Greeks recognize that. And one of the things that impresses you is the lack of objectivity in historical information in a way. If you read the typical information of the American Revolution, there is very little said about the soldiers. A lot is said about how Washington was trying to get around one British general after another. But very little is said about how the soldiers felt about it. A of them wanted to go home, like I do. So, which is the history of the American Revolution. When I started Management Science I thought it was going to be a journal devoted to managers talking as well as the model builders. I couldn't find any managers. Managers don't write articles like that. They are just not used to it. They write internal memorandums and so on, but they don't write articles.

3m04s KI: So this is not the problem of science in general. That managers are not scientists, so to speak.

3m10s CWC: No, but you won't do a history of management science. And here is the word. You certainly should include the managers. What do they think of it all. And then Roger Crane and I decided to put out a journal, we called it Management Technology, to differentiate it from Management Science. And that would be one where the managers talked. But again we a lot of problems with it. And now the journal is called Interfaces. It's the same idea. I would get an application sent in from somebody who had done a study and he told about the model that he had used. And then the referees would say: "But there is nothing new in that model." It is a well-known linear programming model. I replied that what was new that it was applied. Somebody used it. What were the managers' reactions. You have to tell the authors that: "We are not interested in your model. I am interested in what you did to get it used." And the academics had no interest in that, and the managers had no interest in that.

4m47s KI: So this also has some importance I guess in order to understand the idea of anti-disciplinarian approach, in the sense that managers do not care about disciplines. Managers care about the problems. And then we try to meet them on this ground, which is the common ground. And I suppose this would give a kind of understanding then of what is the meaning of the anti-disciplinarian approach. And this is what I was hoping that should be explained to students in some way, how to be able, how to wish to choose their field of study or their particular reading on the basis of the problem they are trying to approach. Is this the kind of thought [..] have them, that they should start from a problem, they should start from a manager or whoever they care for and then they should try to gather as yourself did, statistics, logic, economics, political science, literature, whatever, which helps them to get an understanding of this problem? Is this the way of making science that you would propose?

6m28s CWC: Well, I would go back to [yesterday afternoon]. We are? Well, the question is, what we used to say in operations research, is: first formulate the problem, then once you get it formulated, try to get the information, third make a model, fourth deduce from the model what action you think the manager should take. And then, you get what you think is an answer to the problem you first formulated, you go to the manager with that and tell him, this is what we think you should do in this market or this financial situation or whatever, and then that's where the list ends. It does not go into the whole question of how the researcher's contribution gets integrated into the company, which is

implementation. It's just assuming implementation is explaining to the manager the solution that you arrived at. And it just began to dawn on me that things are the wrong way around. You ought to begin with implementation. You have some notion that there is a problem there all right, but you begin with the question to the manager or his staff: Let's suppose we come up with some recommended change, what could we do? Any recommended change. What are the steps we would have to take in order to do it? Let's say one of our recommended changes is: Reduce staff in department X by 10% That's a good question. How do you do that? Fire them? Reallocate them? Or what? Before you gotten really down to what the problem is.

9m06s KI: So you must have then already some hypothetical solutions to present to them.

