Freddie Bell-Berti oral history transcript

CAF: OK This is November 3, 2017. Present Freddie Bell-Berti, Carol Fowler, and Donald Shankweiler, and we are taking an oral history from Freddie Bell-Berti. OK so shall we start with the first question: When and how did you come to Haskins?
FBB: My first day was the day after Labor Day, the 5th of September 1969. I had…in graduate school, I had been truly blessed to have received a Veterans Rehabilitation Administration traineeship even though I didn't have any of the background courses in speech pathology. And the second year, when the director of the graduate program in speech language pathology and audiology knew that it was unlikely that I was going to become a clinician, nevertheless she renewed it. But I also was then admitted to the doctoral program based on some other faculties telling me that it was now time to do that. And Norma Rees told me that she was getting flak as it was. She didn't think she could get me a third year. And I began asking people for recommendations for jobs. And I said I would sweep floors. I needed support. And Tom Gay, Tom Gay spoke to Kathy [Harris] because he knew that Laurie Russell, her then assistant, would be ending her position the following year. And he had a recommendation. And I came to Haskins to meet her in my threadbare coat that I colored in on the subway so she wouldn't see it. I didn't know that that actually would have endeared me to her even more. And she said that she was looking for a research assistant and that I had come recommended. And asked me if I could begin the day after Labor Day. This was sometime in February or March of the year, and I said I could. And she said that if I had any projects I wanted to work on we could talk about doing them, and that was the end of my interview. And I guess it was the beginning of the semester, because we had had a snowstorm and I had a class with her, but we hadn't met yet, because school had been closed. And so then we actually met in class the following week or so.
CAF: And Tom Gay was there.
FBB: Tom was at Haskins. He had only recently finished his degree in Audiology. And he was teaching at Hunter. And I was taking a prerequisite course with him I spent a year taking courses that didn't count towards any graduate degree. But they were still paying me.
DPS: What had been your undergraduate major?
FBB: Well ultimately my undergraduate major was Biology. I started in Chemistry, and I confess that the notion of partial differential equations in physical chemistry made me decide to do Biology. Because it just terrified me. I don't know why, because most things don't terrify me that way. Some things may bore me. But that one, I thought; no, I don't think partial …Whole ones were enough for me. Was sort of my line. And so, I was premed and looking for something interesting to take as an elective the first semester of my senior year. Not the lab techniques course that all my friends were taking so they could get lab tech jobs. And I started at Anthropology and I went down the list of courses offered. I went down as far as Spanish, and I nearly died, because I hadn't found anything yet. And then I got down to Speech, and there was Comparative Phonetics. I didn't have the prerequisite, but I asked if I could take it, and he said yes.
DPS: And who taught that?
FBB: Marshall Berger. And he asked why I wanted to take it. No one ever asked me why I wanted to take anything before. And so I blurted out the absolute truth: I said it sounds interesting.
DPS: Arthur Abramson was teaching it at….
FBB: Not at Hunter.

DPS: Queens. No that's true. You were at Hunter.
FBB: This was actually at City College. This was at City College…is when I was an undergraduate. And Arthur was at Columbia.
DPS: Then he got the position at…
FBB: Then he went to Queens.
DPS: Queens, yeah.
FBB: But he had left Queens by the time I took any graduate courses there. Though I did take a graduate course with Michael [Studdert-Kennedy] there. And also with John Newman.
CAF: Now, was that after you had come to Haskins that you took a course with Michael?
FBB: Yes. Yes, because I was already in the doctoral program.
CAF: Now you said that Kathy's student Laurie somebody was leaving.
FBB: Laurie Russell
CAF: Laurie Russell was leaving. You were contemporary with Larry Raphael as well weren't you?
FBB: Yes, Larry was ahead of me a bit.
CAF: But not working with Kathy at the time?
FBB: Well, he was working….Arthur was the chair of his committee, I believe. And Kathy was also on his committee.
CAF: OK.
DPS: When did Kathy take a position at City University, do you know?
FBB: I can recover that precisely if you remind me with an email, because I have the best CV she ever had. Because I assembled it when she got the Silver Medal. And then the Gold Medal of the Acoustical Society.
DPS: Send us a copy of it.
FBB: Absolutely. Just let me know; just remind me, because...
DPS: Because she wasn't there when I came to Haskins in '65. It was later.
FBB: No, it was later than that. It was about the time I became a doctoral student. So it was around '69, '70 but I can get you the precise….
DPS: That sounds about right. I was just curious.
FBB: I can get you everything about her.
CAF: So she was…so it sounds like she was just starting at Haskins when she took you on…
FBB: No, no, no. She had been at Haskins….this was about CUNY.
CAF: Oh you were asking about CUNY, OK.
FBB: No, she started at Haskins right after her doctorate.
DPS: Right, right, '51 or so.
FBB: Oh, it was something in the early 50s
DPS: Right.
FBB: And Frank Cooper's description of her…. He once described her arrival on a very rainy day. With her hair dripping and her clothes all wet.
DPS: She was the first psychologist after Al that they hired.
FBB: She studied with um Smitty Stevens
CAF: Yes, and BF Skinner.
FBB: Well, yes.
DPS: And Ed Newman
FBB: So you know about the Skinner story.

CAF: Well, I know in Skinner's autobiography that he is very angry at her because she didn't finish a lab manual that he wanted her to write with him.
FBB: Yes, well. She said his treatment of all the women in his lab was awful. And she found this other opportunity that she might actually like.
7:36
But there's a movie of her teaching pigeons to play ping pong. And I only know about it because Laurie Russell was trying to teach something about behaviorism and ordered a film she saw, still 16 mill[imeters] you know. And she said she was sitting in the back of the room. She hadn't previewed the film. And she was sitting in the back of the room as it was running and she said from the back of the room all her students heard her say: My god, that's Katherine! Teaching her pigeons to play ping pong. And she didn't think that was the way she wanted to spend her life.
CAF: Right. So what was going on at Haskins when you first…In Kathy's part of the lab not the whole lab. But Kathy's research.
FBB: The EMG studies were beginning in earnest. We no longer had just surface electrodes and such. And we were moving to New Haven that fall.
CAF: Right! Good point.
FBB: Oh please! I was there the day the 224 [DDP 224, Haskins' first computer] went out the window and down. It was cold, because there were no windows. They had taken the window out. And the street was blocked and the police depar…, everybody in the world was there protecting whatever. And it went out, it came to New Haven, and it worked again.
CAF: Yeah, I didn't realize that it started its life in New York. I remember it in New Haven.
FBB: Oh, yes it did.
DPS: It arrived…The computer arrived [in NYC] just weeks after I did in the winter of '65.
CAF: Alright.
FBB: And it was on the fifth floor.
CAF: Wow, wow.
FBB: The computer was at the back, which was the loft part. And the roof leaked. And I was asked if I could please work on Fridays. And that when I left, I would make sure that everything was covered…the computer was covered with tarps.
CAF: In case it rained.
FBB: In case it rained, because you never knew where the next leak would be. That's where I learned to read octal code. And flashing lights octal code […]
CAF: Right. That was serious computer stuff.
FBB: Oh, it was.
CAF: So what kind of EMG stuff was going on?
FBB: Well, they were still doing some lip stuff. But that was about the time that our Japanese colleagues arrived….began arriving. [Masayuki] Sawashima was the first. And he…I guess this was the end of his stay. And so they were beginning to put electrodes into laryngeal muscles. But no tongue yet. No tongue yet, or velum yet. Jim, Hajime, Hirose.
CAF: Ok. And was the topic, what muscles are involved in [speech] production? Or was it coarticulation?
FBB: It was just trying to identify the functions of the muscles at that point.
CAF: And this was, I guess, pioneering, right. I mean…
FBB: Oh, nobody else was doing it.
CAF: Yeah, yeah.

