



* Okay, then. Welcome to our cleansing talk this evening here in Siegerlandmuseum, and nice to meet you. Never met before. My name is Michael Nassauer, I'm the general manager of the Philharmonie Südwestfalen one of the three state orchestras in North Rhine-Westfalia. And I'm curious, we're talking about control today.

/ Yes. I am Hubertus Koch. I'm an oral maxillofacial surgeon, specialized in children. I have been working in children's hospital here in Siegen for the last 20 years.

□ So my name is Mustafa Kizilcay. I am from the University of Siegen. This is department of electrical engineering and the control as a word is for me, a very technical word. And I would like to start with my statement. I have written a statement on this key word control. And if you agree, thereafter, we can start to discuss to talk or to go to any direction, related to control. Is that okay?

* We have the three statements and you start.

□ Okay, thank you. The key word control, evokes in my mind in the first moment associations to the following two subjects. Control of people of higher authorities or by some privileged groups. And the second one is control of physical systems, equipment, or devices in engineering in daily life. The first association has a rather negative meaning, this control runs in a dictatorship, the second one is widely spread and can be found almost in each household appliance. As scientist and engineer, I would start to talk about the control of technical systems. They are often called automatic control systems. Control theory belongs to do fundamental courses at universities in engineering, particularly in electrical and mechanical engineering. Why is the control of various systems so important in our lives? I will try to enlighten on this subject in the next 10 minutes with some simple examples.

So don't expect that it will be a tough theory of controlled systems, but anyhow, we should, we will have some introduction in this field. So in my chair of electrical power systems at university, we deal with the control of the electrical power system. We call it power grid because it is a meshed complex system. That broad system must work with least disturbance and interruption of power supply 24 hours a day. So can you imagine a week without power? We cannot tolerate this. Even 5 minutes, 10 minutes, short interruption of power is unacceptable. This is only possible by several control mechanisms installed in the system. We talk about speed and frequency control, voltage control at the power stations. There's power flow and current control, if there's an overlaid high voltage direct current transmission system, what we call briefly HVDC system.

So I brought two course books, you see on the table, about the theory, control theory and control systems. Both are in English, one book by the author Benjamin Kuo. This blue book printed in 1975 was the course book at the time when I studied electrical engineering at the Middle East Technical University in Ankara. The book is rather thick, if you scroll in it, you will see many mathematical derivations and also some figures, and those figures are yeah, sometimes you see, like here, those are mechanical applications to mechanical systems.

Mustafa Kizilcay □
Hubertus Koch /
Michael Nassauer *

And then the so called block diagrams, which are fundamental for the control systems we see and also in this statement. Now at first sight, for example, this is a block diagram. The listener cannot see this, but I hope later this will be provided on the webpage of the artist Lara Favaretto under the, let's say, subject distraction. So although those two books are relatively old, written 45 years ago, basic theory has remained almost unchanged.

Of course, there's a steady progress in the control theory and applications with regard to the complexity of the representation and methods of analysis of those systems. I will quote from those two books in order to give you an opinion on the control of various phenomena, at home and at industry. Even such problems as inventory control, social and economic systems control, environmental control, may be approached from the theory of automatic control. Also the performance of a Philharmonic orchestra on stage can be interpreted as a controlled process, I believe. I will come back to this subject after explaining the basics of the control.

So the basic controls system concept maybe described by the simple block diagram shown in figure one. So here is figure one, see this document of paper, we can look at it. The objective of the system is to control, the variable C , which is on the right side. In a prescribed manner by the actuating signal E through the elements of the control system. So we have a black box. The black box is the control system. And at the left side, we have the input and at the output side, the right side here, is the output. So in more common terms, the controlled variable C is the output of the system. And the actuating signal is the input.

As a simple example, in the steering control of an automobile, the direction of the two front wheels may be regarded as the controlled variable C , the output. The position of the steering wheel is the input, the actuating signal E . The control process, or system in this case, is composed of the steering mechanism, including the dynamics of the entire automobile. However, if the objective is to control the speed of the automobile, then the amount of pressure exerted on the accelerator is the actuating signal with the speed regarded as a controlled variable.

So another example, the central heating system, we will see, we see it on the, on the next figure, figure 2. It is rather complex if we look at this. It's a central heating system, or air conditioning system, if operated in conjunction with the room thermostat it's said to be automatically controlled. Whilst if it is operating without the thermostat, it is said to be manually controlled. These systems shown diagrammatically in the figures 2a and 2b. In the case of 2b, it is the manual control. If a change occurs in the outside air temperature, a change in the room temperature would result and manual intervention will be needed to correct the room temperature. For the automatically controlled system, or figure 2a, the effect of a change in outside air temperature on the room temperature would be corrected without manual intervention. The manual system is said to operate in an open loop, and is now known as open loop system. Whilst the automatic system is known as a closed loop system.

So the listener cannot follow this talk, cannot see this, but we can see this in figure 2 in the closed loop system, there is a real loop, which is closed, the output goes to input. And in the manual system, this open loop, this connection is missing. So the word 'automatic' implies that there's a certain amount of sophistication in the control system. By automatic, it generally means that the system is usually capable of adapting to a variety of operating conditions and is able to respond to a class of inputs satisfactorily. However, not any type of control system has automatic feature. When the system does not have the feedback structure, so-called an open loop system is the simplest and most economical type of control system. Unfortunately, open loop control systems lack accuracy and versatility, and can be used in none but the simplest type of applications.

