

PHONETICS AND I 1952 - 1979

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I first met Phonetics in the shape of Kenneth Pike, in 1952. But first a few words about what had gone before.

Between 1940 and 1952, after my M.A. in 1940, I had been at home, taking care of four children and had for various reasons, not continued studies or held any outside jobs. Now and then I had done translation work, mainly Swedish medical dissertations.

In the autumn of 1952, I accompanied my husband to Rochester in Minnesota, where he was to study surgery at the Mayo Clinic. After a few weeks I felt that I had had enough of my nice, comfortable life there, with nothing to do but shopping, lunching, cocktailing etc. I also felt very much of a stranger, somehow, and outside of everything around me. So I went away, fled rather, to the University of Minnesota, Ann Arbor, and enrolled as a graduate student there. Although I was at least ten years older than anybody else in the group, it was great fun, and my fellow students were extremely nice and helpful to me. I went to Ann Arbor because I had brought with me a letter of recommendation from Professor Arngart in Lund (whose "licentiat" seminars I had just then started to follow) to Professor Marckwardt in Ann Arbor, who greeted me kindly and also became my supervisor. My idea was actually to study English, or rather to try to find out as much as possible during one term about what had happened to the various British dialects on American soil. With this in mind I also enrolled for Professor Kurath's seminars on Dialectal Geography.

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- 1) This is, as you will see, not the history of phonetics between 1952 and 1979 but rather a personal and rough outline of my own most immediate contacts and experiences within the phonetic field.

Very soon, however, I met other graduate students who strongly advised me to take the opportunity to listen to Professor Pike's lectures. They told me that he was talking about some new (to me at least) things called phonemes, morphemes, and linguistic structure, and in a very interesting way. That he was quite famous, in fact. I followed their advice and went to see Kenneth Pike. The man seemed a fireworks of ideas, questions, gestures - he kept rushing his chair from one part of the room to another, talking all the time and firing questions at me. In half an hour he had grasped the Swedish phonemic system (a system that I, of course, at that time did not know existed), and seemed to have got a good grasp of the word accents, or tones, i.e. my South Swedish version. He told me, among others, that Sweden was "a black spot" on the map as far as modern linguistics was concerned - even in the darkest part of Africa one knew more. I would in fact do a good deed if I went back and spread the light. I might as well concentrate on intonation patterns of Swedish, particularly sentence intonation versus word tones. There was one person in Sweden, however, who seemed to have grasped what structural linguistics was about - his name, said Pike, was Malmberg, Bertil Malmberg.

I felt almost stunned after this meeting but also excited. Moreover, Malmberg lived in Lund, as far as I knew, so it should not be difficult to get in touch with him. How wonderful too to be one of the first in the country instead of joining the long waiting line in the English Department, as had been my intention. Not any longer!

Pike was actually on leave, more or less, at the time, but still had his seminars going and promised me that he would instruct one of his doctoral students to take care of me. At the end of the term he would (and also did) examine me in Phonemics and Morphemics, informally. I went back to my supervisor and told him, rather shamefacedly, that I wanted to leave his course and move over to Pike's - I did not have money enough to pay for another course - it was not cheap to study in the U.S. Marckwardt told me that he was sure that I was making a mistake but nevertheless

signed the necessary papers, saying, very generously, that I could continue his course too, without cost, so to speak. I am afraid I let him down entirely on that - Pike's courses meant a lot of hard work as they were all about things that were quite new to me.

When my tutor Helen Wang, from Singapore, seemed to me to be too hard on my rendering of foreign phonemes and tones, I asked her to say, after me *sju sköna sjömän* [ʃw: ʃø:na ʃø:mən], "seven beautiful sailors". She always broke down on that and was less severe afterwards.