FBB: Minoru Hirano then went to somewhere in southern California, maybe UCLA, and did some work there. But it was Haskins. Haskins was the pioneer.
CAF: Yeah, good. Good.
DPS: So you were working on that project from the beginning.
FBB: But my contribution was to make the electrodes.
CAF: That's what you have students for.
FBB: Well, and then they changed the wire. They had been using a platinum merdian wire and they changed it to a stainless steel wire, and I couldn't make the electrodes, because it woudn't bend. It wouldn't hold the flex; you couldn't flex it. And I finally went to…And I would make them and wrap them in whatever the special paper was so they could be autoclaved. And I don't know how long I spent trying. You put a loop through and you try bending it and then cutting…nothing. Nothing would bend that wire. And I went to Masayuki and I told him I couldn't do it. So he was going to show me. And he discovered you couldn't do it with this wire either. We had to go back to the other wire.
DPS: The electrodes were first…suction was the first method.
FBB: Yes, the superficial…These were…These were the inserted electrodes that that I was making. We weren't using..
DPS: Had they stopped using the suction ones?
FBB: I don't ever remember using them, so probably. But we didn't do very much by way of recording…except for the larynx. I mean all my memories are of the insertions of the larynx.
CAF: Yeah.
FBB: And maybe, maybe actually even some of the extrinsic tongue muscles like the mylohyoid, because I do believe that's where she and Larry [Raphael] both fainted. Was still in New Haven…still in New York. Because Maude [Kathy Harris' daughter] arrived, and she said she was there to see her mother. And somebody said: "Well, she's in the back, dear. Wait for a minute." Well, she just walked in the back and she said: "What's she doing on the floor?" "She's just taking a rest." [Maude:] "Well, even my mother doesn't do that!" Something to that effect. And then, Kathy woke up. And Larry said he passed out, but he came to very quickly, and my entire experience with the mylohyoid was just that it would make me feel nausea. Something under here [chin], you know, under the chin. It was just…
CAF: The whole thing is not [my…]
FBB: I think it has to do…It's such a thin muscle and all of the sensors are so close to wherever the muscle is that something is irritated.
DPS: Sawashima was doing the insertions? He was the person?
FBB: Yeah, now Jim Hirose arrived that fall, I think.
DPS: Fall of…?
FBB: I think '69, but…Yeah, because he was here for 3 years and he was back to Tokyo before I defended my thesis in….So we had to keep shipping it to him. We didn't have email.
CAF: Oh, right, right. Dissertations are big.
FBB: Oh it was…Well, mine was actually quite thin.
CAF: Really, oh I […] lots of pictures.
FBB: Well, it has. It's more pictures than text. The comment from Dennis Klatt was that I write very tightly. He was my outside reader.
CAF: "Thank you," he said.
13:58
FBB: Well, if you said it once, why do you have to say it again?

CAF: That's fine. So when did the coarticulation research start? (That's not one of the questions.)
FBB: No, no, but in fact Kathy and I had an abstract in for the acoustical society meeting in the spring of '74. Because you were asking how things went on and where they came from, I actually went to […] And I had been looking at nasality that way….I had finally finished my thesis by then. And I was very tired of nasals to be perfectly honest. You could get tired of them very easily. And I once said something to Ray Daniloff. I just wish people didn't think of me as Velar Bell-Berti. And he said: "It's better than being Lips Daniloff." And I said, well, you know….
CAF: "I'll be Lips Bell-Berti."
FBB: Yeah….it didn't. And so we had a paper and I don't…I could probably go…you know we could go look in the Acoustical Society archive and see what the proposal was, but that's not what we did. Because Kathy had done…She was looking at stress effects. I don't know if you remember her PEEpop and PApeep experiments. A PEEpapa, a PApeepa, aPEEkapa, aPA….I was helping her with the data analysis, and I was sitting and looking at the computer, and I said…I called her over, because something kept happening. And what kept happening was a lower trough during that medial /p/.
CAF: Ah!
FBB: Ah And I said to her: "It's every token. And this is the second talker." So that was what the paper turned out to be about. And Bill Henke was sitting there, and I'll I'm doing is saying Henke is all wrong, because this can't be true. I mean I didn't put it quite that bluntly.
CAF: So the point was, Henke was one of the feature spreading guys, right?

[INSERT: Henke had a theory about anticipatory coarticulation: A feature (was it a feature) of a forthcoming segment could be anticipated through any segments that were not contradictory for that feature. So, e.g., lip rounding for a liprounded vowel, such as /u/ could anticipate during any consonants in a string of consonants before /u/, because consonants are not liprounded or not. THEN See Bell-Berti and Harris paper in Haskins Status report 37-38, pp 73-78. They were looking at the genioglossus (GG) muscle, not at features. They found in /ik/ sequences just one GG peak but in /ki/ sequences two peaks, one for /i/, one for /k/. Why the difference, when both /i/ and /k/ use the GG muscle. They interpreted this sort of in Henke terms. The /i/ in /ki/ could not anticipate, because it would open a tract needing to be closed for /k/. If this is consistent with Henke, another result was not. They looked at /ipi/ sequences depending on whether the first vowel or the second was stressed. The idea was that /k/ is more closed than /i/, stressed /i/ is more closed than unstressed /i/, so would the stress-unstressed /i/ sequence look kind /ki/ and the unstressed-stressed sequence look like /ik/ and have one peak (no trough between peaks). Upshot: both /ipi/ sequences showed two peaks (with an intervening trough), which was not consistent with what Henke's prediction should be if extended down to muscles rather than features. This is how Bell-Berti and Harris discussed it in the paper. Below, Freddie focuses on something else, also contractor to Henke at this level; in a /ipi/ sequence, regardless of stress, /p/ does not involve the tongue, so tongue muscle activity for the second /i/ can anticipate during /p/, but the trough in EMG activity during /p/ says that it does not.]

FBB: Well, yes and he said: As soon as it's not contradicted by something intervening. Well a bilabial stop shouldn't be contradicting the tongue movement. You should have /i-i/.\
CAF: And yet there's a trough. [during /p/ between the two /i/s]

FBB: And yet there was the trough. Not only was there a trough but it was related to the duration of the /p/ closure. So it was…
CAF: Yeah, yeah.
FBB: And that was…and he was sitting there, and he raised his at the end with the only question, and he said: "I guess, I'm wrong."
CAF: Wow. No one says that. Good guy.
FBB: When I realized who was sitting there, I got a little nervous.
DPS: I'm ignorant. Pardon my ignorance. But who is Henke.
FBB: He was one of the theorists proposing feature spread models of coarticulation that have no boundaries. I mean Kozhevnikov and Chistovich at least stuck it to the consonant cluster.
CAF: So the idea was: if coarticulation is feature spreading, then, say you an oral consonant, a vowel and a nasal consonant, the nasal…the lowering of the velum will happen right after the offset of the consonant. Right, so you've got a word like ban, let's say. Right after the /b/, the nasal gesture is going to start for the /n/ because there's something about the /b/ that says, I'm oral, don't make me nasal but there's nothing about the vowel, we don't have contrastive nasality in English [vowels]. So you should always start the nasal gesture from an end nasal right after the first oral…right at the end of an oral consonant through a string of vowels [before the nasal].
FBB: Which is what Moll and Daniloff said.
CAF: Yes.
FBB: But Kozhevnikov and Chistovich because they were looking at lip rounding said that you could start the rounding for a vowel anywhere in the string of consonants before that doesn't interfere with the rounding.
CAF: Exactly.
FBB: And I guess I started looking at the velum at that point a little bit because, when you think about it, that means, we have two different organizational syllables, one for the lips and one for the velum. [She means according to Kozhevnikov and Chistovich. They propose the CCC..V as a unit in speech. So their account of liprounding was that of feature spreading. But their account of anticipatory nasality had to be different, because any nasals would be in a different syllable from a preceding V: V. N] I'm sorry. That's too complicated. I couldn't talk. I don't have those kind of motor skills.
18:25
CAF: Yeah yeah.
FBB: To have two separate organizational systems, have separate ones for each articulator. It just didn't work for me.
CAF: Right.
FBB: But it took a long time before I finally got the velum piece done. And I did that with Rena [Krakow].
CAF: Well there still ended up being a lot of….So this is one of my favorite contributions on your part that I just had to lecture Daniel Recasens about a few months ago. What I see is that you introduced a control condition in both the study of velum anticipatory coarticulation and lip anticipatory coarticulation
FBB: Yep.
CAF: Because everybody saw a little something happening after the /b/ in /baen/ or after…[CAF meant to say: or at the start of the first C in a CCC string before a rounded vowel]
FBB: And made assumptions.