In general, the elements of an open loop control system are represented by the diagram of figure 3. This is a general diagram and the input signal, or command R , is applied to the controller, whose output acts as the actuating signal E , the actuating signal then actuates the control process and hopefully will drive the controlled variable C to the desired value. What is missing in the open loop control system, for more accurate and more adaptable control, is a link or feedback from the output to the input of the system. In order to obtain more accurate control, the control signal C must be fed back and compared with the reference input. And an actuating signal proportional to the difference of the output, and the input must be sent through the system to correct the error.

Human beings are probably the most complex and sophisticated feedback control system in existence. A human being may be considered to be a control system with many inputs and outputs capable of carrying out highly complex operations. To illustrate the human being as a feedback control system, let us consider the objective is to reach for an object on a desk. For example, here, I try to reach this book, or even any glass. As one is reaching for the object, the brain sends out a signal to the arm to perform the task. The eyes are as a sensing device, which feeds back continuously the position of the hand. The distance between the hand and the object is the error, which is eventually brought to zero as the hand reaches the object. This is a typical example of closed loop system. However, if one is told to reach for the object and then is blindfolded, one can only reach toward the object by estimating its exact position. It's quite possible that object may be missed by a wide margin. With the eyes blindfolded, the feedback path is broken, and the human is operating as an open loop system. The example of the reaching of an object by a human being is described by a block diagram shown in figure 4. The feedback signal has generally a negative sign in the shown closed loop operation. I would not to explain, but for us, for the three, maybe it is interesting to see we have the controller in the brain, the controlled process that is the arm and hand, which will be moved. So the position of the hand is the controlled variable because we want, that is our goal to reach some object, but there is a, this feedback through the eyes, as a sensor. In order, we can go with our hand, very quickly, but this is a process which is occurring steadily, and so that, we don't think about such a closed loop system as human being.

In such basic closed loops control system, there are several factors influencing the system behavior. It can be easily understood from the following examples, time response is a very important issue, how fast and how smooth should be the operation of performance so that the desired output, the desired controller output is timely achieved. Stability is a notion that describes whether the system will be able to follow the input command. In a non-rigorous manner, a system is said to be unstable, if the output is out of control or increases without bound. Disturbance is therefore also an important factor to be considered in control systems.

So I'm coming back to the performance of a Philharmonic orchestra on stage, I said it can be interpreted also as a closed loop control system. The interaction of the conductor with the orchestra members forms a feedback system. The music score on paper is the reference input. The sound produced by the members of the orchestra is the controlled variable or output. And interaction of the conductor is the feedback in order to minimize the error in tone, in tempo. Now that is mine imagination of this control, whether I'm right or not, I would like to give the word, Mr Nassauer, to hear his opinion first on this, how can I say, my imagination of the interaction of the orchestra with the conductor, whether it can be accepted as a closed loop control system.

* But I never thought of my profession as this sort of control but, thank you very much. You did impressive preparation for this evening. Just trying to follow you in your explanations here. When I got the invitation to this evening, I thought about how can I approach this term 'control' as control is not the word of the day in our normal business. And most of the time when I talk about my profession and my person as such, people listen a little bit, and then they say, "It's a totally different word." Musicians, music, being an artist is, in part, very different from all the other jobs. Control, nevertheless, is part of our world. For me the control... maybe I'll introduce a little bit myself, so that you can understand how my "vita" developed.

I was born here in Betzdorf, which is not so far away from Siegen. And my father conducted a small, let's say kind of brass band in the church, and he needed the French horn. My parents were not totally able to control the thoughts of a child, the child, because I would have preferred to play football or something like that, outside. But my parents were sure the boy was talented, and that he should learn to play an instrument. I got French horn lessons, and I was very lucky that at the age of 14, I got the chance to become a member of the Youth Orchestra of Rhineland-Palatinate State. That for me, gave a start to approach the symphonic world, to be part of an orchestra, to play together, to work together, to have emotions together and, but you are right. This every time has to be controlled when you have a rehearsal or you're at a concert by the conductor in the front.

I finished my high school in 1994 and began to study in Cologne. At that time, I was a member of the John National Youth Orchestra. And 5 years later, at the age of 23, I got my first position here in the orchestra, assistant principal at the Philharmonie here. And I started to play every day my instrument in the orchestra.

After some years, I was a member of the orchestra board. I was a member of the union, and also organized some concerts in my hometown and Betzdorf. Maybe some things came together that the people here in Siegen talked about, if I could take over the position as an intendant, the general manager of the orchestra, which is not the conductor, but the man who organizes everything behind in a way.

2014, that was the change for me in the profession. I was elected intendant and I accepted this. And in October, on the 14th, I played my last concert with the orchestra, and on the 15th I went to my new office, sat at my new desk. And I tried to learn everything as soon as I could. Well, when I was invited, I thought, why did they invite me? As control, maybe it's not the first word I would think of when I talk about my profession, but I was curious, and I thought a little bit, what is control for me? Do they mean the control as the general manager, the control system, the controlling the people I have here, my employees, the musicians? Or is it the control I need as a musician? As I learn both, I said, "Well, I introduce maybe the two words that I experienced so far to you. And maybe we come back to one to the one or other point later."

That's the first, my actual position as a general manager, we have 70 people here in the Philharmonic. Most of them are musicians, but we have also the staff behind, the team behind the orchestra. Control can also mean I have to control the money. I have to control the budget. I have to control sometimes the behavior of the people, I have to control that everything works in the right way, but then – I thought – I'm also controlled. I'm also controlled, it doesn't matter. What do you achieve? There's always another boss above you. By whom am I controlled? By my bosses, of course. Sometimes they come and say, "Let's see if the financial budget is still working correctly or not." I'm also controlled by the audience. The audience listens to our concept. And in a way they control also me, my staff, but of course, at first sight what the musicians can bring on the stage.