9m13s CWC: Well, change. That's a hypothetical solution. We are going to change some things. For example, there isn't, I mean, a great majority of people in the world I can assume are interested in the armaments that are being stored in arsenals and so on. Let's suppose we find an agreement on reducing those. How? How would you carry it out? Particularly as there are a lot of people who find their life to be one of keeping those arsenals. Is that the answer? Often when you get on to implementation you change the nature of the problem. You do the reverse. What can we do? Nothing here, nothing here, but this. Then it tells you something about the problem. That's true in general in the real social world, that is the state of affairs, you figure out what can be done, and then you worry about what the problem is, the precise problem from the secondary point of view. I think that in the beginning operations research, when after the war. The war time story is different, that's where it got its name, research on military operations, the war time story is clear, because we knew very well what we wanted to do as researchers. And that was to win the war. But when you begin to apply it, as we tried to do, to the industry, then what are you trying to do in the company. And there is one group of people that say: Well, we want to maximize net profit for the year. There is another group of people saying: No, that isn't what we are trying to do. Because we expect to be in business beyond this year. And therefore we should be building the company so that its long-run potential stays, and that's translated into market share. And market share may be a much more important thing than just net profit for the year. So you begin getting clashes as to what the nature of the problem really is. And the first things we ran into in industry, when we tried to apply operations research, was the failure to implement anything. Because different managers had different ideas, just to what was really important. And it seemed to me that the two societies that were formed, the Operations Research Society of America and the Institute of Management Science, what they should be doing is getting on to this problem of the relationship between the researcher and the manager. What kind of a relationship is that? Because a lot of people assume that the researcher builds the model now using computers after 1950 and the managers simply accepted it passively and did what the model said. Well, I knew that wasn't the case. The managers weren't about to do this, just because somebody said they had a model. [They were not] going to do what the model says. So we ran into a period there. We assumed that the models were bigger in scope than the ordinary consulting firm thinking, that we would get automatic acceptance. But we didn't. So by the end of the 1950s I got my class to write letters to people whose supplied cases were published in the journals. And they wrote to some thirteen authors. So, we liked your paper very much, and so on, but you did not tell us what happened, when the study was done. Only one author was able to say what happened. They had left. They left their report behind. There is no evidence one way or another whether anything was done. And that seemed to me to indicate that the whole industry of operations research was in trouble. It was kind of magic to begin with, because it had computers and mathematics and so on. But it was just wasting its time on doing studies that nobody did anything about.

15m14s KI: Many people would say that the trouble was that the managers did not understand the great value of the studies and then one should train the managers to better appreciate the logic and mathematics and then they would realize how useful it is.

15m30s CWC: Well, that was one answer. I was [..] that I wrote a paper in the early 60s. It's still probably one of the most quoted papers.

15m41s KI: Do you mean 'The researcher and the manager'?

15m43 CWC: The researcher and the manager, yes. The first that the researchers gives the manager the results and then leaves. That was separability. Then, the second is: No, the researcher has to educate the manager in statistics and model building and so on. You give short course, when they come for a couple of weeks, then they get the idea. And then we decided that didn't work very well. Because the managers would go home, and quickly forgot what they got in their two weeks, and go ahead and do the same thing. And the third suggestions is: Why doesn't the researcher learn what the manager does? And that was the other way around. And he sits there, listens to the manager talking, what it is like to be a manager. And that doesn't work very well either. Researchers don't really understand what it is like to be a manager. They can't even feel what it is like to meet a payroll. And knowing that in two weeks I have got to meet a payroll. They never met a payroll. They don't know what it means to meet a payroll. You can have sleepless nights worrying about that. And then you are going to worry about some guy who is working on a model overhere on inventory, when you don't know how to meet the next payroll. And then we decided on mutual understanding, that's the label we gave to it, and it meant that somehow or other the two have to work together in some sensible manner. And we didn't in that paper define exactly what that was. But neither was superior. And subsequently to that the two major societies in America had put out a journal called Interfaces. That makes the best attempt I know of, to bring the two classes, the researcher and the manager together. It doesn't always succeed, but it is read by both managers and researchers, trying to understand that relationship. It is not a strange one, because to be trained as a manager is a totally different educational experience from being trained as a researcher. That's totally different.

18m40s KI: Many researchers, or at least many technicians, technologists, would feel that that's the trouble. We should train the managers as we train the people in technology and so on. We should substitute the managers with people who don't use their time for low politics and feelings and so on, but they should be more rational in some more clean way, they should use more logic. This is the trouble of the world.

19m14s CWC: And they shouldn't worry about how to pay the next payroll.

19m20s KI: Maybe, with the help of logic.