CAF: And they assumed that that was the onset of coarticulation. But you pointed out, that if you have /baeb/ you're going to see a little bit of velum lowering at the end of the first /b/.
FBB: You'll see more of it in /baeb/ than in /bib/ [because /ae/ itself, a nonnasal vowel, is associated with a lower velum position than /i/]
CAF: Right. I know, so my favorite paper of yours is in Lass, 1980.
FBB: Oh, I love that paper, and he [editor Lass] changed one word and I've still…haven't forgiven him.
CAF: Held it against him?
FBB: It ruined it.
DPS: Who did?
FBB: The editor.
CAF:Norman Lass
FBB: And it wasn't a technical word. I said something was not "transparent", and he changed it to "clear" because it made him think otherwise of plastic wrap and I thought […]
CAF: But still, nice paper.
FBB: I love that paper, I do.
CAF: It's about…it's sort of educating us on the fact that the location of the velum is not just: Either It's down for a nasal or it's up for an oral segment.
FBB: mmhmm.
CAF: It is very high for consonants, especially….stops, voiceless stops, is it?
FBB: Well, it depends on the talker. That's talker dependent because of control for voicing.
CAF: And it's correlated with vowel height, so it's higher for /I/ than for /a/.
DPS: This was a time in which a lot of people believed that features were binary and..
FBB: Oh yes, oh yes.
CAF: And this is entirely outside of any phonetic description, right? You never say about /i/: It has a pretty high velum position or about /a/ it has a pretty low one…You just ignore the velum for those things. But it's just systematically true, and very important if you are trying to find the onset of coarticulation.
FBB: I once had somebody confide that he always had his students read that paper to understand the velum, and, I said "Thank you." And he said: "Because it's easy to read." Jeez Louise, fellah! That just means I write well.
CAF: Yes, exactly. So the thing that Daniel had wrong…it just surprised me…is that he said: There are two phases to coarticulation, right. So he's describing Perkell's idea of this hybrid model where you have, like an initial lowering of the velum right after the end of an oral consonant [before a vowel, as in /baen/); that's one gesture. And then, as you get closer, time-locked to the nasal you have another [velum] gesture. And yet he's citing your papers in which you say…
FBB: Because he's showing…he's saying that supports Perkell.
CAF: Yeah, exactly.
FBB: Then Rena [Krakow] and I ended that with that paper in '91.
CAF: I think you did, yeah.
FBB: Well, that paper…OK, so in August of that year, there was a Phonetics congress in Aix.
CAF: Yes, I went there.
FBB: And I was invited to be on a panel commenting on Sieb Nooteboom's paper about…I don't know. I read….Why me? Ilse Lehiste and Hiroya Fujisaki and Gunnar Fant and me. I've

always…I will say right now, I still don't know why you are interviewing me except that I can fill in some history. I mean I'm serious about that. I am a student of Kathy's and that's my….
CAF: No this..
FBB: Wait. That's my identity and myself.
CAF: But what I'm saying is that I think this is one of your important contributions to the literature on coarticulation and why we are recording you.
FBB: Well, and I appreciate that, it's just I will say that in 1991, for me to be on this panel…And I wrote back and said…And it was on perception: "I do production." You know? But no, they really, really, really…And so I did it because…
CAF: You wanted to go to Aix.
FBB: Well, I was going to Aix anyway and…but the other plenary session had Joe Perkell and whomever.
CAF: Oh, my gosh.
FBB: And my two dear friends who were traveling with me: Carole Gelfer and [Ann Mary] Boyle came to my session to support me. Kathy went to the other one. Please, thank you. We need to know what they're saying. And when I saw her afterwards at lunch, she looked at me, and she said: "You've won."
CAF: All right!
FBB: I had no idea what that meant, because she didn't explain.
CAF: Yeah. Just so this will be understandable on the tape: The important thing that Freddie and her colleagues realized is that you have to have a control condition. If you're looking at nasality, if you have the word /baen/, you've got to have the word /baeb/ [better, /baed/]. So that you have….you can look at the movement of the velum that has nothing to do with nasality. It has to do with the rest [of the segments in the words]. Right? And, analogously for lip rounding. You have to have two vowels, one of which is lip rounded, one of which is not otherwise the same phonetic contexts [e.g., stoo, stee)] so that you can pull out any lip gestures that have nothing to do with lip rounding. And only then can you know that you are looking at coarticulation of lip rounding. It's really important.
FBB: And know…what the interactions really are, as opposed to..
CAF: Just anything happening with the lips or anything happening with the velum counting as coarticulation when it doesn't. So that was important.
[And when Kathy said that Freddie had won, she probably meant that Perkell, realized that with the proper controls in place, the early gesture of the two in his hybrid theory was not coarticulation; instead, it was e.g., the velum dropping from an oral consonant to a vowel in /baen/ and /baeb/ or lip movements associated with /s/ in /stoo/ and /stee/. Upshot; Freddie/Kathy's proposal that, there is only one phase to anticipatory coarticulation and that true velum and lip anticipations were time locked to the nasal/lip rounded segment, had "won."]
CAF: I do think you won except that Daniel didn't know that.
FBB: Well, you know, people still read some names more than others.
CAF: Right. True, that's true.
DPS: So what was the year you defended?
FBB: I defended my thesis, but it had nothing to do with
DPS: This had nothing to do…OK
FBB: I defended my thesis in '73
DPS: Oh, OK.
FBB: But the first of this was '74. Because I was just looking at

CAF: At the trough
FBB: At the trough. I'm sorry. For the sake of the recording, I'm doing a visual in the air, sketch. But that was just such an eye opener
CAF: Right.
FBB: Though I mean I wasn't looking for…but there they were
CAF: Right, but things happen that are not necessarily in the phonetic description of a segment […]
FBB: And then the suggestion that both that and the velar height difference for the voiceless stops was the result of intraoral air pressure…Well I was asked that about the..I was asked that when I presented my thesis work at the Acoustical Society meeting. And I remember when Ken Stevens asked, I was so relieved that I knew the answer that I said: "Oh, no, of course not because the EMG comes before the air pressure build up." And he said: "Oh yes of course." That was the end of that. But the same was true…Other people then asked, well couldn't the lower trough be because of increased pressure for the longer closure duration of /p/. And I thought: "Well, but, we're looking at EMG that comes before the pressure build up."
CAF: Right.
FBB: So it can't be.
CAF: Right.
FBB: I mean it…those physical things cannot be causing…
CAF: Just one second.

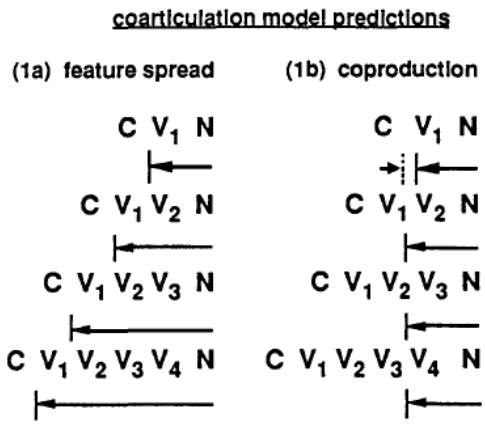
END OF FIRST FILE
CAF: OK so. Let me ask about the Velotrace. Are you the person who decided we needed that?
FBB: I was the person who decided we needed some way to measure the velum not using film. And frame-by-frame measurements. And Satoshi Horiguchi appeared one day. He was…He came after Kyoshi Oshima or before him? I've lost the order.
CAF: Yeah. I don't even remember that name.
FBB: Oh yeah. He was like my little brother. He followed me everywhere. We went to a couple of cleft palate meetings, and I mean it was….People asked me who he was and I said he was my colleague from Haskins. He looks like a child. Well, he does. He's almost as old as I am. He…I don't even know where….He went to a hobby shop. He bought some materials. And he came in with a prototype that we needed to test.
CAF: So remind me how this…it sat on the…
FBB: There's a bar that rests on the floor of the nasal cavity, and there is…
CAF: Oh, it goes through your nose. That's what I was forgetting about.
FBB: It goes through the nose, and there's a long bar in between. Outside there's a lever. And inside, there is a thing that rests on the velum. And when it goes up here [outside], it goes in…you know, it's a beautiful….
CAF: So you can measure it out in public…what's going on inside.
FBB: And you can record what that thing [the outside lever] is doing if you put an LED on it. You can get an electronic signal, and you don't have to…And it's certainly better than…[The following is about pre-Velotrace efforts to measure the velum?] The problem measuring the velum inside is that you can't always see the edge of it when it's going up and down, because everything is pinkish red, and it's moving, so you don't necessarily have a sharp edge even if you're using 60 frames per second. So we…what do they call it, the press on lettering? And we had press type. Well they also had a grid thing. And I remember, it must have been Seiji Niimi