We are controlled by the press, by the media. We just released our first Blu-ray a few days ago, which is also kind of a control, because you can every time see it and go into details and control if everything is right. Yeah. And sometimes I'm also controlled by my people also. If they come to me and say, "Mr. Nassauer, that was not right." It can happen, should not be too often, but it can happen. They are seeing that you have to understand how and where people work. Then the other part of my life being an artist, I still play French horn. Being on stage, having to do with emotional topics, but you have to control the emotions. Being an artist professionally means you have to control your instrument. You have to control your breath, your body. You have to have good nerves and you have to control the nerves.

I always say it doesn't matter if you can play a special part of the symphony, for example. At seven o'clock or nine o'clock, if the schedule says at eight o'clock you go on stage. And at eight o'clock and five minutes, it's up to you to bring this passage, then it must work at that point. You have to control, in my case, as a French hornist, the fingers. You have to have discipline.

On one hand, we have to control emotions because we have to control ourselves, that we can be part of a big project, a big orchestra. But on the other hand, we have to review the emotions, we have to show them. And this is sometimes a little bit contradicting.

□ In what sense? Because if I go to a performance of an orchestra, I'd see that the people, the musicians, are so concentrated.

* Yeah.

□ So they cannot control their emotions, I think. Because they, they are in the music and they live it in a way. Or, is it my imagination not so correct?

* We live it. If you go alone on the stage, then you can, then you have more flexibility to perform. But if you have a score, you have your own instrumental part on the desk, then you just sit there and you have to be a part of a precise orchestra. In modern music, for example, the scores are very, very complicated and the composer noted everything he wanted to have. This is, in a way, a little bit in the own world, let's say, and if you can't control yourself and your body, then everybody would have some different manners. And this doesn't work totally together. In addition, you have the conductor and he worked with you. We have rehearsals. And then he says, "Let's do it in this or that way." He has his own attitudes. He wants to perform the symphony, for example, in his personal way. And he has to bring this to the musicians and the orchestra has to transport that together to the audience. So, if everybody does what he wants, it might sound also interesting, but not that professional, maybe.

□ Excuse me, I interrupted you. How can a conductor control or the control of the conductor of the orchestra, in which way it occurs?

* Yeah.

/ So, it is the time delay? Is it the tempo? If somebody plays the wrong, say, tones, you cannot correct it.

* No.

□ It's just...

* There's this part of a live performance. You have the rehearsals before, you expect everybody to be prepared technically, before you appear to the first rehearsal and in the rehearsals, you bring together people from different nations, from different generations, from different schools, maybe. You tell them how you think, how you want them to play this evening. Of course, we are human beings, we do some mistakes. You have to take that into account, but he has to think a little bit in advance. Even if you conduct on the evening on stage, you have to show the people a little bit in advance what comes now, what do you want to have them know, you have to listen to them. But on the same time, you have to organize.

You have to control the big amount of people in front of you that they know, especially maybe if there happens a mistake, what you do next, you control the tempo, for example. And you are not always the same person. Sometimes you feel a little bit like “let’s do it today a little bit slower.” The other time you’re totally motivated. And you say, “Okay, this time we go faster.” And this is the point where the conductor is very important in front. And he has also to be, let’s say, a wise person, a person with social skills. It’s not only the technical thing that you control, when I command you, when I advise you to play now. But it’s also that you learn how people work and how they try to do their best. It’s also a question of motivation. This is in a way then also controlling the symphony, the evening that you achieve a situation where everybody is motivated and does his best. So maybe as an introduction to a totally different world. Control for me if I look back a little bit is indeed both.

It’s controlling the system orchestra in a way, the company in a way, that the company is like everything else where people work together. But, also, that we control that we are able to perform, that the profession is still something you enjoy very much, because this is the bottom, this is the basics that we have fun to play together. And we hope in these times that Corona allows us to come back on stage with the full amount of the orchestra very soon. Maybe for my personal statement so far to this point, and I’m curious if you have questions later.

/ Sure, sure. Thank you. It’s interesting which different thinking of control we have. To my person, I was born in Eastern Germany, left the state at the end of my childhood because of the political persecution of my father. We came to Herborn, there I finished high school. Then I was in university in Gießen. Then I became an oral maxillofacial surgeon with a specialization in surgery of the malformation of the child’s face. And with this I came 20 years ago to Siegen and work at children’s hospital, as I said beforehand. Therefore, because of this history, I got to know what it means to control oneself, my own, in surgery.

Being under control of others or to control just the procedure. And these are very different opinions on control. With this experience I learned being under control of somebody can be positive or negative. In a positive way, when, for example, you have a surgical teacher who leads you to optimize a surgical technique and to learn to control your surgical performance. The negative side. When you are under control of a dictatorship state was a goal to distract your thinking or being. In my profession as a surgeon, I must have the surgical procedures under my control. If not, the procedure may end up disastrous.

In my opinion, one has to distinguish between having control of a procedure, you can learn this or having control of another person, another man. The control of other human beings or furthermore, the control of the development of mankind might be of interest to talk about. And this might be the political or cultural background of the exhibition clouds. That’s the reason why we sit here. The clouds in the blue sky, give us the belief in childhood and dreams. And in our dreams, nothing is under control. Nothing must be under control.