19m24s CWC: I don't know. Now, what happened in fact, despite this paper that Schainblatt and I wrote, is that operations research or management science – they were the same thing by the 1960s – decided to make themselves into a discipline. And the way to do that was to build models. And there was the advent of more efficient computer, so you build your models on computers. And the major question was not implementation […work], it was how fast the algorithm went on the computer. And they were very proud of themselves when they developed a program that had two million variables and 35.000 constraint equations. You couldn't have done that without a computer, at all. It was done for a company. I don't know whether that company ever used it or not. I don't see how the managers of that company could have felt justified in using it, because they certainly didn't understand what the computer had in it and how could it maximize a function of two million variables subject to 35.000 constraints. They wouldn't know what that meant even. Perhaps a [… ]

problem, I don't know. I never heard the story of whether it was ever implemented. But that was the history of management science-operations research in the 60s. And it is why a lot of us dropped the labels. Don't call ourselves that anymore. And took on the word 'system', to escape the fact that we were just model builders, which is what operations researchers were. With no interest in implementation at all. I had a colleague at that period, who wanted to give a capstone course to our business operations research students. And he said: Let's pick out five journals that have appeared in either Management Science or the Journal of Operations Research, get the students to study them. They are all cases. I said: Don't you know that when people report cases in those two journals, they'd leave out all the interesting stuff, on how they did get implemented.

22m26s KI: Because it is not science.

22m28s CWC: Because it is not science [nods] and doesn't get them promoted. Because the promotion system depends on the extent to which you make a clever algorithm that nobody else had ever had before. Or a clever model nobody else has ever had before. In fact, I once asked Ackoff, who was a very successful implementer, of his version of management consulting. How did he do it? And his answer was: Friendship. You have to know the presidents, first name, talk to them that way. And you have to have been to his house, and had dinner, and met his wife. You have to know the problems he is having with his kids. And you have to have something to share, as you have kids, so you talk together about that. Is that operations research? Most operations researchers would say: No!

23m45 KI: So leave it out.

23m46 CWC: Leave it out of the text books. Not a single text book on operations research has a chapter called 'Friendship'. And yet that may be the most important.

23m59s KI: But then we leave it to the psychologist, would you.

24m05s CWC: Yeah, that's the answer that is given. For example, as I said earlier, I grew up as a philosopher and did my work in philosophy. I found that when I wanted to apply philosophy, I was running in all kinds of oppositions and when I brought them up, then philosophers would say they are not in philosophy, but in sociology or psychology. Disciplines sort of have the same attitude that retailers have. We don't handle sport shoes, you got to go down to the sports store, down the corner, to get the right kind of shoes, because that's not in our store, we handle dress shoes and so on. They do the same thing. The disciplinarians say, it just not in our discipline. Go on some place else. That's what I mean by: Collapse it all, get rid of all that.

25m14s KI: Now, there is another way of collapsing it all. Which is very relevant in the computer age, or whatever you would like to call it. We could say that many people don't think that we need to bother anymore so much about models as such, as [..] in operations analysis, but what we need is just more communication, more computer power, just to support ad hoc activities in the form of keeping track of data, just gathering data, and putting up tables on the screen and to retrieve information about hard facts from data bases, and in general more information and more communication, I mean telematic networks. It's always good, anybody would almost agree, even managers, I guess, how good it is to have the possibility, just to send in some lines to another fellow anywhere and just to keep track of your data, to be able to retrieve whatever is available in the databases and so on.

26m27s CWC: As bad as all that, really. It's worse than I thought. Plato had a sign over his academy, that no one enters here who has not had his mathematics. I'd say that: Do both. There comes a point

where you would like to organize the data in a certain manner. Certainly when you are worrying about too many people being involved in the same job. Or having too much inventory. Or how do you figure out which of your various kinds of marketing activities are the most important or crucial. There has to be somebody there who says: Hey, I can take that and begin to formulate it into a mathematical issue with the data that you have been showing me. And it will take some doing to do that and it will take some knowledge of mathematics how to do that. So you get into the act and it pulls a lot of us together. Otherwise it is reactionary to me. I am not against modelling, I am just against the silly business that modelling is all you have to do. But certainly there are many situations where modellers are called for and Russ Ackoff himself was a successful implementer. He uses models. He gets around himself sophisticated people who know how to do this. And if necessary he gets to a point, it gets down to a fine point, as happened in that beer company that he was working with: How long do you keep beer on the shelves, before if it isn't sold you get rid of it. That's demanded a kind of modelling, that's all. You can't just show a database of how much is sold in different parts of the world. You need to have a way to pull it all together.