who cut a strip of that, used tape to hold it outside, put it in, and then put the fiberoptic endoscope in, and we could see that. Well, of course, sometimes it didn't really stick. And it would fly up in the air you know. But you could at least see the edge of it. But the other issue is that the further away the high point is, the less difference you're recording. But at least we knew we were never overestimating the velar height.
CAF: Yeah.
FBB: That was the thing. But I only ever measured one subject and decided that was enough. [So the Velotrace was developed?]
CAF: That was my question. It wasn't…I would have said it was very unpleasant for the person?
FBB: The endoscope and that thing was not.
CAF: Oh!
FBB: No, because the endoscope was just sitting in your nose. It wasn't down…
CAF: Yeah, OK.
FBB. It was just sitting there recording this thing going up and down. And so that was…It was the measuring and the…The problem was the projector we had to advance frame-by-frame…sometimes it did, and sometimes it didn't.
CAF: Oh, golly.
FBB: So I had to…that first round, I had to go…We had a--I'm sure we still have it somewhere here unless you folks got rid of it when you moved—a wheel with sprockets and markings. There are 40—Did you know there are 40 frames to a foot in 16 mm film?—
CAF: No.
FBB: You see? And what I had to do because the background was black, I used a razor blade to scratch every 50th frame on 400 foot rolls. And that way at least I knew as I was measuring where it had stopped advancing.
CAF: Wow.
FBB: And I knew that life was not long enough to do this for very more times.
CAF: Well that's too bad. Now, does anybody..is anybody looking at the velum, now and how do they do it?
FBB: in the early days, they used a lot of Xray motion picture studies.
CAF: Right
FBB: And there are a lot of people who glow in the dark since then.
CAF: I know.
FBB: The idea of using it with EMA, the problem is adhering the sensor. You can't risk it going…if you put it on the upper surface, you can't risk it sliding down. If you put it on the lower surface, you're going to knock it off with the tongue for velars. And so we…I spent a lot of time actually talking to my dentists about dental adhesives.
CAF: How about ultrasound? Would ultrasound.[…]
FBB: Well, ultrasound except it's hard with ultrasound to identify a point. And people have looked with ultrasound. I actually was a reader for a thesis that used ultrasound. And, yeah, you can see some differences, but it's very hard to quantify, because you don't know…And, if the high point is moving further back, and you're managing to get a recording, you may not get it all the way. It's just…yeah.
CAF: mmhmm
FBB: And to be perfectly honest, I never want to look at it again, because it's too much trouble.
CAF: Sure, I just wonder…I'm really not paying attention to what people are doing in speech production, but that's a tough one.

FBB: That's a tough one, and I have been asked to review papers that have to do with nasality, but none of them is doing any kind of real measurement. Any physical measurement of what's happening.
CAF: Most people are looking at acoustics probably, and that's…even that's
FBB: Well, and that's a problem.
CAF: Yeah.
FBB: That's a problem, because you don't get the coupling if you don't have a port..so you can't know whether the port…. The notion that the port is closed, just because the velum is high is meaningless. Some of those early studies, they used nasal mikes and acceleromoters, and if they got no signal or airflow, they assumed the port was closed. But there was a study…I'm going to say it was Bjork…This is really taxing my…There were two volumes, and one of them, I think, it was [Lars?] Bjork, who showed, having irradiated a lot of people in the late 50s and early 60s, that you might have—and it was so noisy that he couldn't tell—but that even with what is completely oral speech produced…what sounds as best they can under the circumstances, the measurement circumstances, but people who have no problems with nasality—that you may still have a port opening that amounts to about 20 sq mm. You just won't get coupling if it's small.
CAF: Right.
FBB: So you can't…so using acoustics is a challenge.
CAF: Yes, yes, I know.
FBB: Yes, for nasals. Because you just don't know what the port's doing.
CAF: One thing I see…don't see among the questions, but something that I'd like to hear your view of..One thing I sort of credit Kathy [Harris] with is being an outstanding mentor to young women scientists. And when I think back to when I was a grad student, I mean, you were one of her more senior people at that point, in fact you graduated
FBB: Just as you were arriving
CAF: Yeah [In fact, FBB graduated in 1973; CAF arrived in 1971] Right. Right. And…But then there was Rena Krakow, there was Carole Gelfer, Suzanne Boyce…Just a whole bunch…
FBB: Betty Kollia
CAF: Betty Kollia, Betty Tuller.
7:57
Freddie: Yeah, all of them. And there she was.
CAF: Yeah. And she, you know…all of you guys were working on this really difficult, technically difficult-to-do research, doing really good stuff, I mean, you….I think of Carole Gelfer's dissertation, Suzanne Boyce's dissertation; they're really along the lines of the coarticulation work that you and Kathy were doing. It really was a very, sort of vibrant, that I think kind of didn't get the attention that it deserved. But it was a really good group of students and former students.
FBB: She [Kathy Harris] was an incredible mentor. I had the honor of introducing her when she got the Silver Medal at the Acoustical Society. It was a very short introduction. And it simply said that she had been so much to so many of us, and that the best example I could give was a recording she had made for me when I was first teaching phonetics. I had several speakers, and my students were to choose one and transcribe and that was their term project. And they were allowed to come ask me questions. And a student came to me, and I [said]--it was one of the two women--could you give me a little more clue? And she said: "It's the one who sounds like a fairly godmother." And Kathy often in front of a microphone, her pitch would go up. I knew

exactly who she meant. I said: "In fact, that is exactly what Kathy has been for many of us including some men. She has been our fairly godmother."
CAF: Yeah.
FBB: She has just taken us through whatever.
DPS: She was one of my first collaborators when I arrived at the Lab. She was very welcoming and generous, and we started working almost right away.
CAF: Now did guys work on aphasia?
DPS: Yeah, we did and dysarthria.
FBB: And apraxia.
DPS: And we published the first EMG study of dysarthria.
CAF: Oh you did?
DPS: Yeah, and in 1968 it was quite early.
FBB: It's in her CV.
CAF: Yeah, you definitely should send us that.
DPS: You know I got a request for that paper as recently as about a year ago.
CAF: Wow, wow.
FBB: But it's wonderful to know that people are actually looking to see what's already been done. Because all too often they repeat…you know, they reinvent the wheel.
DPS: But we were using the suction electrodes that were made of silver beads that were sawed in two.
CAF: Oh my gosh. Who did the sawing?
DPS: I don't know. I certainly didn't!
FBB: And attached a wire to it. And then…two wires to it.
DPS: I wanted to ask…we left it out of the questions, but what was your impression of Peter MacNeilage? He was there when you arrived.
FBB: No, he wasn't
DPS: No?
FBB: He was already gone.
DPS: Really!
FBB: Really. The only real contact I had with him is…we had a Haskins symposium that was held at the Crown Plaza Hotel? And we had this large ballroom, and I wound up sitting next to Peter. And Leigh Lisker got up and talked about timing and about looking at things in ways that make sense. And Peter was sitting there saying: "God damn it, I've been working on that for 20 years! And all he does is this!" But Leigh has always…you know. But I had no real…I never had a working connection to [speak of].
DPS: Oh, OK. That was my mistake.
FBB: I started in the fall of '69 and by then…
DPS: He was already gone
FBB: He was already gone or was going and I…
CAF: He probably was gone, because, wasn't that Psych Review paper…no maybe it was 1970 that that was published, that Psych Review paper?
[MacNeilage, P. F. (1970). Motor control of serial ordering of speech. *Psychological review*, *77*(3), 182.]
FBB: Yes. That's' the timing, yeah.
DPS: Then one person that you mentioned that I don't remember: Mary Boyle? I don't remember her.

FBB: Oh, no. I just mentioned her. She's a colleague; she's not Haskins. No, but we were working on some timing stuff in, well, some timing stuff in apraxia of speech that wound up also looking at normal, healthy, whatever you now call them. We don't call people normal anymore.
CAF: So, one question, number 6 was: In what direction did your research expand from there. I have a memory of a planning meeting for what we folks at Haskins wanted to do in the next five years, and I remember---I can't remember when this meeting was, I just remember *you* saying you were interested in…I don't know, dysarthria, apraxia…
FBB: Apraxia of speech.
CAF: Did you get sick of coarticulation? Why did you shift like that?
FBB: No, I think I thought: You know, OK, basically I have the answer. I just have to get the right study done. I know what the answer is. Talk about being self-confident. When I think back on it, I…But OK, I've done that. I'm done with it. What am I going to do. I sat through too many Acoustical Society meetings where there would be 15 papers on VOT?
CAF: Right.
FBB: And, you know, for what?
CAF: Incremental
FBB: OK here's the answer. And I want to say that, by that time, I already had the study recorded that Rena and I published in JASA in '91?. [This one? Bell-Berti, F., & Krakow, R. A. (1991). Anticipatory velar lowering: A coproduction account. *The Journal of the Acoustical Society of America*, *90*(1), 112-123.]
I'm telling you that's the reason I printed this stuff out. And it was already done, and it would have been published earlier, but my mother got sick, and I kept thinking I was really being helpful working on this manuscript. And Rena just kept giving it back to me and giving it back to me and giving it back to me. And then I realized that, in fact, if anything, I was just making it awful. She was just giving me back the original to work on. And after my mother died, I could focus again, you know, and I thought I was doing just fine. And we got it put together, including the diagram that we have in there about the size of the field for each segment and where things could begin:.
[This one?



And that, in fact, what it looks like is carryover…anticipation is trivial. It is carryover that matters, which, I guess I had already come to that conclusion, but…And the editor wanted to take that figure out of the paper, and we get back and forth for a few months on that, because he thought it was pointless. But without it the word description, we didn't think worked.