In Ann Arbor I also listened to Nide on Morphemics, Fries on Structural Grammar, and to Lado on Applied Linguistics. One day I was taken to a modest laboratory, headed by a man called Gordon Peterson. He wanted to show us a new machine, which, however, unfortunately was not in the mood to perform on that particular day. This was my first contact with the Sonagraph and my only one with Gordon Peterson.

Back home in Lund, I naturally looked for Bertil Malmberg, according to Pike our only modern Swedish linguist. I found then that he had become a professor in a new subject, Phonetics, in 1950. The Phonetics Department happened to be in the top part of my parents' house. He had one assistant, and their most important phonetic aid was the kymograph.

The kymograph - I have missed it many times after it was put away as too obsolete. I wonder if any other single device has provided the beginner with an introduction as clear and as pedagogical as the kymograph's about what happens in articulation. Talking with a funnel pressed against your mouth and glass sticks (so-called nose olives) stuck into your nostrils, you could see how small pieces of reed, fastened to membranes at the other end, started to move and sometimes to vibrate, drawing on a sooted piece of paper which was wrapped around a cylinder that rotated at a known rate. The difference between voiced and unvoiced sounds, between nasal and oral, aspirated and unaspirated, stops and spirants was demonstrated in a very direct manner. You could

also measure the duration of the sounds, and if you had a thing fastened to your throat you got a third, "laryngeal" curve, where you could measure the distance between the peaks of the vibrations and thus see how the pitch rose or fell.

The tricky job of coating the paper with soot by means of a Bunsen burner produced, as a byproduct, a considerable team spirit. Although we had only few and simple instruments, Phonetics was considered to be too technical for women and most of our students were men. I believe that more than one couple first found each other over the drum of the kymograph - the female voice was usually unsuited to the membranes and did not cause vibrations strong enough to show up on the paper. Male help was therefore necessary for the female students to get recordings that could be measured.

And measured they were, often by means of Meyer's Pitch Meter. This instrument measured the distance between the peaks of the vibrations of the voice fundamental in such a way that the result was an auditively correct (or so I suppose), logarithmic curve. The interest was not only in periods per second but also in notes and octaves. This, I believe, could well be taken more into account than is usually done today.

Everything was done manually and took an enormous amount of time. On the other hand each one knew every step in the process, from beginning to end. This has its advantages, no doubt about that.

One result of my studies in Ann Arbor was an examination paper in Lund 1954, called *Trends in modern American linguistics*, which was an attempt to present some main points in American structural linguistics as I had understood them. At that time the "licentiatexam" still existed. I wrote my thesis on Swedish intonation for this degree and used Pike's method of description. It is not really at all difficult to analyze and describe sentence melody by means of four or five pitch "levels" and three final junctures, or to divide an utterance into smaller units, each with one primary stress. It becomes a kind of stenography, or rather perhaps a transcription, which can be written out in

full when necessary.

In 1957 I became an assistant lecturer and started to write a dissertation for the Ph.D. Most of our students were then following our so-called propaedeutic course, which was obligatory for all language students. It comprised about 22 lectures and some hours of laboratory work. Those who went on to study the subject more extensively were at that time comparatively few. The activities within the department grew, however, and we had to move to get more space. Our new address was Kävlingevägen 20, where we were to stay until 1979. At first, the German department had the upper part of the building and Phonetics the lower, including the cellar. It seems that Phonetics, or rather the phonetics lab., has always and everywhere occupied the cellars! Some years later the German department moved out and we had the whole house to ourselves, much to our satisfaction, since the number of our students continued to grow (more of which later). For a long time there were nevertheless only Malmberg, his assistant, and myself to manage both the teaching and the laboratory. The teaching load was at times quite heavy.

In the fifties Malmberg spent some time at Haskins Laboratories, then in New York. One result of his visit was that we got our first Sonagraph. It seemed a marvellous thing, a big step forward, even though it sometimes behaved rather strangely, probably (at least partly) owing to our inept handling of it.

