

University of Illinois Student Life and Culture Archives

UI Centennial Project

Interviewee: Joseph Tykociner

Interviewer: Unnamed

3/9/1967

Length: 32:23

Interviewer: Why don't you just talk...

Joseph Tykociner: Keep that out. Count?

I: Count.

JT: One, two, three, four, five, six, seven, eight, nine, ten.

I: Okay. March 9, 1967, interview.

JT: When I was a boy, about sixteen years old, I got interested in the recording of sound. The phonograph...I was especially excited by the work of Edison. So I began to make small models, you know...and was very dissatisfied with the results, and came to the conclusion that it mattered, the mechanical mattered to the recording, by a needle in soft, in wax, there's no, in a cylinder, that this is not the right way to do that. And thinking about what should be solution, the ideal thing about it, I got the idea that it can be done only by means of photography. That's [unintelligible]. I started to experiment but I had no means at that time; it was impossible, and I had in my mind, I made sketches of how I imagined the thing to be...and meanwhile, things have changed altogether in my life because I decided to leave Poland where I was born, and go to the United States, for one—for one year, I wanted to go to prepare myself at—to an engineering college, enter an engineering college in Germany. But then I had difficulty, because they required for each student to have at least one year practical...some experience, you know, in engineering. So I came to United States thinking that this would be the best solution. And now I'll tell you the motivations there.

I: Alrighty.

JT: What else do you want to know? Shall I –

I: Why don't I go on to the second question, do you want me to ask you each question?

JT: At that time that I started, yes.

I: Okay.

JT: Nobody was working with the sound pictures, and even I had not the idea of sound pictures, but only that was the first, what motivated me to work in recording of sound, you see? In fact, the the...how do you call it...film was not yet known at that time.

I: Which year would this be?

JT: That was in 1897. 1896 and '97.

I: Do you know what types or type of systems were used to give the impression of sounds synced with the picture before your system was...

JT: There was no pictures, no way...cinematography wasn't invented at that time. When I came to the United States, I got...some notion about it. And I can tell you the story of how I came to, to know about it. I once went along Broadway—by the way, the time that I came to United States was the Depression, time of Depression. Cleveland...[it] was the last year of Cleveland's presidency. And most of the stores along Broadway...had just blockaded, you know, the windows, the store windows, because no business was going on. Many businesses were simply quiet, so to say, and one of such, of such stores which did not work, so to say, had a big announcement, "Come and see new Edison's invention. Bioscope, see the Bioscope." Bioscope, yes. I went in; there was a screen, you know, a small screen, perhaps like smaller than this [unintelligible] and there were pictures, an instrument would tick-tick, quite dark, and people were standing around it, and there were all kinds—a band was marching along, a steamer announced its coming by whistle, but there was no sound at all. The only sound was the ticking of the machine. And I thought now, "They have invented here movies, moving pictures, but where is the sound?" And that's the idea; that's the moment where I got the idea, "Now we had a photograph; we can photograph together, with the picture, the sound itself." And here it came in;

my ideas came in. Of a sound picture. Is that clear enough?

I: Yes, it is.

JT: Do you want me to repeat that?

I: No, it's coming off very good.

JT: That's the answer to this question. Nobody was—see that's a primitive stage at that time. What type of system that doesn't belong here at all...[reads questions] "What major problems or upsets did you encounter in your research...yeah...how were they solved?" First of all, I couldn't very well [unintelligible] myself, and I began to ask people to help me, you know, financially, and I was quite astonished when everybody said that's just nonsense, here's somebody fantastic, has a fantastic idea. Why? "Well don't you know that sound cannot be photographed, and you are going to photograph sound?" I said, "No, I am not going to photograph sound. I am going to use electrical changes," you know, and I used—at that time, the word was not known to me, but what I meant is modulation, modulation of light, you know, by sound, but not photographing the sound, but photographing a light source which varies with a sound. Nobody could understand me...physicists, very well educated, known physicists, they thought that's just a strange idea. This is hard to...the reaction was...that was a difficulty. And so I had to start experimenting myself with very simple means, you know, to invent very simple experiments to see whether this [was] possible or not. And how, and I cannot explain all the different ways which I was using in order to, but I was not successful, because there was no—I needed—it was all too weak, the signals, it was, no, and there were no means at that time of amplifying this thing. So I got stopped by the necessity of finding a good amplifier. And that was another problem.