CAF: Yeah. So who was the editor?
FBB: Ralph Ohde.
CAF: Oh. He should know.
FBB: Well, he just…you know, we're talking…this all started sometime in '90 and it appeared finally in '91, and I don't remember the volume…
CAF: Right.
FBB: I just know it happened, it must have happened over the summer or in the spring; I don't think it was late in the year '91.
CAF: So you basically thought: We've solved this problem, I understand it.
FBB: We'd solved the problem. And I had thought that before. And I would say, OK, so there was an ASHA meeting in New Orleans…well there was a meeting that I was looking at some stuff, some velar movement stuff that we had gotten I guess with the Velotrace. I don't even remember all the details now. And I was looking at it and I was seeing steps down: The velum getting stepwise lower across the utterance depending on what came before the nasal consonant. And when there was no nasal consonant but you still had those oral, you know, and thinking: Yeah, OK, that's it. We just have to do it in a way that everybody can see it. [I think FBB is going back to the earlier discussion of velar movement during oral segments that reflects canonical velar positions for the oral segments. Perhaps this is where she saw the need for the control condition VVVC needs to be a control condition for VVVN]
CAF: Right, yeah.
FBB: And I had an opportunity to go to Paris to work at Claude [Chevre's] lab at La Salpetriere, L'Hopital La Salpetriere where she ran the…she was in charge of the speech lab. She was a…she started out as a pediatrician and eventually took every course in the Sorbonne in Linguistics and took the French speech pathology exam. And she said if she was going to be doing this…She was there, I think, on a part of her training. And the director of the lab…the then director of the lab who had established it. She said you know how she came to this was…she was the first person who seemed interested and he was about to retire and asked her if she would like this lab and all of its associated equipment and people. And she wound up running it and that's when she…And so I met her…she wanted to come to Haskins to visit.
17:05
CAF: Who is this?
FBB: Claude Chevre Muller. This is the spelling of her last name. Her first name is Claude. She has the same name issues that I have. Chevre Muller.
CAF: Right, Claude's a guy's name, isn't it?
FBB: Well, not in French. It can be both.
CAF: Like Claudia
FBB: Well, yes, but they don't have Claudia; they have Claude. C-L-A-U-D-E
CAF: yeah, got it.
FBB: Yeah, she…and we met and then we saw each other then, I guess, at the meeting in…was it in Aix? Where was it? In Toulouse. One of the international meetings; it was in Toulouse. And she asked why I didn't put in an application to [INSERM] to come for a stay in the summer. So I did. They invited…you know…I got it and so I went. And what I wanted to look at was apraxic dysarthria, because the notion is—it's a cerebellar issue. And if the cerebellum is really this master coordinator then we should see things that look different.
CAF: Right. Yeah.

FBB: I didn't find stuff in the EMG we recorded, but found some interesting timing things in the audio. Because I had a student who wanted to know more about: What do they mean when they say that the timing is messed up. And I said: well no one ever says. So she measured.
DPS: You were clear, but I need a repeat. What's the deal about the cerebellum
FBB: Well, the cerebellum is thought to be the ultimate coordinator of multiple motor acts.
DPS: Yeah.
FBB: And so ataxia is a disorder of the cerebellum, And so..
DPS: Oh, yeah. Yeah yeah.
FBB: I thought…And all of the ones I…all of the subjects I had…sorry participants. I have this problem.
CAF: It's fine.
FBB: Yeah, but I have to learn when I'm talking in class not to say it.
CAF: Oh yeah. Right
FBB: I always tell students: "If I say 'subjects', write 'participants'." [All of the participants] had Friedreich's ataxia, which is really nasty because it strikes late 20s early 30s, and they don't last but a few years.
CAF: Oh. Ugly.'
DPS: What does ataxic speech sound like?
FBB: I actually can't imitate it. Sometimes they say it sounds like scanning speech but I've never thought that. [Scanning speech: spoken words are broken up into separate syllables, often separated by a noticeable pause, and spoken with varying force.]
DPS: Ah.
FBB: But before we had our first subject, I was sitting in the lab preparing some materials, and one of the techs came to get me and said Dr. Chevre wants you to come. She said it in French, but…I followed. And she introduced me to this woman who was…And people came from all over the world. French speaking world. For Claude, for her to be their ultimate diagnostician. She's written all of the major textbooks in child language disorders.
CAF: Uh huh.
FBB: I mean she's remarkable. And she introduces me as this American—the American scientist and all of that who's here to, you know, and visiting us and all of that. And we're talking, and she asks the woman to…in French. And I could follow enough of it, and I'm listening and I thought: Oh my, she's ataxic. It's ataxia, I know, because I've only ever heard one recording of it, but she's ataxic. But I can't imitate it. It's one of the ones I cannot imitate [for anything], which is probably good; it means my cerebellum is still working.
DPS: So you were working on this in during that fellowship?
FBB: In Paris.
DPS: in Paris
FBB: And I went back two more times, two more visits to that lab, two more summers.
DPS: So what were..
FBB: Well, we were recording…The first round we were doing EMG and audio recordings of…we were just labial recordings. So everything was rounded or not, bilabial or not. And multiple repetitions, rather than have them say it once. And the EMG just was not illuminating. And I also had control subjects and so I had a student here who…a masters student… who wanted to know what this meant. So I told…I have all of these….do you remember the VIsicorder?
CAF: I do.

FBB: So it was the equivalent output on paper.
CAF: Oh, my gosh.
FBB: And I had it. And she went through, and she measured these sentences, and it was waveforms. So we identified…And I had shorter and longer sentences with rounding early or late. I mean, I…And she measured, and she measured the healthy speakers as well, who were age matched. So that nobody could quibble about that with the ataxic speakers, And she was running a camp in the Catskills so her kids could go to camp without she and her husband having to come up with the money for three kids. And she had a trailer, but she had no telephone. So one night she got…she had come up to Haskins and she had run all these numbers that she had hand measured and typed into Excel. And there were 12, 000 lines? By the time we had…
CAF: What a job.
FBB: We had 6 subjects and 15 repetitions of each of 48 sentences? I mean it was….it was incredible. And she went away with this gigantic printout. And she was to look at it and see where there were real differences. We hadn't done t tests or anything. And she told me….So she started by making graphs. And she said: "There's something wrong; we have to go back and do it again." I said" What's wrong?" She's calling me from a pay phone. She could read the number; I called her back. And she said: "Well, there…the ataxic speakers are slower. OK. Everything is longer. There vowels are longer, their consonants are longer. Until you get to the end of the sentence, and then, their final words aren't any longer…The vowels there aren't any longer than the vowels earlier. But in the normal, they are. So something's wrong." No, my dear. Nothing is wrong. Isn't that beautiful?
CAF: Yeah!
FBB: We had…So the timing is really screwed up.
CAF: Yeah.
FBB: And so after that when I went back, we looked at timing. And I guess we did it here with some masters students as little projects. We had healthy young adults produce speech at their normal rate and then slooowly. Not defining it. Just telling them slowly. One of them produced an 11 second sentence. And then fast. Again, they were four to seven syllables and the target word was either the second syllable or the last syllable. And when they get slow, the final lengthening is gone.
CAF: Is that right?
FBB: As long as they do it on the breath.
CAF: Huh!
FBB: So…And it didn't matter, slow or fast, didn't matter. And I just thought that that was…But I never had enough clean data to do much with.
CAF: Uh huh
FBB: But we did have…we gave some of that in Par…in the meeting in Aix. But I could go find it. I may still have the…In fact I know I have the data because I still use them occasionally as examples.
CAF: mmhmm
FBB: I'll go fish something out. Some numbers.
DPS: Did you publish on that?
FBB: Well, I think only…I think its only in Aix, in the proceedings, there.