29m05s KI: But you would say that if you want to put up a model, you are going to need a database or data to plug into the model so let's start with the database and let's start with modelling and then the family and the kids will get into the picture after a while. So we have some kind of priority, a scheme anyway.

29m30s CWC: But Kristo, you know what's wrong with that. And that is that the crucial data don't get up on the screen. My favourite example is opportunity costs. Any manager who decides to go into this kind of activity is cutting the opportunity to go into a lot of other activities, because he needs the funding that go into this one. So the question is: What does it cost him to give up these other opportunities. Are these other options. Find it. All the data that you accountants are gathering, the marketing people are gathering, tadatatata. Not a single one gathers any data on opportunity cost. And yet that's the most important thing for me as a manager. You don't show it to me. What's the cost of the loss of a limb to an automobile manufacturer. And the answer is: Once you have seen one customer loose a limb, you have seen them all. But you don't know what it is. And yet, that's crucial. See, your databases don't have information that's really (**VIDEO 4: 0m0s**) needed.

0m03s KI: Then it's better to have some, than none at all. I am just playing the devil's advocate all the time.

0m08s CWC: You are not a very good devil. Because you don't have any devil in you.

0m15s KI: Your trail-and-error method. Anyway, there are a lot of companies all over the world nowadays that use and rely on databases and they don't know so much, perhaps, about the opportunity costs. And then, many of them will do in a good way, anyway, and they don't need to be philosophical and don't need to bother about opportunity costs. But they need to have computers. Without computers they would be off the business at once.

0m44s CWC: I'm not impressed, because on the other side: How many have crashed, failed. An awful lot of companies fail. I ran a seminar on non-profits. The estimates that we got was that 95% of non-profits in the United States fail every year.

1m10s KI: Non-profit organizations.

1m12s CWC: Well, I am sure it is something like that for profits. If you include all the little stores and so on. And even big stores. They fail. They also are looking at databases.

1m32s KI: Perhaps we should only rely on profit organizations and not on non-profit.

1m39s CWC: Well, profits fail too. They look at the wrong information and so on. I don't know. I find that looking at a list of data on a screen, that tells me various numbers are associated with various activities, isn't very useful. I don't know how people react to that. The great advantage of models is that they have to decide what's relevant at the very outset.

2m16s KI: And still many people would say that this is not possible to do because reality is so complicated. So, let's start with some kind of relations, logical relations about different kinds of data, and try to build up a model by means of a kind of interaction in which we build a logical network, which becomes bigger and bigger and more and more better refined, and perhaps in the meantime we also will learn how to define the variables, how to improve measurements. And this is the idea behind many expert systems connected with databases and so on. Let's try a heuristic trial-and-error method in a, with humility and with modesty and let's make it piecemeal, little by little, and not try at once to get the big model. As you say, it does not work perhaps, and we have no data and so on. Let's start small and let's build on. A better devil this one?

3m24s CWC: I don't know. Something happened when the computer came along. And the most successful thing was storage. And business offices have known that storage is important. You could tell for an old fashioned business that storage was important, because there would be filing cabinet after filing cabinet, all with information. And now what we have is the ability to not have to go to a drawer with a name and look for the file and so on, but we can push some buttons and then there it is upon the screen, you have it. For certain kinds of business applications, like insurance, I am sure that's convenient, you know. Because when I call into my insurance company and I have a question about my insurance policy, she doesn't ask me what my name is, she asks me what my number is. So I am only known to this computer by this number. And then she can push the number in and out comes a statement, West Churchman didn't pay the last bill, or whatever. And that certainly is convenient for that kind of operation. On the other hand, there is another part of the insurance company that's dealing with investments. That's a part of running an insurance company, they have to take the money that customers pay and invest it. Now, what do I do?