It should be pointed out, I think, that General Linguistics did not exist in Sweden as a separate subject or field until 1969. Until then it was, so to speak, included in Phonetics. This meant that Malmberg's students got a solid background in linguistics. I would like to emphasize too the great pleasure it was to us to have Bertil Malmberg as an inspiring teacher, encouraging supervisor, and for me personally later on also as an unfailingly loyal colleague.

In addition to the spectrum, our first sonagraph could produce two intensity curves too, with and without damping, and it could also expand the spectrum so that only a small number of harmonics

were represented on the paper, enlarged, so to speak. I consider it to be a real drawback when the instrument, as has sometimes happened, does not provide any intensity curve at all, however grossly calibrated. I have always been of the opinion that the relation between the frequency and intensity curves can give important information as to how we perceive and interpret the sound wave. An intensity curve can, moreover, indicate when the sound has reached a level of intensity too low to be perceived by the human ear thereby saving the investigator a good deal of worried measuring and analysis.

My Ph.D. dissertation, on sentence intonation, was naturally now based on spectrographic analysis (and not on Meyer's pitch meter!). The tenth harmonic (whenever possible) of the entire spoken material was measured and noted down on semilogarithmic paper. It was, however, impossible to get a perspective on all these data. My floors at home were all covered with sonagrams and papers with measurements, but however fast I crawled from one end to another I could not get a real grasp of the thing. Something radical had to be done. To that end I went up to Stockholm, to Gunnar Fant and his Speech Transmission Laboratory, to ask for help. Fant had both the Mingograph (which we so far had not) and also his 48-channel spectrograph. A female voice was something new to these instruments, so some recalibration was necessary. When this was done, the entire corpus was processed in less than one hour (with the expert help of Aage Møller) I could return home with all the data I had already got from the sonagrams but now in a compressed form and on a manageable amount of small rolls of paper. This was exactly what I needed to continue my work.

I also returned with an increased self-confidence, thanks to Fant. At that time there was a veritable gap between linguists-phoneticians and people in the technological fields. We belonged to the humanities and had as a rule practically no knowledge of technology or even of the sciences. I did not even know what questions to ask of Fant or how to state my problems in technically correct terms. But when I expressed my feeling of inadequacy to

Fant, he said: Never mind - just use your common sense and you will manage all right. I still remember my surprised, spontaneous (and silly) exclamation: May I really?

I had probably thought that technical-mathematical know-how somehow was on a higher level, unreachable for people like me and different from other mental work.

After this encouragement I even dared to go on to use speech synthesis for my dissertation. Since I was fortunate enough to get some money from an Edinburgh foundation, my synthesizing was carried out on the Parametric Artificial Talking Device (PAT) at the Phonetics Department in Edinburgh, the head of which was David Abercrombie. It was a busy place, with much activity, and an enjoyable place to work in. The laboratory chief was Peter Ladefoged, but PAT was housed in another building and serviced by a special group. The people who worked there, taught me how to manage PAT, and stood by and helped whenever necessary, were Elizabeth Uldell, Peter Strevens and, not least, James Anthony. PAT was then still at its "TEA or COFFEE" stage, that is to say, it was a much simpler device than later on. There were six parameters in all, one of which was pitch. The information for PAT was painted on a small glass slide, about 10x10 cm. Fortunately I only wanted to vary one parameter: fundamental frequency. The outcome was surprisingly good, considering the rough spectrum presented. The samples had of course to be chosen within PAT's performing capacity. But such considerations usually have to be made also when working with very sophisticated machinery, as for example computers.

To return to Lund. Whenever questions arose, for example about where to find pertinent references or other difficulties connected with my writing, I could always turn to Eli Fisher-Jørgensen in Copenhagen, for excellent advice and information, always generously given. In 1961 I finally got my Ph.D. and a position as "docent" (assistant professor). During the 60's the number of students continued to grow. At our peak we had, I believe, about 800 students following our propaedeutic course, 80 students taking the first term course, 40 continuing

through the second term, and about 10 to 12 in their third term. This was repeated twice a year. They were all undergraduates - graduate and doctoral students were still very few and followed individual plans of study.