DPS: Oh.
FBB: I think. I don't remember. Because it was never…there was never enough and well enough controlled to know that any reputable journal would have taken it. I mean I believe the..I believe it, because it was repeatable, and it happened with…we had 4 or 5 talkers.
END of second file
CAF: So another question: Did you know Frank Cooper well? Other than that he didn't want to give you a key.
FBB: Not nearly as well as I wished I did. But what a beautiful man. And I can still here him say: "Somebody else knows the laws of physics." When I got my degree, the following fall we started a series of evening events for the graduate students at Haskins to hear from senior members. And I, because I was the newbie, I got to organize it. And they were on Thursday evenings. And in the conference room next to the…We did it in the library, but in the conference room, we had the coffeemaker set up with hot water, we had instant coffee, sugar, powdered stuff and tea bags. And I put the sugar in the bottom and added the hot water, and Frank said: "Someone else knows the laws of physics." I've always put the sugar in. The hot water dissolves it. You don't have to worry about…He was just so wonderful, even before he was willing to give me a key. He was such an incredible gentleman. And when I…He was at the Acoustical Society meeting when I had become a Fellow of the Acoustical Society sometime in the early mid 90s. I can never remember. And George Harris had had his major cancer surgery, and so Kathy couldn't be there. And I was….At the plenary session, they invite…at that point, they didn't have you come up on the stage, they just have you stand at your seat. Alphabetically I came first, so I got to stand. I was sitting down front. And Frank was with me. I mean it was like he knew I needed…
CAF: Yeah. Nice guy.
FBB: And he was there and then he took me out to dinner.
CAF: What a sweetie.
FBB: I mean he just made sure we made a festive occasion of it even though I spent most of the day explaining to Kathy's various friends that her husband was now safely out of surgery, because I knew that, because I'd called.
CAF: Yeah.
FBB: But that was…I mean Frank was… He and Edith [Frank Cooper's wife] came…I gave myself a graduation party, and he and Edith came. And she bought me a pot of violets that she had dug up from her garden.
CAF: What a sweetheart! How nice
FBB: Oh! It was just…They were just such wonderful folk.
CAF: They were.
FBB: Blessed to know.
CAF: And how about Al Liberman? You never worked…You never collaborated with him.
FBB: Well, he…he technically supervised my post doc. But he never cared about it.
CAF: Right. It astonishes me how little he cared about speech production, being a motor theorist.
FBB: But it wasn't…In fact, I was trying to do something in perception. But he knew that I was in production and, it didn't matter. It was like…it didn't matter.
CAF: Uh huh

FBB: I always actually had the thought that he didn't really like running…administering anything.
CAF: That's probably true. That's probably true.
FBB: And so Al administered the Labs, administered a post doc. You know, it's all the same thing.
DPS: He didn't like administering the department [Psych Dept at UConn].
FBB: He just didn't like doing it. We got on just fine.
DPS: OK.
CAF: So you did a post doc at Haskins after you finished.
FBB: I did. Which was really weird. I mean I had already taught for four years.
CAF: mmhmm. Did you…
FBB: And one of the main questions that had been asked--and I know this, because Frank was at the NIH meeting—was, well, what if she becomes pregnant and has a baby?
CAF: Of course! Probably shouldn't give her a post doc. But what was the perception project? Do you remember, and did it get published?
FBB: I was trying to see how…what happened to the perception of a vowel as its duration changed. And so if you had /ɛ/ and just made it long. People didn't think it was /e/ [not quite what she said], they thought it was /æ/ and vice versa. But if you made the /ɛ/ short enough, people thought it was /ʌ /. And I was trying to do that with other vowels, but he didn't care.
CAF: Uh huh.
FBB: Michael [Studdert-Kennedy] cared a little bit, but Al didn't care at all.
CAF: So I remember another perception study now that we mention it. A production-perception study with you and Larry…
FBB: Larry [Raphael] and Pisoni and Sawusch.
CAF: That's probably right. This is the one where the way that…there's a different way that some people change from /i/ to /ɪ/ and maybe /e/ to / ɛ/, I can't remember.
FBB: Yeah. /i/, / ɪ /, /e/, / ɛ /.
CAF: And that was paralleled by differences in the way people categorized those…
FBB: Yes, and we knew that because we could shift the boundary,
CAF: Right.
FBB: More for those who perceived / i/, / ɪ /, /e/, / ɛ / as a continuum as opposed to those who saw / i/ and / ɪ /…
CAF: separate categories. Yeah.
FBB: Yeah. And we had 150 listeners.
CAF: You did, wow.
FBB: And Bruno [Repp] at the staff meeting where I presented oral version that I was to give at ASA, Bruno told me that there was a serious error in one of my slides.
CAF: Spelled Repp wrong?
FBB: No. I had the…y axis was mislabeled. He said: "It looks like you had more than 100 subjects." I said: "We did; we had 150." We only had 10 or 12 production subjects, but we had 150 perception.
CAF: Wow. I did not remember that.
FBB: That's because Sawusch was teaching Psych 1.
CAF: He had access to a whole bunch of kids.

FBB: And they just did it, you know. And that was…
DPS: Can I ask a further question about Frank. How about Frank and Kathy. I mean I know that Frank was a strong supporter of Kathy in her early years. Did that continue?
FBB: Yes. Yeah, yeah.
DPS: OK.
FBB: Al was not, but
DPS: Al was not, but
FBB: Al was not.
CAF: This is a puzzle about him that I don't get. I mean, he tolerated the production research that Kathy and all of her students and others were doing, but he really didn't care.
FBB: He didn't care, and I don't know whether…You know, you pointed out earlier that she was the second psychologist…One of you said that..
CAF: Hired.
FBB: Hired at Haskins. And maybe he didn't like competition? I don't know. Because, I mean, it was not women professionals. I mean Isabelle [Liberman; Al's wife].
CAF: Right.
FBB: You know it wasn't…I don't know.
DPS: Yeah, but It took a long time for Isabelle to win her stars.
FBB: Oh. Oh OK.
DPS: […]
FBB: My first week at Haskins Kathy told me that she had a project for me because she promised Isabelle some help. And Charles Orlando…
CAF: Yes. I didn't know him. He graduated just before I came.
FBB: Well, he did not analyze his data
DPS: He was one of the first graduate students […]
FBB: I can assure you he did not analyze his data; I did.
CAF, DPS: Oh.
FBB: That was the help that was provided to Isabelle. And I was the one who discovered what the confusions were, but I was so new at all of this, I wasn't….It was just…I knew it wasn't visual.[This is probably mistakes that beginning readers make in confusing one letter for another] But I was not…It took me…She actually put me on as the fifth author on that paper.
DPS: That's right! I'd forgotten that, I'd forgotten that, I'd forgotten that.
FBB: LIberman, Shankweiler, Orlando, Harris and Bell-Berti. I thought that was the sweetest thing in the world, and it is my first publication. And that's, I mean that's…
DPS: That's your first publication?
FBB: Yep.
DPS: I'll be darned.
FBB: I was just…I had just started at Haskins. I had started at Haskins and that was my first..Well, I had that task and another. And the old, the old mechanical statistical calculator?
CAF: Oh yeah, I remember that!
FBB: Ooooh! You make a mistake: Start all over.
CAF: Right, right. That was enormous.
8:00
FBB: There was no way to undo…there was no undo button. And I had pages of these…

DPS: I think I spent a couple of months doing a monster analysis of variance on that thing.
FBB: Well, yes. I handed you the data and then you worked on them.
DPS: It wasn't that…it wasn't that.
FBB: It was something else.
DPS: It was something else. I don't take any credit for that.
FBB: That was beyond…First I had…Well, I mean the real issue was figuring out how to categorize the errors. I know what the target word is so then I have to say whether the error was…oh, if the target word was a consonant-vowel-consonant-consonant, what was the error? You know, and it was just…and you could have many different possibilities. And I somehow developed a coding sch—I remember the wide data pads.
CAF: mmhmm
FBB: And having to divide the columns on them because I didn't…they were 20 columns wide, and that wasn't enough columns.
DPS: Oh my god. I'm sure I repressed all this.
FBB: And however many children he recorded, well I know why he couldn't [count]…I mean, it's…As I was driving up here, I was thinking: I never think of myself as being particularly analytical, but boy that…I must be if I could do that. I mean, if I could figure out how to do that, and no one has ever challenged those results, to my knowledge.
CAF: Yeah, I thought of Orlando in connection with a different project, so I hadn't even remembered that that was…
FBB: That was his PhD..or ED whatever his degree was in.
CAF: And he didn't analyze it?
FBB: No, he didn't do the analysis.
CAF: Shame! Shame, shame. That's not right.
FBB: I don't know if he…The idea was his but he was the third author.
DPS: He was an education student.
CAF: That's a good point [3rd author]. Yes he was a student of Kath..of Isabelle's.
DPS: He didn't have a scientific background.
FBB: So it's Liberman, Shankweiler then Orlando and then Kathy because of the help she provided, then me! And I just was so…I was so surp…so…It was just a delightful surprise to see my name on it.
CAF: mmhmm. Oh yeah.
FBB: I think Kathy told me, but I…
CAF: It's a big deal
FBB: And I thought, all I did [calculate…] well, yeah! I mean, I don't think at that point I understood what that meant.
CAF: You probably put in more hours than anybody.
DPS: Yeah.
FBB: Oh, I did. I surely did. I did week after week after week of it. It was awful. Awful. First I did phonetic transcriptions of what the kids produced though. So that I could work from that.
CAF: Right, of course.
FBB: Well see, you say of course, but there are people…
CAF: So before we move on to focusing on Kathy, is there anything else that you want to tell us about your time at Haskins that we haven't asked you about.