5m27s KI: Make an expert system?

5m31s CWC: What does that tell me. There is a rule of some kind. Don't invest in American automobiles, correct? (KI: I suppose so). Well, is that rule any good at all?

5m46s KI: [There are] many rules. You ask then somebody who deals with investments he might [start] talking with you. But this is the way I think, you see. If we have so much many and the stocks are such and such and the reports on the stock market are this one, if and then, if and then, if and then, I will try to build up an ad hoc trial-and-error method, then I'll run it to see if it corresponds to the kind of decisions that you really would make in the near future. And then I would say: OK, this is validated until further notice. I guess it is a way of working nowadays with logical networks. You try to catch the logic of the thought of the man who is considered to be an expert. And, OK, this is computer support. You don't need to speak mathematic about mathematical models in the old way.

6m51s CWC: I am curious about all that, you know. I have heard that said what you are saying to me now. And knowing organizations as well as I do, I know that if that did happen and these rules were added together and then some response comes: invest in this type of activity. It seems to work, now, you know, it's like memory. Because that's all it is. It's the use of memory, so that's what's stored to make our own decision. Well, it gets up to Mr. Jones, who has to sign off on all this. And Mr. Jones, who is the most powerful man in the investment industry says: No way am I going to invest in that kind of activity. And he tears it apart.

8m00s KI: And then you ask why and you put a new rule into the system.

8m06s CWC: And then Mr. Jones is replaced because he has been unsuccessful. Jim Miller wrote a book on living systems. He tried to define how each living system has these 19 functions. And one of them is memory. And he defines memory as acquisition-storage-retrieval, is memory. Now, I am a pragmatist to this extent. I would say there is more than that, those three basic functions. It seems so simple. And that is political power. There is a matter of political power there, because the company may have stored and maintained the storage and then retrieved and not acted on the memory at all. Because somebody with political power simply intervened.

9m16s KI: I guess we would probably return to what we talked before, namely that, OK, but I can not scientifically obtain political power. This is not in the department of science, but we can just by means of reason and perhaps wisdom tell something and hope this will illuminate the people who are engaged in this thing.

9m43s CWC: [Imagine] we are in the year 2287, some time from now, and there is a historian looking back on this period and he says: You know, one peculiar feature was always to people of that time, that decision-making was important. But what they worried about was whether it was scientific or not. That seemed to bother them a lot. And if it was scientific then apparently they thought it had a lot more power to it.

10m29s KI: It was near to the truth. It was more probable to be successful.

10m40s CWC: Let me go back to my nutritional scientist. They go into an Indian village, they weigh everybody, they get their height, and they measure their caloric intake. That's what they do. They come up with these numbers. And it is scientific, because they can return home and say: In these villages in India, these are the data, and we collected them very carefully. Now what?

11m11s KI: Now we can calculate how much food they need, they could say. And then how to distribute this food.

11m16s CWC: That's easy to say. They can calculate that. And write it into their article. There is something called the Harvard Standard. If you are below 60% of that for caloric intake, then you are hungry. You need more food. […] That's in you article.

11m39s KI: Now you at least know that, would the devil's advocate say, now you at least know how much food is required where and then you can begin to discuss the distribution problem, but there was something that was absolutely needed at the outset. To know what are the requirements and which is a problem, and the data and measurements and databases are basic to all this effort. So why not at least set up the databases.

12m10s CWC: If you had begun the other way and found out what are the possibilities for distributing the food differently in India from the way it is now distributed, given the bureaucratic system and its relationship to the landowners, the answer would be: We have no idea. We don't know how to distribute. So, all right, you gather a lot of this information, but we have no idea how we are going to distribute food where it is needed. And, furthermore - I don't know what the opposite of the devil's advocate is, angelic advocate? (KI: God's advocate, priest), - the people who gathered the data gathered it primarily so that they could return home and publish papers in respectable nutritional science journals, which get them promotions. They don't have to say anything about how it is used. So, they are out of that. They are like my operations researchers who left the company behind with their report. They would leave all the data behind. It got to be so bad that Berkeley used to work with India as it was assumed that [..] they had a common nutritional

research project that they would work together. The last time this came up with the Indian researchers and government they said no, we don't want to work with you anymore. The data you gather are irrelevant, never used, no way to do anything about it. That's a pretty tough indictment.