Being under control of consciousness or nothing has to be under control at least. These clouds are smooth and gentle, but they can turn to thunder and lightning. The data clouds seem to be very similar for me, they come smooth and gentle. They make you believe that you are safe and you can trust them. But there is thunder and lightning too, and abuse of data can be disastrous.

Having data is the most important tool to control other persons today. This is indeed a very short flow of my source, but this is a dilemma for me, a person that had to learn what it meant being under control of an oppressor state. A totally different point of thinking about control is for me, what is the mankind drifting by furthermore losing control of itself? The question too leads to data, data clouds, digital information, fake news, manipulated pictures and so on. Persuading in this way the terminals, control gets out of control because mankind has never had control on nature, evolution, and the real great things on earth. Religions, nationalisms and science try to make us believe you would control the earth, but we have not understood what evolution means.

And I believe this is the point to talk about because this is what comes to us. Climate changes. We believed many years, we have them under control, but we do not. And there are people that try to control other people in this way to believe there is no climate problem. And there are others they make us believe there is. What is the truth? That's the point I ask you for discussion. This is a totally different view to control. As you, as a technician with data boxes, control boxes, and your opinion, controlling an orchestra, dealing with instruments and music as artist.

* The artists can't control the climate that's for sure. But if your technical systems can help to control things like you mentioned, then the importance of your work is very high because if your systems doesn't work, then the effect is very big. The mistakes are grave. So, for example, when you go on stage as a musician, you want to do your best. And everybody hates playing a mistake in the concert, but if it happens and sometimes it's not to avoid, then nobody dies because of that. If you do a mistake in the operation, you said it can be a disaster. The effects can be enormous.

/ Sure. And my specialty, I try to form a malformed child to make him appear as normal as possible. If you do it correctly with a well-trained technique, you can reach indeed nearly normal appearance, nearly normal function. But indeed, if you do a mistake, it can be worse than before and this you have to avoid. So, this is a point where you have to have your performance absolutely under control. That is specially, me, I just work as a classic surgeon just with a knife. I do not have high-end machines. I do not need radiographs or something else when I perform surgery first, but I have to trust my team. There's not only me, this is a team and I have to rely on this team, especially the anesthesiologists, that the child is safe while I'm performing my procedure. With all this, I'm going to work fine.

Getting to have control requires a lot of experience, because every child is absolutely different. You cannot do the same here and the same on the next child, you have to make it fit for every single child.

That's interesting and it's good, that doesn't save the climate either, but in a team we have to work so that the outcome is good. A small team works fine. The larger a team is, the more difficult it's going to be and to look on the earth with 8 billion of people, it does not work. It does not work.

□ It usually does not work. Yeah.

/ Mankind has oneself not under control. And I do not know how to manage this.

* But you said training is where you can get prepared for an operation. Or you said you have the experience and you have to be concentrated, I think. But you have to have a blind trusting with your team that everything works together. And you have only one chance and there's no second chance, normally.

/ Second chance is almost the worst one. Yeah. If you do a mistake and you have to redo a surgery, it is never going to end up as you do it for the first time as perfect as possible. That's the goal. Do it one time and do it correctly.

* So how do you control this? How do you control the situation? You wake up, you go to the hospital, three, four, 10 operations today.

/ No, not 10. One or two.

* One or two.

/ They take a couple of hours. So, one or two of these surgical performances are absolutely enough. You must know what you are doing. You have to know the anatomy, the function or the malfunction and the malformed anatomy. And then you can look at the tissues and you see, what is in my field right now, nasal tissue, oral tissue, and you can dissect them. And later on, put nasal tissue to nasal tissue, oral to oral, and it's going to work fine. You see what you can do, but you have to have a plan, a schedule how to navigate through surgery. And you have to have this goal before you cut in. You have to know before you start where you want to end up and then you do it step by step. And it takes time. So, I can't allow in doing surgery to lose control.

□ Concentration is very important because, as mankind, we can concentrate on a limited time. You cannot maybe do surgery three hours or four hours. It is impossible. Or is it possible?

/ This is true. You have to imagine that you do not have to be under maximum concentration all the time. There are phases in surgery when you suture some tissues, that's different to cut in. But the investigations show that if the surgeon makes a break after two or three hours, about 10 to 15 minutes, he's going to go better afterwards. He is more concentrated at the end of surgery. But the question is, can you do it? I cannot step aside for 15 minutes or 20 minutes and come back. As an anesthesiologist, a child is sleeping. That's impossible for me.

* The parents are waiting outside.

/ Sure. So you get used to it, and three to four or five hours, you can go on working without lack of concentration. So this is okay. It works. But you have to know what you're doing. Doing it for my first time, I was tired after two hours. Sure. And then on the other hand, your teacher pushing you to go on, but he keeps an eye on what you are doing. In a surgical field the best way is to learn to control your performance step by step, and then you'll learn to concentrate at the right moments, that's the way it works. It's a different way of control that you have as an electrical system.

□ That's right. It is almost self-control.

/ Sure.

* Yeah. Self-control that is maybe a little bit similar to our job, that we need big self-control. That we have to work, even if you need the flexibility. If something happens that you didn't expect and you have to change your plans. You have to react on what happened and do the best. And of course, I can imagine that your experience, the more you did that, the calmer you may be and can work better. Panic is the worst thing that can happen to you. And especially at that point, but if I understood you right, then control in your profession is – of course it's different to maybe our control – controlled in a way, also, if you describe these systems.