FBB: I guess I…I hope I don't cry…I just want…how blessed I felt from the very beginning to be there.
CAF: Yeah, I think that's true of a lot of people.
FBB: Well, when we were still in New York…You don't know what that looked like, but the fifth floor was where all the production stuff was. The third floor was where the office was. Was the fourth floor one of the other units of Haskins?
DPS: Yeah. I think the […]
FBB: But that's where the autoclave was, was on the fourth floor. So,,,
DPS: Oh that's it. it was Seymour.
FBB: Seymour. Seymour Hutner. OK. Because I had to make the…So one day I had gone down to the third floor for some reason, and I was…I came back up to the fifth floor on the stairs. And I found myself trying to hug the wall right near the door to walk in. And then I stepped back thinking: Oh my goodness, what if Frank Cooper comes and sees me doing this. Of course, it didn't take me long to figure out he would have understood. But you know, you don't want to be…And I guess the other thing is the…collegiality doesn't even quite capture it. But the acceptance of an individual. You don't have a degree? Who cares? You are you.
CAF: I know! That stunned me when I..it even intimidated me when I first came.
FBB: It was very intimidating.
CAF: Yeah.
FBB: I remember I had just finished my thesis. I just defended it, and I was working on something, and Leigh…It was a Thursday night, Leigh LIsker walked over and started to ask me questions about nasals. And he's asking and asking, and I'm th…And I said: "Why are you asking me?" And he said: "You know more about nasals here than anybody." I mean, he would have asked me that the year before if he had thought of it. Or two years before. Once he knew I was…It is that sense of…
CAF: Yeah, you're a colleague as soon as you get there. Even if you don't deserve it.
FBB: You're a colleague. You walk in the door, and you're a coll…So my first day, Kathy…And I'm so grateful to you folks for taking care of Arthur. My first day I got there before Kathy did. She arrived and then she started to take me around to introduce me to people. And you don't remember, because you [CAF] weren't there, but *you* [DPS] will remember on the fifth floor that there were desks around…It was a loft. So there were desks and there were pillars holding up the roof, the leaky roof, and there were telephones hanging on pillars. One or two. And Kathy was taking me to introduce me to someone and someone, and she was paged to the telephone. There I am in the middle of this big space standing there by myself. Wishing the floor would just swallow me. Because there were all these other people to whom I haven't been introduced, and they have not a clue. When someone comes rushing…I can only describe it as scurrying up to me, and said: "You're Kathy's new student, aren't you?" "mmhmm. Yes." "My name's Arthur. What's yours?" "Freddie." That was just…And he chatted with me. And then he said: "Well, they don't just pay me to stand around and chitchat." And he was gone. And I never figured out where he disappeared to. Look! There was Kathy standing there while he was…And then she takes me downstairs to the third floor and makes sure that I've been introduced to Frank [Cooper]…and to anybody else down there, I think Al was there. And to this man sitting at a desk. And she said: "And this is Dr. Abramson." And I'm…And he said: "We've already met." That defines Haskins..those kinds of things define Haskins.

CAF: Yeah. I agree. Yeah.
FBB: I've just had so many. I mean, Leigh LIsker. I didn't know who he was when Agnes McKeon brought me over to him, because they couldn't find the…she couldn't find the phonetic alphabet chart. And I needed a symbol for I think Orlando. And she said: "Well come with me." And there's a man sitting at a desk. So she said: "She needs…"
CAF: He'll know; he'll know.
FBB: Well she never says anything more. He said: "What do you need?" And I told him what I need. So he gets up and goes in the next room and then comes back and writes it down. So I needed another one later that day that I couldn't remember. So he…I come and he does this again. When I come down the next time, he's not there. So I go back to Agnes and I said: "The gentleman…" She said: "Leigh?" I said: "Oh, my god." Leigh Lisker. And he was going to check in a book to make sure he didn't give me the wrong one.
CAF: Right, right. Very careful guy.
FBB: You know. It was that..He didn't say: "Oh, I'm too busy."
CAF: Or too important.
FBB: Or too important. And he offered to lend me his copy of Kozhevnikov and Chistovich, which was missing from the library.
CAF: Wow.
FBB: The problem was it was in Russian.
CAF: Oh. Mine wasn't
FBB: No, no. Eventually I got…
DPS: I read it in English.
FBB: Eventually, the Lab…somebody figured out who had the Laboratories' copy and it came back and I could read it. But…
CAF: That is my one criticism of Haskins back in the day was that everything was out at the library. People just took it out and kept it.
FBB: Yeah.
DPS: We didn't mention Phil Lieberman. I don't know how much you might have interacted with him.
FBB: I didn't much. I mean, I did a little bit. And then he sort of wasn't there much. I mean he was there a little bit at the very beginning of my stay and then. I think by the time we were in New Haven, he was hardly at the Lab.
CAF: I saw him once or twice, but he…yeah.
FBB: He would be coming in to meet with somebody. It wasn't
DPS: He was in New York, but you were only in New York for a half a year.
FBB: For a half a year and then we were traipsing up to New Haven.
CAF: OK so, what did Kathy tell you about her early days at Haskins? I mean, she was…There were other women there, but she was the only PhD.
FBB: She was the only PhD woman.
CAF: Did she find it difficult?
FBB: A little. I think Frank helped make it bearable.
CAF: Yeah.
FBB: I think it was Frank who made it bearable and made sure that she was connected to things and not just let adrift.

CAF: Did she….?
FBB: But she didn't complain. She just said: "You know, it could be difficult."
CAF:Yeah, I mean that's what I thought, but we couldn't elicit from her [in her oral history], so it probably isn't somethat that's […] for her
FBB: When I interviewed her for her oral history for the Acoustical Society, which is, by the way, it's transcript is posted. So I don't know if you've looked at it.
CAF: No.
DPS: No, we haven't.
FBB: It's the Neils Bohr Library of the American Institute of Physics and if you simply put in "oral histories."
CAF: Oh, you know somebody…
FBB: And that's where Arthur's [Arthur Abramson recorded by Donald Shankweiler] will get eventually.
CAF: Oh, you're the one that told me about these. Because you were going to do Arthur.
FBB: I'm currently chairing the committee that's responsible for that, so…
DPS: Say it again? Where do we look for it?
CAF: Neils Bohr
FBB: Neils Bohr Library of the American Institute of Physics. Probably if you go to the AIP website and you can go to the Neils Bohr Library that way.
CAF: I think that's what I did. Yeah, yeah.
FBB: But Kathy's is in there, and it is not the version…it is not what she said, because we added a lot. You know Kathy's one word answers.
CAF: Yeah, yeah. She was difficult. She was difficult.
DPS: Yeah.
FBB: Did you ask her where she got here degrees? Where she went to college?
CAF: Probably did.
FBB: And she said…"Where did you get your bachelor's degree?" And she said: "Radcliffe." "Where did you get your doctorate?"
CAF: Harvard.
FBB: No that's not the way she said it. "Harvard!!" I mean, you know, where else would you go?
CAF: Right.
DPS: Yeah, yeah.
FBB: I mean it was just…it was such a…there were many of those.
DPS: Yeah, yeah.
FBB: And then we fleshed out some of it.
CAF: Yeah.
FBB: "Was there anyone you went to high school with that might be of interest to members of the Acoustical Society?" "Yes." "Who?" "Jim Flanagan"
CAF: Whoa!
FBB: They were high school classmates!
CAF: My goodness!
DPS: And she was a Harvard classmate of Norman Mailer.
CAF: Is that true?
DPS: Yes.

CAF: Oh, wow.
DPS: And I think she knew him a bit. I gather she did from […]. She's not a name dropper.
FBB: No, not in the least.
DPS: So, if she didn't know him, she wouldn't have mentioned it.
FBB: And in naming…in asking her who she knew when she was up at Harvard, she gave me some names and of course they were garbled by the person who did the transcription. Fortunately, because I had a copy of the audiotape; this was on a cassette, it was that long ago. And I could fix the spellings of many, but then when I gave her the transcript, she actually provided written commentary about some of them.
CAF: Ah. Ah.
FBB: And those are in the posted version.
CAF: […] uh huh.
FBB: It took years. Well, and because I sent it back with all these changes and then they sent me…two years later they sent it to me without any of the changes and said: "Could you please edit this?"
CAF: Oh my god.
FBB: And I said: "You already have it."
DPS: This is the…
FBB: But fortunately I had it on my computer…I never get rid of anything.
DPS: This is the transcript of her…
FBB: Of her oral history for the Acoustical Society.
DPS: And I'm sure we have the Silver Medal bio…
FBB: The encomium?
DPS: here, but if you could send it to us
FBB: I could send the Gold and Silver Medal encomia
DPS: That would be great, that would be great.
FBB: Given that they all reside on my computer under Acoustical Society business, medals and awards.
DPS: That would be great.
CAF: Yeah, it would be.
FBB: And typical Kathy…the way the system works at the Acoustical Society is that the Medal and Awards committee meets and votes. And then it goes to the Executive Council who have to affirm.
CAF: mmhmm.
FBB: I don't think they've ever not. And then the President of the Society, when the meeting is over, calls the person being awarded. So the Silver Medal, she,…of course she called me. The Gold Medal, Anthony Ashley was President and he said to me: "I'll call you and let you know when I've let Kathy know." And I said; "You don't have to do that." And he said: "No, I'll do it. And I said: "Don't bother. It's a waste of your time […] I'll know." And I was teaching one day. I got home and there is a phone message she never says who it is. "Freddie, What have you done?!" "I didn't do anything; you did it." But that's classic Kathy.
CAF: Yeah.
FBB: That's classic Kathy.
DPS: Yeah.