Long time passed, I began, I left after one year and four months, I left United States, [and] went to Germany to study, studied, graduated 1901 or '02, I don't remember at this moment, and I got meanwhile interested in radio. But I was still thinking about an amplifier. All kinds. In fact, I have made description of this and...consulted others about its possibilities, and so on and so on. Meanwhile I got—radio came, radio was not known as wireless telegraphy. And, when I was ready to get my first, I mean to look for a job after graduation, I couldn't get anything in my country in Poland, where I was born; I couldn't get anything in Germany, and especially the electrical engineering was very not quite developed at that time yet. So I went to, to London, in England, and there very soon I found an announcement in the newspaper that a Marconi company has been organized for the purpose of world communication, communication between the ship by means of waves, electromagnetic waves. Well I thought [that] that's something, that's what I really want. Everybody else of my colleagues had thought that this is nonsense, because why should you go in a new field, you have so many, so many, field, why start in an

uncertain and new field? This is just what I want, something interesting, something which has a future. I am not interested in things which are already known; I am interested in things which are going to be developed. It's challenging! So I was engaged as an engineer, research engineer with the Marconi company, and stayed for two years with them. And there I forgot altogether about, about, about sound recording. But, I had in mind the amplifier because the amplifier was very important for other purposes besides sound pictures, see? But the idea was still there with me. Well, after two years, I got an offer from a German company, a telephone company, [unintelligible], on a large scale, you know, research development in...in radio telegraphy.

So I worked with them for some time, and then all of a sudden, the Japanese War broke out. And I was the only engineer who could, who knew to think about the development of radio, and who knew Russian, and the Russians sent a delegation to all over the world, you know, to America and to United, to England, and Germany to find out what system to introduce, they needed for all, their fleet; they needed a radio. And I was sent to Russia to tell what is all about a telephone system. Though I hesitated to go from that—I was interested in research, mainly, but they told me, "Well, you'll just go explain all of that and when the contracts will be ready we'll come back and continue work, research work." Well I did come back with the contracts well, very well, but right away they wanted me to go back because it was necessary to organize department, for, for wireless telegraphy. And so little by little I stayed for nearly fifteen years in Russia. And during three revolutions and a war in addition to that, actually two wars. The Japanese War—the Russia-Japanese War—and the First World War, and then I came back to Poland after the war, and then to the United States later on, in 1920, in 1920, I came back to the United States. Well is that story, is that much too long?

I: Don't worry about it, sir.

JT: [Reads question] "Could you tell us about the early research camera and so on?" Well, when I came to the United States, I had decided that I would do nothing else but now is the time, the amplifier was pretty well—I mean the fundamentals were known about it. I am going to work on sound pictures. I was investing in this company for one year, in the laboratory, in Pittsburgh. But I could not convince Mr. Skinner, who was the director of the laboratory, that there is anything in sound pictures. First of all is that...that belongs to Hollywood. It's not our business. Who knows whether it'll work at all? I say well, if you know absolutely that it will work then it wouldn't be research. No, I could not convince him. And meanwhile, I got an offer from the University of Illinois, here to come and work for the engineering experiment station as a research professor. So I came here to Urbana and that was in 1921, September 1921. And...I'll say I was very disappointed at first, because there was no laboratory, proper laboratory for what I wanted to do; everything was so primitive. No electrical engineering, and yada yada...everything was for power engineering, you know, but nothing for what I needed. And there was not even a place for work, for my purposes. And, it was suggested that I do that what they expected me to do, namely

investigation on magnetic materials and all kinds of testing things, you know, in which I was not interested at all; it was not challenging enough for me.

Finally, a committee was formed to decide where I should work on sound pictures as I wanted, and whether it is, whether it is, promising or not promising, and so on. And when I explained all that I had in mind at that time to the committee, you know, they said, "Well it sounds fine, but we don't know whether it will work." "If you can prove that it will work," again the same story, "then you can work." So instead of starting right away to work, you know, according to my plans, I had to work on a way how to convince the committee that it is something in it. I thought even that I will probably never find it, a way, a simple way of doing that; I mean on this I will work for months and so on. But I did find a way how to convince them, by an experiment. And, they said, "Alright, go on and work." But, there was no place. So I went, [and] I convinced the physics department to let me work there in the physics department, you know, and there I worked for ten months. 'Til the demonstration, the first demonstration took place in, on June 9th, 1922, in the physics department auditorium or hall, whatever you call it. Number, lecture room, rather.