14m13s KI: Yes, I have the feeling that you have been quite clear now about how you look at operations research, and modelling and implementation and anti-disciplinarianism and systems thinking. And I guess that the devil's advocate has played out its role now and before leaving the final judgment to God and to the spectators then I wonder whether you would like to have some completing words about how you look then at you work and what you hope for the future, and how people would inherit it and perhaps expand on it, build on it.

14m59s CWC: Ya, I go back to logic. Why not, that's where I began. There is a passage in one Kant's book on morality, where he says: I can come to a conclusion that this is the correct moral principle to use, but I realize that anybody, any reasonable, rational person can say to him, Kant: Why is that? The principle. How do you justify that's being the [..] principle. And then he realized he is up against the same problem again. He finds a reason, and there is still this thing, the devil's advocate comes along and says: All right, you give me this reason, but what's the one behind it. Why be interest in future generations. And there are some plausible reasons why not. Take the position that we are a temporary species, we went through a mutation that gave us intelligence, and it would be just as well when this species is obliterated. Hopefully it won't obliterate all the other species, while it does that. Because that was a mistake of nature, that we got intelligence. We weren't prepared for it. We didn't know how to use it. That's why we have all these problems. That's a good question. And I am willing to address it and spend more and more time asking, why? Why base the whole morality on future generations? It turns out to be kind of boring, [..] people just don't want to hear about them.

17m03s KI: Maybe we back up from logic to religion again? And ethics.

17m09s CWC: Well Kristo, do you really think that religion will do the trick, I don't. I don't see how it does. It's full of doctrines. I mean, I was brought up a Catholic, we had a book that thick (2 inches), where we had to get our answers from. Until I woke up one day and asked: Why does that book have any particular authority. And the answer was: It was the word of God, but I didn't find that. I couldn't discover why God printed that book or had it printed. So. I didn't think going that route necessarily does it either. I can find all kinds of things, I think that help. I think literature does. Literature often deals with man's destiny and the meaning that it has in his destiny. And so that takes me to another area. Poetry, and drama, and the novel and so on. They are all dealing with these feelings, these feelings that seem to be in the human race. Kant had as a moral principle: Never treat humanity in either yourself or another as means only, but as an end. [What is] humanity? And now in the United States we have got humanistic medicine, humanistic psychology, God knows, we may even have humanistic accounting. So the Internal Revenue Service can learn how to be humanistic in sending out their returns and so on. What does it mean to be humanistic? That's a good enough point for me. To worry about future generations is to be human.

19m36s KI: And then in order to find out you think more and more about literature and poetry and so on. And yes, you would also include the holy books as examples of poetry and examples of literature.

19m50s CWC: Some of them. I mean, you have to read the Old Testament to see the extent to which the books of the Old Testament were all poetry. Some of them are rather horrible. The book of psalms is certainly poetry, but there are other of the Old Testament, which are anything but. And those are the ones that advocate how many people you need in your armies to overcome the

various enemies. I don't know whether that constitutes poetry or not. It's not a problem I want to worry about.

20m40s KI: OK, thank you very much, West Churchman. Then we have left hope. Those who have read your work, those who will read your work. Some image about your living thought, and not only about your printed though. Thank you very much.

20m59s CWC: Thank you.

