

Music at MIT Oral History Project

Karl Kornacker

Interviewed

by

Forrest Larson

July 11, 2002

Interview no. 2

**Massachusetts Institute of Technology
Lewis Music Library**

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Contributors

Karl Kornacker (b. 1937) received two degrees from MIT, S.B. in physics, 1958 and a PhD in biology, 1962. He studied with noted cellist Janos Starker. While at MIT, he played in the Orchestra under conductors Klaus Liepmann and John Corley, appearing twice as concerto soloist, and was very active in chamber music. During his years at Ohio State University, Division of Biophysics, he continued playing chamber music and also had played with the Columbus Pro Music Chamber Orchestra. His scientific interests span biophysics, cognitive physiology, statistics and computer science.

Forrest Larson, Library Assistant at the Lewis Music Library, has received training workshops in oral history methodology and practice at Simmons College and by the Society of American Archivists, and is a member of the Oral History Association. He is also an active composer and violist.

Interview conducted by Forrest Larson on July 11, 2002, in the MIT Lewis Music Library. Duration of the audio recording is 1:19:03. Second of two interviews. Other interview: July 11, 2002.

Music at MIT Oral History Project

The Lewis Music Library's *Music at MIT Oral History Project* was established in 1999 to document the history of music at MIT. For over 100 years, music has been a vibrant part of the culture at the Massachusetts Institute of Technology. This history covers a wide variety of genres, including orchestral, chamber, and choral musical groups, as well as jazz, musical theater, popular and world music. Establishment of a formal music program in 1947 met the growing needs for professional leadership in many of the performing groups. Shortly thereafter, an academic course curriculum within the Division of Humanities was created. Over the years, the music faculty and alumni have included many distinguished performers, composers, and scholars.

Through in-depth recorded audio interviews with current and retired MIT music faculty, staff, former students, and visiting artists, the *Music at MIT Oral History Project* is preserving this valuable legacy for the historical record. These individuals provide a wealth of information about MIT. Furthermore, their professional lives and activities are often historically important to the world at large. Audio recordings of all interviews are available in the MIT Lewis Music Library.

1. Follow up from previous interview [00:00:14]

FORREST LARSON: This is tape number two [Interview, part 2], an interview with Karl Kornacker. It's July 11, 2002. And Karl has a name to add to the record that he couldn't recall during the first tape.

KARL KORNACKER: Yes, my high school orchestra conductor was Morris Gomberg.

FL: Is there anything more you wanted to say about him?

KK: He was an excellent conductor. He also conducted the Roosevelt [Musical] College String Orchestra [Chicago, IL]. And he actually had me play in the string orchestra along with their college players. And again, they had real cellists there.

I remember one day, when I went for a lesson with [János] Starker. [I saw that] the first cellist with the Roosevelt College Orchestra was in, finishing up with his lesson, and he was playing one of the [David] Popper etudes [High School of Cello Playing, Op. 73]. I was just thinking, "Oh, well, there's a real cellist who can really play."

I remember once I was walking from a break back to rehearsal, and I was walking in the hall and I was whistling one of the themes from the music we were rehearsing. And I was a pretty good whistler, and I sort of prided myself on whistling in tune. But I didn't know that Mr. Gomberg was walking behind me. And when I went for a high note, I hear this voice behind me say, "Flat." [LAUGHTER]

He was an excellent musician and a caring person, you know. When I was, when I was high school our concert mistress was Elaine Skorodin [Fohrman], and she was a brilliant violinist. I don't know how far she got in her musical career, but she was certainly on her way.

FL: So your high school orchestra, what kind of repertoire did you do? Is there anything that kind of stands out?

KK: We were a good orchestra, and we got some awards, I think. Senn High School [Chicago, IL], where I was, actually got some award as being the best high school in the state. And they had not only Latin but Greek there. And I took Latin for three years. I actually won one of the Illinois State Latin tournaments. But so we had a good orchestra. It's interesting how my memory works. I mean when I don't like what I'm doing I really don't remember a lot of what went on.

2. Aaron Copland and the dedication of Kresge Auditorium [00:03:43]

- FL: Sure. Sure. So in May 1955, MIT Kresge Auditorium was dedicated, and Aaron Copland was commissioned to write a piece for the occasion called *Canticle Freedom*.
- KK: Oh, that's what it was— not *Fanfare for a Common Man*, but *Canticle Freedom*.
- FL: Right. And it was performed by the MIT Choral Society and the MIT Symphony. And who conducted? You seemed to recall that it was Copland.
- KK: Well, oh now, see I know that Copland conducted us. And maybe, he conducted us in *Fanfare for the Common Man*, but maybe that was separate from the dedication of the auditorium.
- FL: OK. Because the [audio] tape for that says, "Klaus Liepmann" [First MIT Professor of Music]. It just says, "KL," but I don't know—
- KK: Yeah. Yeah, that's not Copland.
- FL: Right. Yeah. But I just wondered if that was inaccurate.
- KK: All I can say is I know that Copland conducted our orchestra. And I remember the incident with the triangle player.
- FL: Yeah, because it's possible that that could at least—
- KK: And I know that he was associated with the dedication of the auditorium, but these may be two separate events entirely.
- FL: I'm just wondering if the [audio] tape might be mislabeled that way.
- KK: No.
- FL: OK.
- KK: And I don't recall being with a chorus.
- FL: OK. Maybe you weren't in the orchestra for that
- KK: Could be.
- FL: OK. OK. That's the earliest MIT Symphony tape that I have so far found, was that. So I was going to ask you.
- KK: Oh, well, was it the MIT Orchestra?

FL: It says the MIT Orchestra. That's the only time that—

KK: That they would be together—

FL: —with Klaus.

KK: —and I don't remember it. And maybe it wasn't the MIT Orchestra. Maybe it was just the chorus with some other orchestra.