Naturally a great number of teachers were needed to teach all these people - but we were still only three permanently employed at the institute. Instead we were allotted so and so many "hours" each term, depending on the number of applications. As we needed teachers badly, such "hours" were given to almost anyone who had a year or so of satisfactory studies in Phonetics behind them. Their first job was to teach the propaedeutic course, the next usually to assist at lab demonstrations. We were thus able to provide work for a number of older students as "extras": as amanuenses, assistants and lecturers, even though we had no permanent lecturer position.

Most popular by far among the students was the laboratory work. Students were required to do a small instrumental-experimental study, usually in groups, and to write up and orally report on their work and results. I believe the students found it very stimulating to work with the instruments themselves on a comparatively easy problem which they felt was relevant, like analyzing their own speech, speech sounds, prosody or the like. The instruments in our lab were not too complicated either. In spite of the great number of students, we succeeded in giving everybody a working knowledge of at least one or two of our machines, and the chance to carry out a study together with others. The latter was, I think, particularly important, and I doubt whether anything similar occurred anywhere else in the language section.

Why did we have so many students? The basic reason was the fact that the language departments got an increasing number of students and that all of them had to follow our "prop". Another reason was that many, perhaps most language students aimed to become school teachers and to study at the Teacher's College. They often chose to combine two languages with Phonetics. Phonetics gave students valuable credits for admission to the College and was even considered to increase the pedagogical skill of the



future language teachers.

The 1960's were an altogether wonderfully stimulating time. It was moreover fairly easy to reach the various administrators of the university - the Central Administration was still quite small, and one knew the right person to ask or contact for the many questions that arose. Everybody was extremely helpful. During this period one felt that to work hard in the interest of the department really gave results, and it was possible to follow important matters personally. This may still be true to a certain extent, but things have without doubt become much more difficult to handle satisfactorily with the growth of the university - and of the central administration. Gradually it became almost impossible to obtain first-hand information covering the whole field of interest to our institute. To be certain, in order to learn what was going on one almost had to sit on the same committee or board as those who made the decisions. I had been used to, and much preferred, the direct, person-to-person way of handling things. That way they really got done, yet not over one's head. But, of course, we have become too many for this to be possible nowadays. As time went by I felt as if I worked harder, got less done, and had less and less influence over the outcome. Frustrating, in fact.

But let me go from the seventies back to the sixties. A third reason why our subject flourished some twenty years ago was probably that we, thanks to our laboratory, were one of the very first established institutes in our field. Not so very long ago, a language professor used to work and examine his students at home. Perhaps he had a "table" at the university library for his research. Some professors fought hard to escape the burden of a department with assistants, secretaries, administrative paper work and so on. All these meant in fact the beginning of a new era. Before, the professor was expected to lecture mainly on his own research, since he could be supposed to have the most of interest to say on that particular subject. At that time the teacher was not yet expected to regurgitate the literature for the student. There were few courses and lectures, and the stu-

dent had to study by himself, more or less unaided, until he felt that he had memorized the required literature well enough to try for an examination. If he failed more than three times he had to start in another field. No wonder that a B.A. could take quite a long time to obtain. The financial situation was often precarious. On the other hand jobs were more easily come by than now. A B.A. or M.A. was almost certain to result in a decent job in the field in which your competence lay. This was definitely so during my own student days, and I cannot recollect that we ever discussed our future as a problem, once we had decided what we wanted to do. It is true that things started getting touchier after the war, in some fields at least, but even so there was nothing like the present-day difficulties of getting any job at all.