21m02 CWC: I have been asked by Kristo Ivanov to give my rendition of a song by Schubert. It is the fifth song in a song cycle called Winterreise, a story of a young man who has more or less been chased out of town by threats of marriage from his potential mother in law. Its relevance to what Kristo and I have been talking about is possibly this that the story is the journey of a young man and his reflections on what his past life and what his future life will be like. And a great deal of what Kristo and I talked about has dealt with really the design of a life and a just or ethical design. And also I ought to say that my rendition is in part incorrect because I have no musical instrument and I [..] sung this song with such an instrument to guide me. So there will be mistakes and that should be part of your enjoyment as you listen to my rendition. I know that the second verse is in the minor key but I have forgotten exachtly how that happens and so on. So this is called Der Lindenbaum. And its his reflections as he walks along the pathway about a tree that stood near the gate of the town where he had lived before he took his Winterreise:

> Am Brunnen vor dem Tore
> Da steht ein Lindenbaum:
> Ich träumt' in seinem Schatten
> So manchen süßen Traum.
> Ich schnitt in seine Rinde
> So manches liebe Wort;
> Es zog in Freud und Leide
> Zu ihm mich immerfort.
> Ich mußt' auch heute wandern
> Vorbei in tiefer Nacht,
> Da hab' ich noch im Dunkel
> Die Augen zugemacht.
> Und seine Zweige rauschten,
> Als riefen sie mir zu:
> Komm her zu mir, Geselle,
> Hier findst Du Deine Ruh'!
> Die kalten Winde bliesen
> Mir grad' in's Angesicht;
> Der Hut flog mir vom Kopfe,
> Ich wendete mich nicht.
> Nun bin ich manche Stunde
> Entfernt von jenem Ort,
> Und immer hör' ich's rauschen:
> Du fändest Ruhe dort!

**Names in the interview** Names of people and organizations that are mentioned in the interview, in order of appearance: Hannah Arendt, Tom Cowan, Kepler, Newton, FDR (Franklin Delano Roosevelt), Marchant and Friden (manufacturers of mechanical calculators), NASA (National

Aeronautics and Space Administration), Ronald Reagan, Saint Paul's Romans, The Club of Rome, Jay Forrester (MIT), Aurelio Peccei, Immanuel Kant, Carl Gustaf Jung, Joseph Campbell, Edgar A. Singer Jr., William James, Joe McClosky, Koopman, Roger Crane, A. Schainblatt, Russell Ackoff. (This list is shown at the end of video 4, as are below biographical notes, presumably composed by Prof. Ivanov)

**Biographical notes** The Faculty of Social Sciences of the University of Umea, Sweden, decided in 1985 to appoint Professor Emeritus Charles West Churchman at the University of California, Berkeley, honorary doctor of economic science. West Churchman was born in 1913 in Philadelphia, Pennsylvania, USA. He is today one of the main representatives and critics of systems theory considered as a research method at the interface between natural science, technology and the human sciences, especially ethics. His PhD was in symbolic logic. He has been professor of philosophy at the University of Pennsylvania and Wayne University, and professor of engineering administration at the Case Institute of Technology and then business administration at the University of California, Berkeley. In 1963 he was appointed research philosopher at the Space Sciences Laboratory at Berkeley and he was acting chairman at the Center for Research in Management Science at Berkeley. He was one of the founders of a research institute of city planning and has been director of research and chairman of the board in several organizations. Professor Churchman who is, by the way, already honorary doctor of philosophy at the University of Lund, is a fellow of the American Academy for the Advancement of Science and of the American Statistical Association, editor-in-chief and former president of the Institute of Management Sciences, as well as a member of the Operations Research Society, the Philosophy of Science Association and the American Philosophical Association. He has authored about ten books, some hundred other publications, and edited many books and articles including Philosophy of Science and Management Science. He is honorary chairman for life of a new department at Berkeley, Peace and Conflict Studies. West Churchman started his academic career in the area of mathematical logic that together with digital electronics and mathematics constitutes the basis for the development of computer software. During the war he was active within the defence effort with statistics and applied mathematics. That awakened his interest for economic science and for questions of social science. From this period originates one of his first and most important books in a time when mathematics were the fashionable sciences: Theory of Experimental Inference (1948). This development resulted in West Churchman's becoming one of the pioneers who launched operations research and management science. It became a synthesizing concept for the attempts to attack practical problems and support decision making with the help of quantitative and interdisciplinary methods. From this period originates the book that made both operations research and the names of the pioneers known all over the world: Introduction to Operations Research (1957) co-authored together with R.L. Ackoff and E.L Arnoff. The military and technological industrial interests for the 'harder' mathematical-logical and quantitative aspects of operations research dominated, however, very soon all other aspects. Within a few years operations research turned into an abstract formal research area isolated from the social sciences reality that stood at the center of the pioneers' original intentions. Following the themes of his studies in philosophy, churchman continued his interest for economic science and for questions of values in science, often in low-keyed but sharp polemics against those who advocated the possibility and need of strict separation between facts and values, natural science and social science. His methodological development starts from American philosophical pragmatism and especially from one of its branches named empirical idealism. The book that most adequately represents this stage of development, in a time when the world spoke about economic decision theory, information processing, problem analysis, administrative rationalization, etc, is Prediction and Optimal Decision (1961). It represents an attempt to re-vitalize the original idea of operations analysis by means of a criticism of oversimplified economic utilitarian thought.