FL: Yeah. So let's see, there are some other questions here that we've already answered. So in April 1958, Alan Hovhaness came to MIT to conduct his Transfiguration cantata [for tenor (Donald Sullivan) and SATB chorus, Op. 82]. Do you recall if that was with orchestra or was just a choral piece, if you were in the orchestra?

KK: I don't recall it.

FL: You don't recall any that. It might just— I, sorry I didn't get a chance to actually check to see the instrumentation on that, but I wanted to ask you. Do you recall him coming to MIT or anything?

KK: I don't recall him.

FL: OK. Do you recall other guest artists, composers coming when you were there?

KK: No. Copland is the only one. See there— he had a distinctive manner and presence that, first of all, he looked happy most of the time, and what that says to me is not stressed. And he was very energetic, but all the energy was going out to us. So it was a very influential energy.

I think Klaus Liepmann was energetic, but also he seemed stressed. And so the energy was not so effective. It wasn't just coming out clearly. A lot of it was circulating around in him.

FL: Is there anything more you'd like to say about Copland as a conductor?

KK: [PAUSE] No. I don't know what to say.

3. John Corley [00:08:01]

FL: So John Corley took over the [MIT Symphony] Orchestra in 1956 and had it for ten years. And that might have been a time when John was really at the peak of his, his conducting, or at least you know very, very vital. Can you describe him as a musician, as a conductor?

KK: Well, he came across as "one of the guys," and he made no— he didn't hide the fact that he was a trumpet player. And he was very humble about the fact that he didn't

really know much about strings. So in a way it seemed like he was embarrassed, trying to tell the strings what to do. So he deferred to Dennis [E.] Johnson [MIT 1962], who was the [MIT] concertmaster in the early days when John first came.

I remember one incident of that where he was deferring to Dennis that is unforgettable, because, you know— as usual, I was kind of tuned out, but then I tuned back in when he stopped the orchestra, and I think he was talking to a wind player, and he asked him to play that short strain again for the orchestra. And the wind player evidently looked puzzled.

I wasn't looking back at him, but he said, "What is a short strain?" And John Corley, in this deferential way, deferred to Dennis and said, "Dennis explain to him what is a short strain." And Dennis immediately said, "Ugh". And everybody just broke down laughing. So that just stopped the rehearsal for a few minutes.

But so there's a kind of a come, you know, come off it. Nobody's on a high horse here feeling about the orchestra under John Corley.

FL: Did you get the sense that he was working at becoming an orchestra conductor, as far as wanting to learn more about strings?

KK: He certainly didn't project that. He certainly loved string playing, as I said from my earliest interaction with him. And so he appreciated strings. And I wasn't aware that there was any problem with how he was conducting. But you can't really take much from me, because I was not really very aware.

FL: Right. Do you remember much about how he rehearsed?

KK: No. Not really.

FL: When, even like, was he concentrated on specifics or the, the overall performance and shape of the piece?

KK: I can't remember his strategy. I'm sure he had one. Lots of kinds of things happened, like section rehearsals, I mean going over particular sections, and doing run-throughs. And there's all sorts of things....

And I think in my memory, they're just lumped together with, et cetera, et cetera, kind of the stuff you do in an orchestra that I didn't much like. So.

FL: Did you feel his standards and expectations were different from Klaus's?

KK: Well, he was certainly different, as a person.

FL: Yeah.

KK: And an approach. And Klaus being really focused on the strings, and John really letting the strings take care of themselves. You know there was like an extreme difference. And we did some extremely ambitious things as far as repertoire with John Corley. You know it was like he didn't know fear. You know like let's give it a shot, see if we can do it.

FL: Is there a particular piece that stands out in your mind that way? I mean I know like in 1959 you did the "Firebird Suite," the [Igor] Stravinsky.

KK: Yeah. I thought "Firebird" was—

FL: And the [Serge] Prokofiev "Lieutenant Kije" suite.

KK: Yeah right.

FL: And you're— and in 1957, you did a Gregory Tucker [MIT Professor of Music] piece called "Kinhaven Suite" and, of course, with [Antonin] Dvořák and [Jean] Sibelius, but seemed to be quite a difference in the repertoire that you're doing with John.

KK: Yeah. Yeah. I mean Klaus knew how difficult the strings parts were and didn't want to mess around, you know, with bad string playing. Whereas, John probably was oblivious to, couldn't look at the score and evaluate how difficult it would be for MIT students to play this, so like let's go for it.

FL: How is that, um, how did that affect the morale of the orchestra if you were playing stuff that just seemed really hard that way?

KK: Well, again, you know, these are MIT students. My feeling about MIT students is that they are very positive and energetic. And that, that just—

FL: Yeah.

KK: —triumphs over everything.

FL: That's amazing, it goes— that's still the way it is today.

KK: You know you look at pictures of MIT students in any setting whatsoever, and there is that energetic positive attitude.

FL: Now one of John's things with the concert band was to play only original works, written for concert band, which meant that they did a lot of contemporary repertoire. And it seemed like, at least in some regards, that carried over into the orchestral repertoire that he choose.

KK: Well, I think he had this sense of challenging us in a way that was real, real challenges, like let's, let's be for real and experience it. I think he realized that he was providing us with firsthand experience.

FL: Right. Right.

KK: He was providing himself with first hand experience. And, and it was like experience is good. I think Klaus was more worried about doing badly, whereas John was more relishing the prospect for a new experience, which would just be wonderful as an experience: Let's do it.

FL: And one of things that, that John Corley did a lot of over the years was give students a chance to play solos with the, with the orchestra. And it looks like you had a chance on three occasions.

KK: Yeah.

FL: Yeah. So you did the [Luigi] Boccherini [Cello Concerto No. 9 in] B Flat [arr. by F. Grutzmacher] in 1958. And then you said you did the Dvořák . Is that correct?

KK: Was the [Luigi] Boccherini [in] '58 [Cello Concerto in B flat, arr. by F. Grutzmacher]?

FL: Well, according to the, um, the, um, research that I did, the, um, the annual report for the music section from 1958 mentions that. Unless it was the previous Fall of '57.