To continue with my own experiences after receiving the Ph.D. in 1961. I had started late in life and had a lot I wanted to do. Among other things I was very keen to work at Haskins Laboratories, having heard glowing reports from those who had been there. I was happy to get an invitation from Frank Cooper in the Spring of 1962 to work at Haskins on a research fellowship. The only condition attached was that the recipient should become thoroughly acquainted with the work done at the laboratory, so that he/she could report at home on the research done there. I believe this fellowship was paid for by the Carnegie Foundation. At the beginning of the sixties this type of fellowship still existed. Nowadays I believe the requirement for somebody from outside is to join in a research project, usually on a one-year basis.

I spent three periods of four months each at Haskins and enjoyed every minute. The team spirit of the place was wonderful, and it felt natural and easy for me to work from early morning to late at night. The Haskins atmosphere was so good that there was a certain risk for us all of just swimming in well-being. After all, work had to be done too, in order for it all to survive. At first I worked with Arthur Abramson on the duration of Swedish vowels, but in the evenings I tried synthesis with, among others, the Intonator. It was not available during the day

and it had to be arranged specially at night to manage the job I wanted it to do. It was a strange feeling for a linguist with on the whole very little experience of machinery, to work for hours in the night, quite alone in a big "machine hall" (originally an old warehouse, I believe), surrounded by equipment I knew nothing about, ticking instruments, flickering lights, and a tangle of cords. But it felt exhilarating, too, and stimulated diligent work.

After some months I started in earnest on intonation projects, now in cooperation with Michael Studdert-Kennedy, a teamwork that continued for more than 10 years. I also served as an informant for electromyographic experiments, under the supervision of Peter MacNeilage. At first only surface electrodes were used, and because I had electrodes even down on the tongue root, a medical doctor was required to spray something against too violent a gag reflex. Two young Swedish students who visited us, Björn Lindblom and Sven Öhman, grew quite pale as they looked on. But even though it was a little bit uncomfortable, it was not at all as bad as it looked. At first, too, all raw data had to be analyzed and measured by hand. Computers had begun to be used, but there was as yet no program for EMG. These direct, though time-consuming measurements meant at least one good thing - you knew everything there was to know about your data.

At that time money was easier to come by for attending congresses, meetings, and the like. I went to several during my stay at Haskins. It is tempting to describe the Congress of Linguistics in Boston, 1962, when Noam Chomsky made one of his first appearances. It was in its way unforgettable. But I think it is outside the scope of this phonetic summary.

It is also tempting to talk more about my time in New York and all it meant of meetings with people and new milieus, the latter often strange to a middle-aged visitor from a small Swedish town. Perhaps my wide-eyed and unprejudiced curiosity helped to make people show me things they would not have shown to less, let us say naive, people. I think I saw more and different sides of New York than the ordinary tourist. But when Dennis Fry arrived

from London, he found to his dismay that I had been in New York for almost one year without visiting a single museum or theatre. He took it upon himself to remedy this in a very short time. For which I am thankful! The closest I had come to "culture" before that, was to stand in line for tickets for Shakespeare's *The Tempest*, in Central Park. People were sitting in the grass for hours, whole families, with food baskets. Well, we got our tickets. It was a marvellous performance. Very appropriately a real storm, with lightning and thunder, broke out just when the script required it. Most imposing.

All this may indeed seem very far from my subject. But not really - it shows what a privilege it is to be a phonetician and therefore in a position to visit, work in, and enjoy foreign countries and places.

These months in New York were so eminently satisfactory that, when Peter Ladefoged some years later asked me, from Los Angeles, if I would take over for him in 1968, when he himself would be in Uganda, I said yes, after some hesitation. Hesitation, because one year seemed a long time to be away from home and yes, because, among other things, my time as a "docent" was running out (six years was the maximum time allowed) and there was no job in sight in Phonetics in Sweden. My wire to Ladefoged also asked: "Why me?" and I got one back saying: "Why not?". I then asked: "What am I supposed to do?" and got the answer: "Have fun!"