□ Maybe not necessarily because we have not a time pressure as in your case. So we have a system and that system should work in the future, mostly. And what we develop are simulation tools, to simulate the system. We model the system, which will be built maybe in two years, three years, and that system should work, with all controls. So, it's a very complex system. And at the moment, as you develop it, you have a fun, you have intuition to do it. But then later, if the time comes, they realize and build that system, then it should work. So there is not necessarily as your case, if you do a surgery, you are at that moment, you control everything. In our case, is that what we develop should function later without any failure, which is also not good if you build a system which costs a lot of money, because you invest for all these power plants and so on, and if it does not function, you are in a bad condition.

/ This is true. And the anesthesiologist has a machine that is not under control, the technician has done something bad with the machine, it would be a problem. Sure. He visits the patient and can see that he's fine. As you have prescribed it before entered in your book, information in information out, that's nice, but it has to work correctly.

□ Yeah.

/ And I have to rely on all this. Why? Because I do not have any idea how technique works. I just have a working field, four to four centimeters. And I look a couple of hours to the field. I do not have any idea how your technique works. I think there is a technician, they have to look at this and I just want to have a good result.

* Yeah. But interesting, you develop something you have to control.

□ Yes.

* And then if it works, then we buy this and then you say, "We rely on that."

□ Yeah.

* We don't understand this. You control it before us. And the one and only thing we can do is buying it and learning how to use it. And then nothing should happen to this thing. We need an hour. Yeah. The mobile, for example.

/ I do not understand how this thing works but it controls me.

* Your mobile controls you.

/ I'm sure.

* You count the steps you do each day.

/ No. No. Never. But there are other people who know where my mobile is. I'm absolutely sure that Apple knows where my mobile is and they can follow me wherever I am or my mobile is.

□ If they wish, yes.

* Is it an advantage or disadvantage?

/ For me it is a disadvantage. Sometimes I don't want that somebody else knows where I am.

* I enjoy as we have to travel a lot and we've come to a lot of different towns, already as a member of this youth orchestra, we went on tour to Europe, or to Asia, to America. And now not, at that time in the '90s, but now I take my mobile and I want to look where the next hotel is or where the counsel is, and I switch it on, type in the command and it can lead me directly to the point.

/ Sure. And all the others from Apple, Google, they do know very well-

* Of course.

/ ... when you use your credit card to pay. So even your bank knows where you have been. All your pathways can be followed by a control system that we are not conscious of.

* And then you get nice advertisements. When they sell what you were interested in.

Yes.

* Do you think often about how much we are controlled by things like that?
By advertising, by media, by the press?

/ Sure.

Okay. This can be also called control. As soon as we will not be manipulated by these advertisements and so on, then it is not so critical, I think. Because if we are conscious about this, there will be some advertisement and some promotion on that, and then you just click it away.

/ You just click it away, this is true, but the data collectors, big data, they are able to find out your buying skills by just two or three items that you buy regularly and they know it, and they can describe your person, your habits, and sometimes I'm really frightened because of this. Sure, I know when I look at a homepage for a car, five minutes later, I have all these advertisements of cars. I know that it will happen. I do it, sure, but there is somebody behind and...

* Who is not controlled?

/ Who is controlled by his boss.

* Maybe.

Maybe.

/ You told it a couple of minutes ago, behind each thinking head is another thinking head where it's at the end.

But it could be also something, but I don't know those systems, how they work. Whether they collect these data in formation at a central place or they use of order. Because they put a... As long as you visit the page, the homepage, they put on your phone, a cookie. A small... Well, how can I... Spy. And then if you visit another page, then they show you this automatically, I think they show you related advertisement. But if you delete all of them regularly, I think you will not receive any. I am not sure. I tried this, and for some time, if you don't have these cookies on your browser, for example, then it's quiet. But with the time, it will be collected and collected and you think you are under control. Maybe it is not a control in this sense. It is just a system operating... how can I say? Naturally, without any central organization or person or... I'm not sure.

* When you're looking at the Internet and maybe looking for the car or just do some preparations for a clandestine talk, something like that, do you have the feeling that you're controlled in this moment, that somebody is surveying you, that somebody else's looking on your cookies and the paths you are taking through the world of Internet, or does it feel free for you that you are just on your own?

□ Let me ask you again what is your question?

* The question that, do you feel free when you are going through the Internet or do you think there is somebody always spying and looking over your shoulder, and checking your cookies and preparing the next proposals?

□ Okay. Yeah, I understand. Actually not. I do not have the feeling of the control in that sense, that somebody is looking but it is just related to the advertisement etc, that then you get. Certainly, if you would get personal messages or something like that about certain issues, then I would be scared of this advertisement. I think this core system works through this advertisement, and then if you visit a page, then that page gets some credits from other and so on. I think the system is very complex, I don't understand it. For example, if you have a YouTube video which is clicked by millions of people, then you can earn money. And then because of the advertisement they show to the people, and they know how many people look on it, I think that could be not so critical.

Because there are so many millions of people on the world and working, or having a computer or a mobile phone or a smartphone. I cannot imagine hundred million or more in people, how can you direct your control.

/ There are control measures working, they are not only simple men.

□ Yes, in this case, yeah.

/ And I'm absolutely sure when you go on some page or some rewards app and write, "I love the Islamic State." I'm sure there's US securities at CIA that will find this and watch you.

□ In that case, it is for me also.

/ There are single words-

* Keywords.

/ ... keywords that come together. The machine makes ping, and you're on the screen.