KK: Yeah, I think I did Dvořák in '58.

FL: OK. So, OK.

KK: So Boccherini may have been the year before.

FL: OK.

KK: Because I sort of remember like after the Boccherini, there was like what next? And I said, "OK, let's do Dvořák ." I had studied the first movement of the Dvořák with [János] Starker. And he had annotated the rest of it for me, but I didn't study it with him.

And I remember after the performance, Klaus Leipmann said to me, "First movement was good, and then it went downhill from there."

FL: And then you did the Brahms double concerto with Roy Sun [name spelling unverified], right? Yeah. And was that while you were in graduate school?

KK: Yeah.

FL: Yeah. You don't remember the year on that, right? How was John as an accompanist conductor? He seemed from what I've heard was good at that. I don't know what, what your memory was in that way.

KK: He knew what the key issues were, and he went— you know, he dealt with. You know like if there's a cadenza, and then the orchestra has to come back in with the soloist, it's like let's get that one right. So he, he was focused appropriately for a company.

But as far as how well he actually accomplished anything, I can't say. I was, I was terribly unaware. I mean, I remember one... a couple of instances. You know I didn't know I had this bad habit until it actually came out. And of course, it comes out in a concert.

It came out in two places. One place was the Boccherini, when we were off at I think the old people's home. There's an orchestral introduction, and then I come in. So I'm sitting there listening to the orchestral introduction, waiting. And it comes just about time for me to come in, and I hear something that surprises me, in the orchestra. And it completely throws me.

It's like, "Where am I? What's going on?" And I lose it. You know— and so like I don't think that it's the right time for me to come in, which is ridiculous, but you know so— so that happened in the Boccherini, where the orchestral introduction completed, and then I didn't start. So there was like a glitch. And then finally, when I heard, like, nothing's happening, oh, well, it must be me. And then I took off.

Well, that's really amateurish. I don't think it was John Corley's fault. It was my fault. And similar thing happened with the Le roi d'Ys Overture [by Edouard Lalo], which has a beautiful cello solo, and I'm playing the hell out of it in, in rehearsals. Because I could really play it, really loved it, really did it. Comes to the concert, and I deliver the first phrase. And then there's a— then there's, the orchestra plays a little bit. Then I come again.

And the same thing happened. I'm listening to the orchestra, and I hear something that I've never heard before. And I completely lose it, you know, and— so I, I just blew it. It was like I just sort of guessed where I should come in the middle of the second phrase. You know because I basically missed my entrance.

I wasn't counting. I wasn't watching the conductor. I was listening for something that I thought I would recognize, and then I didn't recognize it. You know so— so I was not a good orchestra player at all. I mean I was terrible. And nobody clued me in. I mean nobody woke me up.

I didn't leave the section either. I mean, really, it was pretty bad, I mean.

FL: How big a section was the cello section? How many?

KK: [LAUGHS] ell, maybe two or three. I remember when Peter [A.] Belmont [MIT 1960] was there. He did say something to me, about leading.

FL: And I'm not— that's a name I'm not familiar with, Peter Belmont.

KK: Yeah. He was there, as a cellist.

FL: Uh-huh.

KK: He introduced me to the game of Go. Yeah, I can't say much about his cello playing. We played a lot of Go games.

FL: So you've— is there anything more you want to say about chamber music at MIT. I mean that was the next topic here, but we've already discussed that in—

KK: Well, so there was chamber music at MIT, and then there was also chamber music in the area. And I sort of had my people. Like I played a lot of chamber music with Frank Hubbard who's a renowned harpsichord maker and was a second violinist. And you know, we—

FL: Was he an MIT student, Frank Hubbard?

KK: I don't know if he was. But at the time I was there, he was not at MIT.

FL: Yeah. Uh-huh.

KK: You know he was not an accomplished player, but he knew the literature. And he loved the music. So it's, that's a nice spirit to be with. So I did a lot playing with him.

I did a lot of playing with Margaret Duesenberry out at Wellesley [College].

FL: Uh-huh. Yeah. She's— that name is familiar. I think I may have even played with her.

KK: Yeah. I think she conducted the Wellesley orchestra.

FL: Uh-huh. That name is familiar. I may have actually played chamber music on one occasion.

4. János Starker [00:23:06]

FL: Is there anything more you want to say about working with János Starker as far as things that he really left you with? I can recall in the past you had recalled to me some practice methods that were, you had found, that you had learned from him that were helpful.

KK: Well, he— when I committed to practice for an hour and a half a day, he prescribed an hour of fundamental exercises, broken up into four blocks of 15 minutes each. First block was intonation, just pure intonation, and is basically slow double stop trills, listening to, you know, going through all the combinations and all the pairs of fingers and the double stops, which is the systematic— and the whole approach is to know for a fact, because you've done it. Not to infer, because you could do it.

You know you can play any double stop you want. The thing is have you played it 100 times and made sure that it's in tune. Well, so this is the ideas. Make sure you play every possibility in tune, just do it all.

See then that was followed up by double stop shifts. Well, do them all and know that you get, that you got it right. Know for a fact, from experience, that you get it right.

And then there were bowing exercises, like open strings. All parts of the bow, the weight distribution in the arm, you know, how you hold the bow. And it was all, again, know how to do it and then do it. You know so you have done it, everything.

And then string crossings, all pairs of strings. You know all. So it was an hour's worth of work, every day, on the fundamentals. Like, master the fundamentals, and that was one of my father's phrases. "Master the fundamentals."

So I understood, at an intellectual level, what Starker was having me do. However, I didn't appreciate what it actually meant. This experiential knowledge, because I was in my head. I was a theoretician.

So in a way, I didn't get it. I was— it's like I was the horse led to water, but I wasn't actually taking a drink. I mean I wasn't actually learning the instrument. I was in the vicinity, and I was getting a lot of it. And then the last half hour would be pieces, and that was like applying your fundamental mastery of the instrument to— well, then there would be 15 minutes of written exercises, you know like [David] Popper exercises, [Jean-Louis] Duport exercises.