But before that, in April, that's just now 45 years, today or tomorrow or when—springtime, and I invited the Board of Trustees to come and look at it because there was still doubts whether I should continue or not continue, and so on. And Kinley, you know, that President Kinley and the chairman of the Board of Trustees Mr. Abbott, I don't know his first name, and then was the Vice President White, was his name—they all came to my laboratory and were quite impressed, because I had at that time already sound as they said photographed [laughing], and it sounded pretty well to them, they said, "Go on, we will support you" and so on so I was encouraged, that was my first encouragement which I got in all in connection with the sound pictures. So after two—was it two or three months after, two months I think, I could demonstrate the whole thing to the public. I made use of...how do you call it, not conference, but how do you call it...meeting, meeting of the branch of electrical engineers and another branch of the radio engineers, here on the campus. And through the deputy chairman, we made the arrangement that I will have a lecture on the recording of sound photographically and reproducing it [unintelligible]. That was the team, as it was announced, and its application to sound motion pictures. That took place on June 22nd, 1922. The demonstration, I had a picture that was photographed, and I don't know whether you know the engineering hall, there's an exhibit, you know that? And this first demonstration, there's a picture of the demonstration in this exhibit. Well, that's the historical—a little more than a minute.

I: Don't worry about it sir.

JT: Alright, what else, isn't that enough?

I: Can we go through the rest, please?

JT: [Reads question] "Could you tell us about the research camera?" Well, the trouble was that there was no money, not only space but no money, and no help. For instance, I needed very badly a glassblower to make the different [unintelligible] tubes and this couldn't be done; I had to go to the chemistry department. And also I needed an ordinary motion picture camera, and I couldn't get it, it was too expensive to buy. And...later, no—in fact I did not get any camera at all, I got only, I got only the projector, the motion picture projector, from the agricultural department, and so and then from the, an amplifier was ordered but I did not get it for long time so I borrowed it from the [unintelligible] corp. And so on by bringing together whatever I could get on the campus, and by buying, I went to Chicago a few times to buy for my own money certain things, and I bought a very...a camera which could be a motion picture camera, it could be adopted to my purpose, and also an objector, an optical objector for the making of photography.

Well, and because in this way I could get it very soon, at that time it took a month longer before the order went through all the bureaucratic, you know, steps, it took a very long time, and I couldn't wait so long. I did not want to wait so long. So in this way, little by little you know, I got together all these things, and the mechanization of the physics department helped me, because we had no mechanition in the electrical engineering. The man who was in mechanition there was a former, he made an appearance on locomotives, and the railroad things, you know, and we had the machinery for that.

I: Now, did you do basically the research yourself? Or did you have assistants?

JT: I had no assistant at all, but occasionally, when it came to the demonstration I needed somebody, so I asked students and someone to help me. But, that's enough I think.

I: Okay. You tell us about...

JT: So, so what happened later now. Alright, the demonstration was made, and people...the demonstration made such an impression that...the...how do you call it, some of the newspapers got of course interested here, the local ones and the outside, and especially, the what was it, the New York Times, no New York World and Telegraph I think was its name, and they published it, I was just going for a little vacation when I got a telegram, "Please send us a thousand words to explain, describing your invention." So I postponed my dinner, I sat down and in a few days sent it by wire. I answered, "Yes I will if you will not change anything without my permission." Because I knew already at that time...they send me telegram that all is alright and they only wanted to change the history of it at the end and the description of the thing first, that was the only change. And this article, I can show you the article, I have it here.

I: I also have a copy of it.

JT: Oh you have a copy. Oh yeah, right, right, right. Where did you get it?

I: I got it from...

JT: Oh that's a reprint.

I: Mhm.

JT: That's probably a reprint, or maybe it...it looks like an original.

I: It's a reprint.

JT: It's better than mine, mine is yellow, and yes. Alright, here you are. Well, you have my article, you'll find much what I am telling you in this article.

I: I want you to tell me.

JT: What?

I: I want you to tell me, sir.

JT: What is it...

I: Let's move along then.

JT: Well, I must tell you the reaction of the public.

I: Good.

JT: After this demonstration, you know, the director which was at that time of the...head of the public relation, Wright...Joe, Joseph Wright, he was the chief of [unintelligible] at that time, he came to my laboratory with a handful, a pack of clippings, you know, he said, "Would you believe 700 newspapers in the United States made a record of your talk which you had, the demonstration?" And he wanted to give me an ivory [unintelligible], and I said, "What shall I do with all that, no! I don't want it!" So he took it away and I don't know what he has done with it, he probably destroyed it.

Okay...then came people from all paths, and they wanted to see it. So I just continued to work, I had to spend much time in demonstrating to individuals, and this was the most characteristic thing which I want to retell, because it shows the reaction of the, shall I say, the, the resistance of public opinion, of specialists also, about innovations. One came for instance, one from Hollywood somewhere, you know, he said, "Do you realize what it means for the industry to change to sound?" I said, "Well I suppose it means some capital but, this is not my business, no? You will have to provide it if you want it." "But is it worthwhile at all? You know...we have a tremendous difficulty with the stars." I said, "What difficulty?" "Don't you know that they don't, they don't speak English very well? That they haven't got the the diction and so on?" "Well, this can be learned." "Oh no, no, no, it's much deeper." Why, what's the difficulty? "Don't you know that they've never a good voice for that purpose." And why not? "They drink too much." [Laughing] Don't record that, don't record that. I'm not differentiating what should be in there.