Churchman tried subsequently to develop an applied economic science directed towards global problems such as militarism, poverty and pollution, in a spirit that recalls J. Bentham's attempt to apply economics to the criminal justice systems. The concept of opportunity cost, that Churchman considers as the most important concept of applied economics, cannot be reduced to simpler concepts but rather takes us into larger contexts - or systems - including political reality. 'Analysis' and traditional probability thinking, are consequently not the right way for systems planning and for studies of normative decision-making. Churchman rejects therefore utilitarianism (Hume, Bentham, Mill, Sidgwick, etc.) as ethical basis for economic theory and prefers instead to use the concept of justice or equity (Kant). One consequence of all this is that Churchman - who by the way could be considered a statistician as well as a philosopher - questions several of the basic concepts that are often taught and applied in a thoughtless way in these disciplines, e.g. tests of hypotheses, confidence intervals, cost-benefit analysis and logical deduction. In general he finds that it was a serious 19th century strategic mistake to subdivide human knowledge into club-like disciplines with their own rules of admission and membership. These thoughts are to be found in Churchman's later work and in his development of operations research's original idea into a systems theory. the systems approach allows one to describe and understand the context and functions of complicated activities through many but reciprocally dependent parts or subsystems. Churchman's socially oriented systems theory is also an organization theory or theory for administrative development (rationalization). It was first presented in two books that were written in more accessible language, oriented towards educated laymen, business people, and the public in general: The Systems Approach and Challenge to Reason (both published 1968). They were widely read and the constituted the bridge to Churchman's later deeper information systems oriented work: The Design of Inquiring Systems - Basic Concepts of Systems and Organization (1971). it translates the original ambitions of statistics and operations research into information and computer language in the age of computer revolution systems, databases, computer simulations, administrative systems development, artificial intelligence, expert- and support systems etc. During the latest years Churchman has dedicated a sizable amount of his efforts to studies of conditions for peace and to the possibilities to prevent famine in the developing countries e.g. better food distribution. He has at the same time studied from a philosophical and scientific point of view the criticism and resistance to the systems approach. This was done in a couple of books which also have in part an autobiographical character: The Systems Approach and its Enemies (1979) and Though and Wisdom (1982). Churchman appears now to be working on a manuscript of a book with the preliminary title Counting and Caring that so-to-say closes the circle to his early interest for statistics and economic science considered in a humanistic perspective. West Churchman represents an alternative to Herbert A. Simon's works, and hence another mainstream of modern thought in economic and social science and in the view of administrative systems development that supports theory-building in administrative data-processing. His life-time work is of extreme importance for all those disciplines and academic initiatives that, like administrative data processing, systems science and computer-economics' attempt to connect the explosive technological development to social science, behavioural science, and to the humanities. His research has been relevant for such disparate applications as space technology, city planning, health planning and consumer economy, as well as peace and conflict in the world. His disciples and international network of contacts reach to Central Europe and so-called developing countries in the Far East and South America. During almost 30 years he has constituted a point of contact and a source of inspiration for many Swedish researchers in several of the social sciences. (This note is shown at the end of video 4).