□ On their screen?

/ On their screen.

* On their screen, not yours. But you mentioned YouTube. They just remind me that a couple of months ago, I read a big paper in Berlin where sometimes in the advisory council for the drum federal music organization, and there was just a big topic, the YouTube clips which are used today in school.

And I was surprised about the percentage of how many contents of preparation for school, for example, is YouTube clips. And there was the question in this counsel who controls these clips, because we want the young people to have the right teachers in the Internet, but you can bring everything to YouTube. There's no rules there, there's no limitation for this. And it was a big question, how teachers can find the right way to deal with this. And YouTube is very big. I don't know how YouTube clips can be taken away from the Internet. But what I was told that when something is in the Internet, then it's in the world. You can't get it back.

□ I think so, hm.

* So, is the world with things like this better now? Is this kind of... We don't have this control for YouTube, for example, but are we developing and becoming better in a way?

/ So, what I meant is that data clouds are sometimes okay. We can store our photographs, we can store our memories, but in these data clouds there are different people, and I'm not sure that the cloud I use is absolutely safe, and nobody with the skill to work with Internet and high-tech wouldn't be able to get into it. And that's a reason why data is so important for large institutions to have control. They see what you do, they see where you are. They see what you buy, and they see what you think. They see what you do, what you like. If you like to take photographs, you are a photographer at home. I've seen this. And I think this is a difficult theme, and this is not under the user's control, and this is a very difficult problem.

But at the end, there are institutions like Facebook, the hand of Facebook. There are just a few persons and they may be strong enough to control these systems. And therefore, I'm sure I'm a little afraid of this. Of course, we are millions and millions of people, and I think sometimes as why they should pick out me. So, I'm lucky, surfing in the Internet. And I know I'm under control, but although, I do not think about this.

□ I think the main goal of all this system is economical.

/ And power.

□ Yeah.

* Power, yeah.

/ Power.

* Influence, power.

□ Yeah.

/ And this, money.

□ Yeah.

/ The money of many old men.

□ But if you use it in a wrong direction, as you said, in a political way, then it is dangerous.

/ Sure. And that is what happened today. The obviously wrong news that are sent through the Internet and makes us believe things that aren't true. Mr. Trump has lied 20,000 times as long as he is US president, 20,000 lies.

□ Excuse me, yeah?

/ 20,000 lies.

□ Mm-hmm (affirmative). So today, you should select your information, actually. It cannot be filtered by a higher authority. People should learn how to get the correct information.

/ You cannot get correct information. Every information you receive is manipulated.

□ But you can cross-check.

/ Sure. Therefore, you have to read very many newspapers, books, primary literature. Then you can build up your own knowledge, and better you go to the place and look if it is true, what they have written in the book. There are so many pictures that are redone with fake information, and you cannot check this. There's-

* Do you have the time to do these researches? I mean, our life is complex meanwhile, and we have lots of topics. And if I go to every car station, car seller and...

/ No, you can't. But if you are aware that you are under these control mechanisms, you can be careful, maybe more careful. But so many people do not know, they do not expect that they are under control.

* So, you have to-

/ There are third parties that look at each part of your life.

* You have to set your priorities, that you're saying that for me, for my job or, in the private sphere, for my family, things I say in that case, I look for different opinions. I go to the sources and I check it by myself but sometimes, because of the lack of the time of course, you have to rely on what you read.

/ Sure. Sure. You have to trust.

My experiences growing up in East Germany, having a father that had to leave the state because of political problems. I got to know what the security does, the Stasi. And they checked my family even when we have been in West Germany. We had always a spy on our side, and they reported how we live here in West Germany. The West Germans didn't know what happens in their state from the East, how many spies have been implemented. And this was a time without Internet, without digital data. And I don't want to know what the CIA or other institutions are able to do right now, and what they can check that is normal persons. Persons who believe they are normal.

* And when was that, when you came to the West-

/ In the seventies.

* Seventies?

□ Mm-hmm (affirmative). Maybe they were interested at the time to have your connections, maybe to the East and so?

/ Their goal was all the time to destruct thinking and wellbeing. To interfere with relatives and put them under pressure and so on. They had a complex spectrum to disturb your life.

* Did you realize at that time that you were under observation, and how did you realize that?

/ For me, I was a child when I still was in Eastern Germany. The security was often at home, they ask, and so we felt that we are still under control. In school, I couldn't do what I wanted to. I was a 10-year-old boy. They wanted to say that I did not have to wear this jacket, because it was obviously from Western Germany, as it could influence the other pupils. Later on, we were astonished to read in the Stasi archives how long and how deep we have been infiltrated later on. How many good friends reported. This was a difficult situation, especially for my parents. For me. I was a child, sure-

* Was that the reason for them to go to Western Germany?

/ Oh, they gave him the chance to go. On the other hand, they said they would put him into the psychiatry hospital. So you do not have a chance to think long enough. But these things, my parents told us first after the wall breaks down, not at the time before, because they were afraid when they tell us these talks to children, they can talk about in public, and then it would be a rebound to my father's sister and brother who still lives in Eastern Germany. So first after Eastern Germany, the [foreign 01:12:22], we could talk with the children. That's the influence of Stasi, and these agencies.

* And when you began, I think at some point it was that you mentioned Ankara, are you from Turkey?

□ Yeah, I'm from Turkey, yeah. Mm-hmm (affirmative).

* If you compare this, what we heard now about Eastern-Western Germany to your state and to your home country, do you have other feelings or other experiences of controlling? Is control different there? I mean, you have a strong party there and a strong president.