So those would be like applications of the fundamental practice. So he didn't treat the exercises, published exercises as a starting point. He took those as something to work up to, you know, from the fundamentals. And then the last 15 minutes would be like pieces, you know, like [J. S.] Bach, or [Antonín] Dvořák . Sort of applying what you know about the instrument.

If you can play anything, well, then you can play Dvořák . So it's no big deal to play Dvořák . You know, it's like, practice the fundamentals, then you can, then you can play anything. But of course, because it's a physical activity, it's very different from what you do in school, what you do at MIT with usual academic work. So it was, it had a, there was a distinctive kind of experience. And it, it gave me a physical

feel for this disciplined, repetitive activity with criteria for success, very exacting criteria for success.

5. Doctoral research, Ohio State University, and MIT [00:28:06]

KK: Probably, that helped me do well in my doctoral research, where I was doing neurosurgery, with no preparation whatsoever. I was thrown into by my thesis adviser, and I was doing neurosurgery on frogs, you know, tracking the corneal reflex into the brain, and putting microelectrodes into the brain. Well, I had to open up the head, you know, and get in there. And I had to do it like a surgeon, without cutting any major arteries.

Well, that's difficult. I mean that's surgery. That's, and on a frog, it's very small, I was using—I was doing the dissections under a dissecting microscope. Well, the first time you look through and you look at the tip of your scissors, they're sort of flashing by, because you're shaking so much.

I thought, "Well, gee, I've got some settling down to do." Well, but, you know, I'd studied with [János] Starker. So I—I had sort of an inner sense of how to do that, and I did it. And I did it very well.

FL: So what year was it that you came to Ohio State University?

KK: '68.

FL: Uh-huh. And what kind of playing did you do when you first got to town? I know at some point you played with Columbus ProMusica [Chamber Orchestra].

KK: Let me, before we get into Ohio State, let me tell a story about how I got here, from MIT, because Ohio State University is not the first place you think of as the next step from MIT. When I was in high school, for some reason, I can't remember why, I decided for a science fair project, to build a little device that would learn. And I had in mind the whole design.

I was going to roll a steel ball down a ramp, and then it would pass by two electromagnets, one on either side. And then it would be heading towards a knife edge, and depending on which electromagnetic was on, it would either be deflected one side or the other side, and it would roll down. But then there would be two metal ramps that it would roll onto, one or the other, and close the circuit. And that would signal back to the underlying system that was controlling this thing, which way it had decided to go.

And then the idea was, it was going to be the equivalent of getting a shock if it went the wrong way. So when it would start out, I had a control device that was

giving equal time to the two electromagnets. And I didn't know when I rolled the ball down, so it's a random choice, this way or that way. But when it would get the shock, then the time spent by that electromagnet would be lowered, and the other one would be larger. So it would be more likely to go the other way, so this was sort of a simulation of conditioned learning.

I had big, one-farad condensers, big wax coated things, storing up the shock as an electrical charge, you know, that was going to be my bias setter. And I had a little cathode tube doing the alternation with a gas discharge tube, giving signals. I don't know how I did it, or why I did it. I can't. It just sort of came to me that I was going to do this, and I did.

And I designed the electrical circuit, you know, and I built the whole damn thing. And it worked, you know. And I guess it was impressive, and so it was my science fair project. Well, anyway, my parents decided I should go talk to [James C.] Jim Thoman, who was a brain researcher at Michael Reese Hospital [Chicago, IL]

So I went in to talk to Jim Thoman, and he immediately sat me down and started doing electroenceph— electroencephalographic measurements on me and sort of brought me into his experiment that he was running.

FL: And this was—

KK: Interpreting brain patterns.

FL: Where was this at?

KK: In Chicago, when I was in high school.

FL: In Chicago, yeah, right.

KK: This is all leading up to the story of how I got to Ohio State.

FL: My question was that the hospital was in Chicago.

KK: Yeah. Michael Reese hospital in Chicago. Yeah. And I'll never forget the, the challenge. He, he said, he's trying to, he's studying learning. So he gives me this word in Arabic, mahatat. And he says, "Say that to yourself over and over again. And when you get to the 'ha' in 'mahatat,' press this button."

And so I'd be pressing the button, and there'd be a trace on the oscilloscope taking my brain wave. And he stored these up. And then he says, "OK, 'mahatat' means railroad station.

Now do it again, saying 'mahatat' only now you know what it means." And he's trying to see differences in the brainwave trace. That, I'm telling stories, but forgive me.

FL: No. That's great!

KK: Small world kind of effect. Remember Peter Belmont, who taught me how to play Go, play cello— his wife was Jordanian. She spoke Arabic. I was visiting them, and I said, "You know I've had this experience many times, where if I try to say a word in a foreign language to someone, they don't know what I'm saying. And then when I tell them what I'm intending to say, they say, 'Oh, you mean this.' And when they say it back to me, it sounds exactly to me like what I just said. I can't hear any difference, but to them it makes all the difference."

And so I said to her, "For example, I happen to know one word of Arabic, mahatat." And she starts guessing to see what this means. And she tried this, that, and other thing. And I said, "It means railroad station." And she says, "Oh! Mahatat!" I have absolutely no idea to this day what the difference was in what I'm saying and what she's saying.

Anyway, Jim Thoman asked me where I was going to college, and I said, "I'm going to MIT, I've decided." And he said, "Oh, Warren McCulloch is there!" And I said, "Who's Warren McCulloch?" And he said, "Don't say that! He's like the father of theoretical biology. He's one of the greats. You'll really need to talk with him."

So when I went to MIT, I had in mind that one day I'm going to talk to Warren McCulloch. But I didn't go look him up. I had this sense that it's destiny. Well, when I graduated in '58, I had still not met or seen or didn't know by direct experience that Warren McCulloch was there, so when I was deciding where to go to graduate school, they had a biophysics program at MIT, biophysics is what I was getting ready to do through my double major in biology and physics, so I thought, "Warren McCulloch's here. I haven't met him yet."