I: I'll fix that up.

JT: Maybe this is not necessary; I should not have told that. Well I said, "I can't help that." But I told him, "You know one day, they will find a way how to clear the actresses voices by filters" [laughter]. No, this will never do; no this will never work, and so on so on. Then came another man, he was a psychologist, a specialist in psychology. "The thing will never do for the public, why? Do you know? It is based all on illusion, you know, but you have to insert one illusion, you will have two illusions, the illusion of sound, of, and of the eye. This will confuse people; they will for sure time like it, but they will get...they will dislike the whole thing." Well I said, "I don't believe that we cannot have two or three illusions at the same time, in fact every illusion consists sometimes of many parts. In a dream you hear even voices sometimes. All these arguments are for nothing, you know, he has in mind it'll never work." And then the committee...I must tell about somebody else who came and said...well I better abbreviate that.

I: Okay, well, I don't wanna rush you, but we only have so much more tape left.

JT: I see.

I: Now, was there an episode I believe, with Eastman Kodak? Can you tell us about that?

JT: The thing is this, that we had a committee, which had to decide whether I [unintelligible] the demonstration and so on, I proved that it works, but what to do next? And since everybody was negatively, so to say, tuned to that, they thought that I should really stop working. But I wanted to, to develop that, especially the modulation, all these things that later came with laser and so on, you know, all this could have a consequence because this is modulation of sound and light, especially. Well, and television, I was interested in an application to television and so on, for educational purposes and so on. No, Eastman Kodak expressed himself, that the thing is worth nothing, he said not a dime, he wouldn't give a dime for it, that was his expression. Why? Our professor of physics, he was in the committee he...and interrogated him, "Why do you think, Mr. Eastman, that this is so, has no value, no commercial value?" And he said, "Well, simply the public doesn't want it." Well when I asked Professor Watson, "Did you ask him how does he know that the public doesn't want it?" "Well a man like this, the industrial inventor, he should know these things." Well I say, I don't...right.

I: Well I don't wanna rush you too much. Okay, could you tell us about the very first sound on film that was made by you? What did it contain, the year, the place?

JT: Yes. Outside of the experimental one, which consisted in the following, I invited my wife to the laboratory and a small table I put a bell and a little hammer and all, and I said to her, now when I say I am ready, you will lift with your left hand the bell and your right hand...and you will say the question, I'm going to ring. And you'll strike the bell, and then ask, slowly moving it back, "Did you hear the bell ringing?" That was the only thing I have done because how would I do other pictures [laughing] here at the University? And that was working pretty well. You will have a description in this article, you have a description of this, too.

I: Okay, you told me about question number eight, and you told me about number nine.

JT: [Reads question] "What were some of the first test films about?" Well, you heard that.

I: We already have that. Let's go down to eleven: what was the first commercial, or Hollywood film, that used your sound system?

JT: Yeah, well it came, it came six or seven years later. It was...in meantime, the Western Electric Company introduced not a film, not a sound on film, but film and separately records, and that is to say that that was not at all sound on film, how do you call it, The Jazz Singer, you know? The Jazz Singer, that was not that sound picture, that was just records. They had a little half a room with records, and a tremendously expensive, I understand, they spent hundreds and

thousands of dollars to develop that, and that was after my demonstration. And when I...when I showed my demonstration, that you can do these mechanically, and must do it somehow, because if you cut, if something happens to the record, you are lost, it cannot be [unintelligible].

I: What was the first film? Do you remember the title of it?

JT: What was the first film? No, I do not know. That was Fox, I think Fox has brought that out first, and then came, then came many at the same time. I think the general electric and the bell had a system in all, and it nearly, the fundamentals were more or less the same, but the details were of course were different.

I: Alright, let's go down to number twelve, and then we got a couple more feet. Could you tell us briefly about other inventions and contributions to science?

JT: Well I got a, since the time is so short, the most important thing which I regard at this stage of development in all is zetetics, a new science of research, the science of research. This I am working already for 35 years, if not more, 39 years, probably, I can't tell exactly, and we have already introduced that as in lectures of course, you know, and work is being done and many publications have been made already, I made a third book on it, a very important one, it will be ready in three weeks here at the University's electrical engineering. They are printing it now. And it has big promises, and it is more important than anything else because this will help all the other developments, you know, it is the knowledge of how inventions and innovations and discoveries are made and what is essential in it, how to find out the abilities for that, and how to—[tape ends].