□ Yeah. Meanwhile, I'm a German citizen, I must say this. And so of course at the moment in Turkey, the situation is not so good, with the president, as you know. In that sense, I'm also very... how can I say? Positive. Because as you said, I am not sure who will come later... But also, all my friends are anxious about this development. It is not a good development, you all know. And so sure, there's a certain control. You feel that control, but I-

* How do you feel that? Would you say that the stronger and the stricter a government is, maybe also the political system is set up, the more you feel directly, the controlling system that controls?

□ Yes, mm-hmm (affirmative).

* Also, in Eastern Germany, the people knew that they were controlled, that there was the danger of being controlled, at least.

/ Yes, this was. This was and they know. My parents know, and my father was on a conference out of East Germany. In the group they traveled with, one out of three was a spy. At least one out of three.

* One of three? That reminds me of a maybe funny small history then. Conductor told me that an orchestra, I think it was a Russian orchestra, they went on tour, and they were used to being controlled when they were especially in foreign countries, in the free countries. And every time they went to a new hotel, they checked the room where the microphones were, and one colleague thought he discovered the microphones, he took away the carpets, and then he found the microphone and he put it away. And five minutes later, there was a knock on the door and there was a man from the hotel and he asked what he had done because that was not a microphone, that was the thing that took the position for the lights in the floor down. So everything came down in the hotel room under that. For me, I didn't grow up in a world where I think about this. So we just went in the world and experienced it.

/ Yeah. So that's a difference, and you grow up in a dictatorship state. In school, teachers had a strict schedule how to teach. We didn't learn to discuss, we learn to learn, but we didn't learn to discuss. It was difficult for me when I came to West Germany and was in school, I thought, okay, what do they do as teachers? As I discussed with the teacher, I couldn't imagine that was possible doing this. On the other hand, art? Art in school? Sure.

The teacher was told a topic, like an animal and man. The pupil should build up a picture with an animal and man. You can do everything. But the goal was two soldiers and a dog. Every child has to do this on the picture. Although the schedule says animal, man. But if you don't do this as a teacher, soldiers and dogs there comes control behind.

* Mm-hmm (affirmative).

□ Mm-hmm (affirmative)

/ Yeah. So even, even in such harmless topics.

The state was everywhere. And the dictatorship and the totalitarianism.

* As the word maybe is, has become more controlled, would you say this is a good development or a good thing that it's, it's still increasing the control? Or what you're saying, mankind should in a way step back a little bit from that?

/ I think the best way is to be aware of being controlled.

* Mm-hmm (affirmative).

/ We cannot...

* Avoid it.

□ Avoid it, yes.

/ Go back 50 years ago. That's impossible. But to know you are under control. What else you're doing with your mobile or laptop at home? I think this is the best way. That's a problem. When a teacher is not used to the Internet, but he gives the pupils the way to look at the Internet without knowing what can happen. I think this is difficult. When teachers say look at YouTube and there are lessons, but he didn't know how to manage YouTube and what can be behind YouTube, behind Facebook, behind WhatsApp and all of these things. TikTok seems to be controlled by the Chinese.

* Chinese yeah...

□ Tiktok.

* I'm not connected to Tiktok, so.

/ Wink, me neither.

□ From time to time, I've gotten some video or something about this. But I didn't know that is a controlled by Chinese people.

/ Yeah. And so, control stretches out across the whole world. The Chinese control us, but I'm sure the Americans controls the Chinese too. And however,

* If the controllers control the controllers, then we are free to do what we want.

/ Maybe yes.

□ I said yesterday to you, can we hear in music?

/ Sure.

□ The title of this song is "Control". You will, you would, maybe I will tell this story later. So, this is available also in the Internet, about the song "Control". And the lyrics in English, and also in German, translations. Yea. But by Google, I corrected them. So normally Google do it very well, but in some places, it is not right. And this is by an artist. She calls herself as Halsey. I don't know how to pronounce it. Is Ashley Nicolette Frangipane. Do you know her?

/ No.

□ You know her maybe out of "Control". There is one very nice old song, but this is an electronic song, and actually she sings. But I've chosen the instrumental version, which is available as official YouTube video. So, I think therefore it should be no problem, if we listen to it. And now let me to just switch on loudspeaker.

(music playing)

She brought this song in 2015. I got the information later in the Internet. She suffers actually from a mental illness, bipolar disorder. And she also personifies this and also discusses it in news that I found also in the Internet, in YouTube, just a talk with her and so on. And her music, this song, is about this subject. If you read for example, the last four or five lines, "All the kids cried out. Please stop. You are scaring me. I can't help this awful energy. God damn right. You should be scared of me. Who is in control?" So, this is repeated, repeated again and again. Okay. There is a version of the song we can also listen to, but I preferred the instrumental. The story, as I searched also in Internet, looked for a song with a title "Control".

It was a coincidence. I am, as you said, a photograph and maybe you have also looked in the Internet or to browse, and so on. I take part at exhibitions, which is called to Brewery = Brauhaus. And maybe you know this from the university. It is Brauhaus photography. It is an annual exhibition of art students on photography. And this year it is 29th anniversary.

* Mm-hmm (affirmative)

□ So next year, 30 years. This has a long tradition.

And one of the art students, she showed a picture. There it is also printed here, but the quality is not so good. Say on page, I think six, I can check. Yeah. Okay. So you'll see, there is some lights moving. Do you see, it is a bit dark picture. And she said that it's called "Control". And I said, "why it is "Control?". So she heard that music by Halsey and she danced. And she had the camera in her hand and photographed.