What a way to pick a graduate school. I mean it's like, and I didn't even know what the biophysics programs was like. I was terribly disappointed in it. So two years pass, and I'm taking my general exams. And I did a protest failure in biochemistry, because there was a biochemistry requirement, but I'm not a biochemist. I'm a biophysicist.

Physics is different chemistry. I don't like biochemistry. I don't want to study biochemistry. So I couldn't answer one question in biochemistry. So I was put on probation, and [Patrick David] Pat Wall [MIT Biology Faculty] was at my exam, and he sort of took me under his wing and took me down to the basement of the research lab of electronics. I guess that's no longer—

FL: Right.

KK: Building 20.

FL: Right. That's gone. Yeah.

KK: Well, that was like the underground. That's where the mad scientists hung out. That's where [Gerald] Gerry Lettvin [Professor Emeritus of Electrical and Bioengineering] was, and Walter Pitts, and Warren McCulloch. Only I still didn't know that. And so I get put into a room, read: lab, and assigned a set up with microelectrodes and amplifiers and what not, to work on the frog corneal reflex— I mean that's how it came that I did that doctoral dissertation— next door to Warren McCulloch. But I still don't know that he's there.

Well, then, finally, I encounter him. He actually came in to see who was there. And I finally meet him. And then years pass, and it comes time for me to leave. I had a postdoctoral appointment after I got my PhD. It was like a five year, somewhat honorary appointment, intended for you to get your feet on the ground, decide what profession you're going into, you know, launch.

And what I did with that five years is decide, OK, now's my chance to invent theoretical biophysics. I've been preparing for this for a long time, now I'm going to do it. I told my— Pat Wall, my dissertation adviser, "I've decided to leave experimental research and do theoretical research. I feel I can make a stronger contribution there." And he, again, didn't say anything. It was like the career counselor from high school. I mean it was just, what can you say?

I mean what I didn't was that it was cutting my throat. I mean it's like, now, I have no mentor. Now, I'm like, I'm out on the street. I mean it's like, I'm nowhere. I mean there is no market for a self-proclaimed theoretical biophysicist. But any rate, I took the five years, and I worked on theoretical biophysics— the foundations of theoretical biophysics. I made, I believe, tremendous progress.

So it's a great secret. Those publications you found are sort of little hints of what I was getting into at that time.

FL: I'll have to look into those now.

KK: But anyway, the time came to leave. It was a five-year appointment. Time came to leave. I had this far out project in theoretical biophysics. Not a launchpad for getting a job. So I go in to talk to Warren McCulloch, and I say, "The time has come for me to leave. I need to go somewhere, where should I go?"

I sort of left myself open to a nasty comment. But he, he really knew what was going on around the world. And he just said immediately, "Go to the biophysics department of Ohio State University with Leo [E.] Lipetz. You'll be happy there." So he planted me, and here I am, years later.

FL: Right.

KK: I'm still here. I was not happy to begin with. I was really, really a fish out of water, coming to Ohio State University from the environment I had been in. I mean this was not just a culture shock, but I alienated people instantly, I mean, you know, in ways that never happened at MIT. But talking my way just didn't go over very well, so...

But anyway, Warren McCulloch was responsible for getting my position. He probably saved my life. I mean it's like without him placing me. I mean Leo Lipetz took me on as a protege. You know it's like the future of biophysics. He was trying to build a biophysics department. He had dreams of how this was going to go.

With the riots in the spring of '70, after the Kent State [Massacre, May 4, 1970] all the development money got used to pay the National Guard that came in, closed down the university. Then the Biophysics department really got scheduled for demise, because there was no growth. So the only way a department could grow was by taking over something that some other department had, and we were, we were the ones that gave up everything.

So then I was here. My first chamber music recollection here, I sort of looked around and I found Walter [C.] Reckless, who turned out to be a criminologist. Oh well, I found him in the amateur chamber music guide. So Walter Reckless. So I went to his home.

And he opens the door. And he introduces himself, "I'm Professor Reckless." I said, "I'm Karl Kornacker." And he cocks his head, and he says, "What did you say?" And I said, "Oh my, he's hard of hearing." And then I see that he's squinting, and you know, it's like he can hardly see me. And then he reaches out to shake my hand, and I think there's a couple of fingers missing from his hand. So I'm like, "Wow, this is going to be a different kind of chamber music experience than I'm used to."

And he turned out to be a criminologist. I asked him what he did. You know and his eyes narrowed, and he look very much like the detective in murder mysteries. He said, "I'm a criminologist." But I met some very interesting people at his home, and we had some interesting chamber music sessions.

FL: And what was his instrument?

KK: Violin. But he played like he was practicing vibrato, very slow, wide, slow vibrato. He would shift in the way you practice, going up on one finger and then plunking down another finger, so it was kind of painful, as far as what you would hear me. But as I say, there were some other very interesting people there, and so socially it was, it was OK.

I was approached almost immediately by the Columbus Symphony, and I said, "Absolutely not." By that time, I knew I do not like playing in an orchestra. I'm not

going to play in the orchestra. So it was kind of an honor that the Columbus Symphony wanted me at the time, and I just wouldn't consider it.

6. ProMusica Chamber Orchestra [00:48:51]

KK: I did play in the ProMusica Chamber Orchestra under [Timothy] Tim Russell [co-founder and music director of ProMusica] for a little while, and then I quit.

FL: Yeah. How many season was that?

KK: I played maybe a couple of seasons, but I was second cellist. And the first cellist was leading the section. And she was throwing her elbows around and essentially conducting herself and others and playing her way, which was the way the section would play. And it was my job to follow her.

If I had been a professional, I guess I would have either done that or said no way. But as an amateur, I, I, I was just irritated. I didn't like the feel of it. Also, it seemed to me that she was not playing with the conductor, and that she was not playing with the orchestra.