FBB: I might even send you my introduction to the Silver Medal.
CAF: That would be great.
FBB: Because that's…Not because, you know, I just think it…
CAF: No, that would be terrific.
DPS: We'd like to have that.
CAF: We're trying to be Haskins historians so it'd be great to have anything of that nature.
FBB: Given that I'm currently chairing the Acoustical Society's committee on archives and history, I…
CAF: Good for you, yeah.
FBB: Well, that's…I actually got Arthur on the list a long time ago. And I've asked various people that I've seen at meetings. And they all say they'll do it. And I send them those […] and nothing happens. And I just couldn't stand it
DPS: The last Kathy event that I attended…I couldn't get to the ASA thing,…was the…her retirement party at the Graduate Center.
FBB: Oh yes. At the Graduate Center. Yes.
DPS: That was very nice.
FBB: That was wonderful. And everybody kept telling me that: "You're going to speak." I said: "No. I'm not one of the speakers. Uh-uh. Which of her students are you not going to ask? If you ask me you have to ask every one of them. And there's too many. We'll be here for three days. Without sleeping." So the solution was, after lunch, there was a signup board. You could put your name down and you could come up and say something. And so, mine was the first name on the list. I assure you, I got it up there before they put the board up. And I told the fairy godmother story, because that is, in fact…to me the quintessential description of what she has been in my life and in the lives of many of us.
CAF: Right, yeah.
FBB: Always there. And always more concerned with you and whatever was your problem than with her professional anything.
CAF: Yeah.
FBB: Just Kathy.
CAF: Anything else we haven't brought up that needs to be brought up?
DPS: What do you…This is tough. What do you see as your biggest contribution?
FBB: I guess it's what finally appeared in the JASA, but begins in that last paper. This coarticulation thing and the…I said to classes: If these anticipation theories with feature spread are true, if I figure out today what I want to say tomorrow, I could start rounding [right now].
CAF: That's right!
FBB: You know, it just doesn't make sense. And so then they made it a pause; then they made it a breath; then they made it a….No! Every segment has its existence.
CAF: Right.
FBB: And sometimes it gets suppressed. But it doesn't get anticipated.
CAF: Right. Yes, I agree with that. Yeah, so I…
FBB: But the features, the articulatory combination of things aren't time-linked to the same point in time. Different articulators can be offset. But it's not, it's not that complicated.
CAF: Right.
FBB: Or everybody couldn't talk!

DPS: So would you agree with the statement that we can actually characterize speech as an alphabet in some sense?
FBB: Oooohh…Given that I'm currently teaching phonetics to freshman, I really don't want to say that out loud. [laughter] You know, you'll have a recording of my saying…YOU said it Donald!
DPS: Carol said it out loud.
CAF:No there's a right answer to that question. I just published it, so…
FBB: Well, yeah, in a very, very different sense than…And as I say, I'm dealing with…
CAF: Right. Yeah. What amazes me about phonetics students…they are so entrenched in literacy that they think you mean letters.
FBB: Well. I have now got them to where most of them will no longer say…We did practice dictation yesterday…We finished all the simple vowels and before we got onto the diphthongs, we just…Because I don't start the course with the sounds. I start it with all this theory stuff. And..oh, we're getting to consonants tomorrow….Monday. I can't wait. I mean I'm just so tired of vowels. And I've got them now, and so I have…I think I have some nicely divisible groups, so I can get…I got four students to come up, so it was probably sixteen words, because they could write four each. And I would ask, well, does this look right? What do you think? Is this what you all had? And I've gotten them to a point where most of them will not say: "The second letter." They'll say the second symbol. Progress. This is great progress. This is incredible progress. And then, they write the symbols in the air. And I have to know that they're doing them in mirror image.
CAF: Right
FBB: And for many, that doesn't matter, but /ɜ/ and /ɛ/. Well I gotta know which way they are going, but if they put the little sh…] then I know. And it's just funny. And I'm so busy telling them: "Forget about spelling and when you do these dictations, don't write the word, just write the sounds. If you want to later write the word next to it after we finish it, do it. But don't do it while you're transcribing. Because they get sooo caught up in the spelling.
CAF: It's striking that, you know, evolutionarily the spoken language is first, but reading definitely just takes over.
FBB: And these are college students. They have been trained to do this. This is what they've been told they have to do.
4:31
CAF: Yeah.
FBB: And the poorer spellers tend to be the ones who have the least difficulty with letting the spelling interfere, which is *really* interesting.
CAF: Right, that makes sense, I guess.
FBB: But good spellers have problems.
DPS: I'm really glad you're still teaching. I think that's…
FBB: Well, I .you know, and I keep telling them they've got to find somebody, because I'm not going to do this forever.
CAF: No.
DPS: Well, they can't…
FBB: And I'm only doing it in the fall. I won't do it in the spring.
DPS: Well, they can't find anybody else to replace you.

FBB: No, it's that they can't…I was saying, I guess to Carol while you weren't in the room, the problem with teaching phonetics to students who have no linguistics background. Because if they have some linguistics background, it's a different story entirely. They have learned how to talk about language. But these kids, most of them are freshmen. It is the first course in the sequence, because how can you learn about anatomy, physiology of speech if you don't know what the sounds are. How can you learn about hearing if you don't know what the….How can you learn about language development if you don't know what the sounds are. And if you can't describe that part of it. So, it's the beginning. I know programs where they don' put the phonetics until the senior year. How did you get…How did you teach them...I mean I can't imagine it. So in that sense, the program is clearly something I have had a profound influence on. But they don't have…they don't come with any of this, and teaching it to them requires that you have…that you learned phonetics as part of a linguistic system. I couldn't teach syntax or semantics if my life depended on it. But I understand the framework. And most people who teach phonetics in speech departments, you know, speech pathology departments don't.
CAF: No.
FBB: They've never had it. And linguistics who get brought in to do it despair. Well, remember! This is the first course. Try to remember when you were a student and learning anything for the first time.
CAF: Yeah.
FBB: And so sometimes I will say to them: "The reason I am giving you this assignment is because I remember that this is one of the places I had a problem." Now, sometimes that's not quite true… But: /u/-/ʊ/, for crying out loud, they're different sounds. They can't do it. Or theta and eth; they can't do it.
CAF: Right.
FBB: So I make them give me lists of words.
DPS: Yeah.
FBB: And it's fascinating. You get a list of words. All have theta. Then you get the list of eth words: and the first five do and the next 10 don't.
CAF: [laughs]
FBB: You know, but you'd need to give…you know, assume a different point of view.
DPS: We know from some of our own work that phonological awareness in adults, it can be very …
CAF: Even teachers. Elusive
DPS: very poor.
FBB: Well, and you know I keep telling them: "Look, I don't care what the phoneme is I want you to write down what you heard. And that's…as a listener, you'd better hear the phoneme." And I tell them that: "I don't care what you're hearing as a listener; right now you're not being a listener, you're being a phonetician and you're listening phonetically, not phonemically." That's almost every class that gets said.
CAF: mmhmm
FBB: But there is no such thing as a phoneme except in your head. But it's not in your mouth.
DPS: I can think of one other person: Dennis Fry. He was around…
FBB: mmhmm
DPS: at Haskins Labs. Did you have any interaction with him?

FBB: Yeah, I met him a few times, but I think that most of his work at Haskins was done before. And he was just visiting occasionally. I don't…
DPS: You didn't…
FBB: Yeah, not a lot. I mean I did get to know him, and I remember a meeting in London where it was wonderful to be treated like some long lost…
DPS: He was a wonderful man, I thought.
FBB: Yeah. Well, I had to teach…I'm not teaching that stuff now. But when I did have to talk about stress and stuff, some of his early work…that was…classic.
CAF: mmhmm. Oh year.
FBB: And I had to know the early stuff before you read the more advanced stuff, because you need the background.
CAF: Right, right.
DPS: I used his little book for teaching.
CAF: Alright. Are we done?
FBB: Why not.
CAF: Well, thank you very much!
FBB: Oh, you're welcome.