* Mm-hmm (affirmative)

□ And that is the result of it. And through this, I came to this music, this song. That is the story behind this song. And then, I liked it, because normally I listen to classical music and so on. And the original song is for young people. Okay, it is it's also good but not we heard here. So that was an idea also about this, say key word "Control". Why not to listen to a song, which is, which is entitled "Control" and that involves a bit of control. So, it is also about the control of ..., people or who controls her. She had some difficulty on this subject.

* When you listen to this music first, and maybe you read this explanation before, when you come from your point from your profession, from your home country, what did you think first, when you listen to the music the first time, did it remind you of topics like control or?

□ So we had also many years ago, I'm 65. When I was 18 and I was in a dormitory school in Ankara, we also listened to music of this kind that time. This pop and rock and so on. And what was the question?

* When you listen to this music, especially what you played now for us. As for me, it was the first time I listened to the song. The first time, when you listened to yourself for the first time, did you find back the topic you have in the lyrics? Did you come back to the control, the repetition of what is repeated also in the text here?

□ Yeah. So, if you hear the original, maybe it is more moody. Yep. You feel it. Something is psychological and so; you see this kind of contradiction also in the music.

* In a way that was when I started with my branch. If you have maybe an instrumental version for the full symphony orchestra, then you get the sheet music and then there comes the conductor in. And then he has to introduce you into this music and he can just organize it. You can just make that you can listen to it, but the more you understand what is in between, what is the sense of this music and how you, he leads you to express this, then you bring it on stage. And then the audience listens to this the first time and you want to deliver something. So if you are good, if the music is good and if, yeah, if the concert is good, then it's great. When somebody comes on and out of the concert says, I listened to something very in that kind yet very dense who's in control. I think this person is struggling within him or herself, with her own mind, with her own health. And you have to transport that. Yeah, this is kind of my business.

□ Did you feel this?

* Well at the same time I listened to the music. I read the lyrics now. And for example, you quoted just the last five lines in the sheet you gave us here. This last five lines are repeated three times. And you can see that also in the music that the last chorus always the same. That it's a little bit stubborn and it's abrupt in the end. Maybe I thought it ends a little bit in the middle of nowhere. So, you have to think again, huh?

□ This is, that's interesting your interpretation. Yeah.

* That's my job to analyze it then. And to be fast,

□ Actually, then you should hear the original version of her singing. Good. But somehow I thought, we take the instrumental. Maybe it gives more room to think about the music, but I may be wrong.

* Well, and the nice thing is that everybody who listens to this music can have their own thoughts. It's not a must that you make the same experience as me. It's just that you let commit to your brain, to your mind. And you maybe, sometimes you say it's great music. And in other cases you say, it's totally boring to me. It's nothing for me, not what I like to hear. I can't understand it. I cannot find the words in the interpretation of this music. All he was saying very well. Yeah. Very, very good translation of emotions. But you in the hospital you can't listen to music.

/ Sure.

* But just in the 15 minutes break.

/ During surgery you hear music.

* Sure.

□ Yeah, I know this because I was operated once at my, how this is called? German Sprunggelenk (ankle joint).

* Mm-hmm (affirmative)

□ So then they gave me the anesthesia yeah, but it was weak or something like that. I was waiting for long time for the surgeon. And then I started to hear the music started very nice. And the doctor came, the surgeon said to me, "Oh, are you still awake?" I said, "Yeah, yeah I am hearing your music, it's very nice. So thereafter they gave me another, heavy dose of, and then, but I know that there is a music during the whole.

* Sure.

/ You can, yeah.

* Music is a way to calm down, to keep all people in the OR are happy and with a good mood. We cannot talk all the time. And if nobody says a word, it's this so quiet, too quiet. Just a beep, beep of the anesthesiology machine. Now, therefore, is nice music. Wonderful.

□ Who decides which kind of music you will listen to?

* Me. So you kind of reveal that secret now.

/ But it's, it is music for everybody.

* Mm-hmm (affirmative).

/ Yeah. I'm not a dictator,

□ No, no.

* I do not.

□ But is it more classical music or it is?

/ No.

□ Pop music?

/ Pop and rock.

□ Pop and rock?

/ Pop and rock.

□ Oh then your operation I think your surgery will be very quick and very...

/ Oh no.

□ No?

/ Oh no.

□ No.

/ It can be hard work and I can work very.

□ Really?

/ Very slowly, very slowly.

□ Okay.

/ My fingers do not use music.

□ Mm-hmm (affirmative)

/ And...

□ That's interesting.

/ And it depends on steps of surgery. Sometimes I do not realize the music. I do not realize any sound around me. That's the difference when I'm really concentrated on difficult steps. And when I'm just suturing a little bit. The pace in the OR is just a working pace. As every working place, you have a team you're talking, you're doing your job. You try to do it as best as it can be as you do it, as you would do it on somebody else. So sure. We listen to music. Yes. Okay.

* It was an interesting journey. Now we started with your statement and came across many topics and many different things. Is there something else you want to add or to mention? Another shade of control systems?

/ No, thank you.

* Well maybe we should think about that and later we can come together again and see what we took out of this evening.

/ Now that's done to us.

* Yeah.

/ Okay.

* Thank you very much. Thank you very much. Very interesting evening.

/ For me too, yes.

* And next time I come to the hospital I will listen to the music. Okay? Thanks a lot.