So as a chamber player, you know, with a sense of togetherness, it was like having multiple vision. It was like do I follow her, do I follow the conductor, do I follow the orchestra. It was like horrible. I was just in agony. One day, she was not there, and I played first. And then I followed the conductor, and I heard the orchestra and I was happy, by comparison. At least, I'm playing with, you know it was like something, had some feel like something's going on.

But then, I finally decided I couldn't take it any more. So I just quit. I explained to Tim why I couldn't handle it. Well, actually, one day, I decided to do a protest, silent protest. I played with the conductor, and I just ignored her. I just played with the conductor, and I played with the orchestra.

So she came up to me at intermission, and she said, "You're not playing with me. Does that mean you have no respect for me?" And I said, "I just have to think about this. I know it's not right what I did. I have to think about it and decide what I'm going to do." And I decided that I would just leave the orchestra. I mean you can't do what I did.

She certainly knew that I was not following her. So and that's— I believe I've never played an orchestra again. I'm just not an orchestra player in any way, ability or inclination.

FL: Were there any positive memorable moments of playing with ProMusica, either particular pieces, or, or anything that, that stands out that you enjoyed?

KK: Well, the Guarneri [String] Quartet came and played a work with us, and then played the [Maurice] Ravel [String] Quartet [in F major].

FL: Uh-huh. Which work did they play? Was that that [Arnold] Schoenberg? There's a Schoenberg Concerto for String Quartet and Orchestra. Was it that?

KK: I can't remember what it is that they did. It may have been a commissioned work.

FL: Uh-huh.

KK: I just don't remember what it was.

FL: Yeah.

KK: And the interesting story about that was that they didn't know that they were scheduled to play the Ravel, so they didn't have the music with them. So I zoomed home, got the music, and brought it back. And they performed it fantastically, just—

I had an opportunity after that performance to get coaching from their second violinist. What was his name? And I complimented him on what I had seen of their rehearsal technique. You know how they were so efficient, and so focused, so constructive with each other. And he says, "Well, that's the way we are when we have no time to spare." He says, "As soon as we have any additional time, we're at each other's throats."

FL: I've heard that about them. Yeah. Was there any other professional playing that you did in Columbus?

KK: One thing I did, probably the last professional thing I did, the ballet. What was it? The assistant conductor of the Columbus Symphony wrote a piece pulling together [George] Gershwin tunes.

FL: Who was this? Do you remember?

KK: That was accompanying— I think it was [Gerard] Schwarz.

FL: I can't remember his first name.

KK: And he pulled together these Gershwin tunes, and it was for a small chamber ensemble. And then his plan was to tape it, and then take it on the road with dancers. It was supporting the ballet. And I got brought in to be a cellist. And we recorded it, wearing earphones. And each person had a separate track, and they're putting it together. And it was very professionally done.

Anyway, I got the music a couple of days in advance. And again, I look at it, and I think, "Well, nothing to it. I can play this." And then I start, I see that I have a solo in

"Begin the Beguine," [by Cole Porter] I think. [HUMMING] Well, I start practicing it, and I can't do it well. I mean, I can play the notes.

But I want it to be magnificent, you know, I want to really belt out this tune. You know because it's got lots of stuff in it, so I want the fingering to support the, the tune. And I want the bowing to support the tune. And I want my dynamics and my phrasing to support the tune.

And I find out that I can't just have it all. I mean, it's like, I don't know what fingering to use. I don't know what bowing to use. And so I spent a few hours messing around, getting nowhere. Then I thought, you know, there was like, a couple hours to go. And we were going to record it, and I still couldn't play it. And I think I've got to take this thing apart and practice it. And that's where the [János] Starker—I said, "OK. Finger it. Forget about bowing. Forget about phrasing. Forget about—just get the fingers. How are you going to finger this thing? Figure it out."

And so I figured that one out. And then, OK, bowing. But how are you going to bow it? And then, phrasing. How are you going to phrase it? And then put it together. Well, I... by the time, I got to where I put it together, I actually had ingredients to put together. And then when I put it together, it went together. And then it was good.

So then I went to the rehearsal, and I was ready. You know and when that happened, I just belted it out. It didn't worry about it. I knew I could do it, and I did it. It turned— was it Gerard Schwarz?

At any rate, he was playing piano in the ensemble, and one funny thing that happened. He's assistant conductor. He's a piano player. It's his piece. And there was a place where he had to do something and then hit a note, and he couldn't hit the note at the right time.

He missed a little bit, enough that he couldn't accept it. And so we'd do another take. And then he'd try again. And he absolutely, absolutely, could not get it. So I think the percussion player said, "I'll do it." You know he just did it the first time. You know nothing to it.

So I kind of sense a rhythm. You know go to a percussion player for a sense of rhythm. Well, any rate, we tape this thing. Then they're doing the playback in sort of the recording studio. And I went in there, and they were playing my tune you know. And I listened to a little bit of it, and I got that overwhelming shocked feeling, you know, that happened to me when I would listen to Starker playing the [Zoltan] Kodaly [Sonata for Unaccompanied Cello].

And I absolutely couldn't stand it. It was so intense. It was positive, but it was just too much, scalding. So I had to leave. I just couldn't listen. It's like a persona that's like a potential persona in me, but that it wasn't going to be. That's not the path I'm on, and I just couldn't handle it.

FL: Wow. Thanks for sharing that, that story. You describe your, your experience with the cello, and your, your reasons for playing the cello as, as an amateur. And that's such a big part of the, of music at MIT. But you're also a very thoughtful musician, and I have a few other questions about that.

There's one question I have on the sheet here. And I wish that I had— I don't recall what the idea was behind the question. But it had to do some discussions we had had years ago when I had met you here. And it had to do with perceptions of music when you're playing and as a listener. And I, there was some vague, memory of a conversation. And it may be that this is so vague that I, that there's no place to go. But it had to do— we were talking about perception.

And maybe we can just turn it into, I know that you have some, some real interesting thoughts about how we, we perceive music. I don't know if there's anything in particular you want to share about that. Or we can—

KK: I think probably I've said things that touch on that already.

FL: Yeah.

KK: I don't know that I would want to—

FL: OK. You've touched on this in just the story that you just told in a certain sense. When you have a new piece that's unfamiliar and strategies that you have to learn it, is there anything more that you want to add to it?

KK: No. I think I've covered that one.

FL: Yeah. Yeah. That's um— now here's a really unfair question, because it's so broad. But I know that you have some thoughtful ideas on this. The central ideas that you bring to playing the cello in regards to sound and style. And then we can even, maybe you can comment about particular repertoire that you like in composers. But talk about your general approach to the cello, like a sound that you're trying to go for.

7. Personal thoughts on cello sound and style [00:58:43]

KK: Well, I spoke a little bit before about the rhythmic structure of music, and the "Twinkle, Twinkle" example, and how the way you perform affects how the music is perceived. So I took a systematic approach to this issue, and said, "OK, what can I do? What do I have control of when I'm playing?"

So I said, "OK, clearly there's dynamics." There's, there's the volume, loud and soft. But what about the attack? It can be smooth on a string, or it can be biting, where it pops a little bit at the beginning. And even with the dynamic, you can have an accent at the beginning or no accent.

Then there's tone quality, which is very important on a string. And that can range from what I would call "tense," where you might go close to the bridge and a lot of pressure in moving the bow slowly, so it's almost at the point of choking off, but it's like a very intense, tense sound. Or it can be open, more flute-like, where the bow is moving quickly and lighter and farther from the bridge.

So I thought, "OK, well how do those ingredients work together to communicate something?" There's all sorts of combinations, and they can be used at all different kinds of levels in the hierarchy of relationships in the music. How do you use them? And what levels do they work at?

So I developed all sorts of strategies. And then there's vibrato. And it can be absent or it can be slow or fast. So there's all sorts of combinations. I worked out my approach to using all these ingredients to convey all the levels of music that I was aware of.

Now, that's a kind of a cold-blooded technical approach. But again, just like with "Begin the Beguine," you plan it out. You practice it so that you can do it. And then you bring it all together with an inner sense of what it means. What's the point. You know like what are you getting across. And then it communicates.

Having gone through that, I can then listen to different musicians, you know different string players, and I say, "Well, this one knows what he's doing. He's really going for it, you know, he's really using the instrument as effectively as possible." And then I listen to somebody else, and I say, "They have no idea what they're doing."

I mean, they're using vibrato because you're supposed to. You know they make good sound. They have dynamics, but it's like painting by the numbers where you have no idea of what the, what the picture is. You know, and you're not really accomplishing anything.

So I did get to a certain level, but I, no way was I an inspired musician. My mother loved the way I played. My daughter loves the way I play, but that's family. And I think I did some things very well that I really love, that I really played through my life. What is it? The Sh—the Schubert? What is it? The Brahms Cello Quintet.

FL: You mean the Schubert Quintet?

KK: No. Well—

FL: You mean there, there's a—

KK: [HUMMING].

FL: Yeah, that's—

KK: [HUMMING]. I think that's Brahms.

FL: Here. Let me... Gosh. That's the Sextet [No. 2, Op. 36].

KK: Sextet. That's right. Sextet.

FL: Right.

KK: Yeah. That's the first section.

FL: Starts off with that big viola solo to begin the movement. Yeah.

KK: Yeah. Well, I love that solo in that movement, so I, I had worked out my version of that solo. And I had worked it out over years. I knew I could play it. And I really had it, you know, it's like, dynamics and tempo, and all the rest of that. So it's like white hot. And it comes at the end, it's sort of like the final statement.

Well, I had an opportunity to belt it out with a very good group, where we just got together, and the other cellist was a professional cellist. Now I'm forgetting his name. But he's a professional cellist in a string quartet, professional string quartet. And we were at his home.

And we had the players for doing the Sextet, so we did it. And I asked to play first on that movement. And he says, "OK, so we switched parts." And I, I played that. And then when I belted that one out, it just went, you know, like the performance of my dreams. You know it was like everything worked, and I did it.

Well, afterwards, the cellist's father came up to me, and he complimented me. And I said, "Well, I really appreciate that. And especially considering that your son is such a great cellist, you know, that means a lot to me." And then years later, the cellist, I met him again, and he told me that that was one of the memorable experiences of his life, that chamber music experience, because, of course, professional playing is a job.

FL: Yeah.

KK: I forget what the question was, or where we were going with this.

FL: You were talking about just your approach to the cello.

KK: Oh yeah. Yeah so, it's like there are the ingredients. See and then, what more can you do? But you have to be aware of the musical significance of all of these aspects. They're not, there's nothing incidental. The bite at the beginning of the sound is there for you to use or to suppress, for musical reasons, at particular levels, to get something across.

You can handle certain amount intuitively, and by inspiration, but you really have to have a technical plan in place and support in order for that inspiration to come out, and really express itself. Now having said that, I can say that I heard [Pablo] Casals in a master class, and he got frustrated with one student.

And so he sang the phrase. Well, he couldn't sing, I mean by singing standards. I mean his voice was sort of cracking, all the rest that. But the musical intent came across like kaboom, like, "This is it." You know so here was somebody who could really transcend all technical issues, and all the rest of that and just have the music come out.

But I don't have that, [LAUGHS] I don't have that kind of strength of musical sense. So I need to support, get myself close to where then I can get the final part with feeling.

8. Preferred repertoire and composers [1:07:51]

FL: Is there any particular, particular repertoire or composers that you feel close to?

KK: The Beethoven last string quartets and the last two pianos sonatas are like my music. See for me, the, the notion of heaven, and like the feeling of heaven, is, to me, expressed only in music. There's nothing I can see, I mean like no visual portrayal of heaven registers on me. I mean it doesn't— it's just it's totally [? moot ?]. But music really takes me there.

In town here, there's a very, very fine pianist, Rosalie Beverly.

FL: Oh yeah.

KK: Who had a Bechstein piano in her living room, and it basically, it was a small living room, so basically a Bechstein piano with enough room to sort of walk around it, and, and I remember going over there to play, one evening, we were going to play Brahms.

I forget which, what, what we were doing. But it was a slow movement. The piano plays the introduction, and then violin and cello come in. And her playing on that Bechstein piano was so transcendently beautiful that, when the sounds just sort of stopped, and it was time for us to start playing, I absolutely refused to play. Like I didn't, I like— and it was like I was in heaven, and I didn't want to come crashing back to— [LAUGHTER]. Yeah, and I don't remember what we were talking about here.

FL: Well, asking you a particular repertoire that really means something to you.

KK: So Beethoven is basically it, Brahms— some Brahms. But Beethoven, the late Beethoven quartets, and the last two piano sonatas are sort of where it's at for me. Then, a lot of Brahms I love.

FL: Has there been any contem—

KK: I—

FL: Yeah.

KK: My brother, Tom [Thomas Kornacker, professional violinist], went to a Chamber Music Camp in New Hampshire, or was it Vermont? I think it was at Bennington, in Vermont.

FL: Uh-huh.

KK: Rather good camp.

FL: Yeah. That's very famous for—

KK: And he was a counselor there, and so he got me in. Said, "Let's go together." And I gave my credentials, you know, and what not. There are a lot of professionals there.

FL: Right. And I talked about having performed the Brahms Double [Concerto in A minor, Op. 102], and I have also did a performance here at OSU [Ohio State University] with Sylvia Zarembo.

FL: Oh really.

KK: Yeah, and we did piano quartets, and we did the, well, Brahms again. We did, oh, piano quintets.

FL: There's one with the F minor.

KK: We did the [Dmitri] Shostakovich. We did Shostakovich—

FL: Quintet [Op. 57].

KK: Quintet.

FL: And then the Brahms—

KK: The Brahms.

FL: F minor quintet [Op. 34].

KK: Yep.

FL: Uh-huh.

KK: Very ambitious program.

FL: Yeah.

KK: And a Mozart, and did a Mozart piano quartet.

FL: Quartet. Yeah. This was at OSU with Sylvia?

KK: Yeah. Yeah. Sylvia Zaremba. Sylvia Zaremba, when I was at MIT, one day I was, I was listening to the radio in the afternoon, and on comes the announcer, and he says, he just got this tape of this, I remembered it as a 12-year-old, but since then, Sylvia said she wasn't 12, so maybe she was 15 or something like that, playing the [Franz] Liszt "Mephisto Waltz." And he says, "You got to hear this."

So on comes this tape. And I'm absolutely blown away. I mean it's just the most in— you talk about passionate virtuosity, but this was like off the scale. Then I meet Sylvia Zaremba, piano faculty at Ohio State University. So I told her this story, and I said, "I thought when I heard that tape, you know, that you were on your way to being an internationally renowned musician."

But it turns out she didn't do it. She didn't go that route. Because she got married, one thing and another, she wasn't there. But she's still a phenomenal—

FL: Yeah.

KK: Artist.

FL: She played the [Sergei] Prokofiev with us in the orchestra.

KK: Just phenomenal. I can tell you all sorts of stories about working with her. But anyway, when I went to that camp with those credentials, they sort of marked me as the Romantic. So I got assigned the stuff that I do, you know, like the, the clarinet quintet, Brahms Clarinet Quintet [Op.115].

And [Albert M.] Al Wray [MIT 1958] was there. You know he— you know, he was at MIT. Did the [Jean] Sibelius [Violin Concerto]. We played together a bit. So there he was at the camp as a counselor. Well, I guess he was actually one of the administrators. I mean he was helping run the place. I mean he was a major person there.

And so, and Al Wray was assigned to my group. And so we were, or maybe he signed, or maybe he set this up. And anyway we played together. That so we did that, and I just had a ball. I mean like I was in pretty good shape as a player. I sort of had a premonition that this might be my farewell. I mean that's like I serve all day, every day with these great people. And then that's it.

I might add that when I started developing software to do non-monotonic reasoning, and I was going to do the whole thing myself, I decided to give up cello playing. I gave up Go playing. I said, "My disciplined mental activity is going to be software development. This is going to take absolutely everything I have. And it's going to drain my energy.

And when I relax, I'm just going to go blank. And I'm going to let my brain recover." And it turned out that debugging is a real challenge and an art, and bugs would sort of occur to me while I'd be sitting, thinking that I was doing nothing, you know, just relaxing. And I'd sort of get this little information, you know, it was like if you look here, you'll see that you did that. And that has this unwanted side effect over here, and you better fix it before— and it was like I was taking orders. You know then I'd just go fix it.

But so I gave my subconscious free reign to work just on that project and do that. And so I wasn't working on phrasing anymore. I wasn't working on playing with other people anymore. I just had to bid fond farewell to that.

So I've— I have a rather fine cello, a [Jean Baptiste] Vuillaume [French luthier] that's now worth a couple hundred thousand. And I'm lending it to a cellist in the Columbus Symphony. And the Stradivarius Society sort of handles the relationship. So I'm glad it's being played and not sitting in my closet.

FL: Why don't we, for now, end here, and we'll just have to reschedule another time to talk about music and science and stuff. And there are many things that you said in the interview that I would like to kind of flush out with further questions in a future interview, and I think I could ask even more— I could ask better, better questions.

KK: Well, I've enjoyed this time together. And I hope I haven't been too verbose with some of the things.

FL: Not at all. You've been most generous, and you've really contributed, contributed a lot. Even the stories are valuable. Almost all of the interviewees apologize for the stories. But they, they add a great deal!

KK: OK. I appreciate it, Forrest.

FL: I want to thank you very much for your generosity this afternoon.