And I did have fun! It was great to teach American students - not least because *they* are great - and I myself learnt a lot. I think I managed quite well, all things considered. And after having had one year with intelligent, outspoken American students I did not find any other teaching situation insurmountable or even difficult. I had graduate seminars too, mostly on intonation. Much of the work, not least the management of the laboratory, grant applications etc, was done by Vicky Fromkin, an excellent linguist and administrator. I shall mention some of the participants of the seminars, and you will surely recognize their names: John Ohala (now at Berkeley), Harry Whitaker (now a neuro-linguist in Maryland), Dale Teerbeek (later at Chicago),

Mona Lindau, Tim Smith, Kay Atkinson, Ralph Vanderslice, and many others, who in various ways have made well-known contributions to phonetics.

At UCLA I had another go at EMG, this time with needle electrodes, and with the help of Tim Smith and Minoru Hirano, from Japan. I was still interested in the Swedish vowels, particularly in the amazingly great number of rounded vowels. Later on in the seventies EMG studies of these vowels were continued at Haskins, this time in collaboration with Hajime Hirose, also from Japan, and now with a considerably more sophisticated instrumentation. It is true that I always found Americans wonderful to work with - but the same is true about my Japanese colleagues. I remember well Jim Hirose's indefatigable work, measuring, thinking, planning the next day's "runs" when everybody else had gone home for the day. My gratitude to all the people whom I have met during my active years in phonetics is immense. Thank you all, colleagues and students, both at home and abroad!

Well, let me go back again to Sweden. In 1968, Lund finally got a university lectureship in Phonetics, which I applied for and got. I had been half prepared to stay on in the U.S. Later on, a number of chairs in Phonetics were instituted or became available - in Uppsala, Umeå, Lund. Bertil Malmberg had been "called" to chair the new subject of General Linguistics and left Phonetics. We were several who applied for them all, and I finally got the professorship in Lund, after Malmberg, in 1969.

Not very long after this, things started to deteriorate for the general linguistic subjects. The reasons were many. University studies became more job-oriented, no time could be spent on subjects which did not lead to some occupation or other, for instance school teaching. Since the various languages had a certain market value they were given priority, for example, for admission to the Teacher's College, while such subjects as General Linguistics and Phonetics gave lower credits (and later on no credit at all). State loans to students became available but did not encourage more than three years of studies altogether. In addition, students with only about two terms of study in a foreign

language were not considered good enough - three semesters were a minimum for a teacher, but three languages were preferred to two languages and phonetics, earlier a common combination. All in all: there was no longer any place for subjects like ours. Students just did not dare to stake their future on subjects which did not lead up to any jobs, which were hard enough to get in any case.

At the same time other prescriptions and rules started to affect the teaching and the administration of university departments. Foreign languages had to take over our "prop" courses themselves in order to have enough "hours" for their own people, with the result that we lost contact with the great number of new language students that we had had before. In fact, since our subject did not lead to any particular job, we lost almost all language students. Those who remained had started earlier and had found the general linguistic subjects more interesting than any other they had come into contact with. In order to continue they had to get a job in another field and then come back, often to do research. Our subject became therefore rather like a pyramid, standing on its head, with a narrow base (few undergraduates) widening upwards (many doctoral students).

It is incomprehensible to me that the schools, or rather National Board of Education does not understand that the general linguistic subjects - General Linguistics and Phonetics - form the very basis for knowledge also in the separate languages. We are the roots, or the "trunk", where the languages are the branches! But as it is, we are as often as not considered to be something on the side, something exotic, something one can do without or, if necessary, manage oneself. What a fallacy! For a long time it has been obvious that linguistic discussions, meetings, and writing tend to be dominated by general linguists, presumably because of their wider scope of interest. Now that "communication" has become an honoured word, the general linguists, whose subject is the most important of all human communication - language - will perhaps at last obtain the central place that ought to be theirs.

From this perhaps wishful thinking I return to our department in Lund as of 1979. For some time we had had to struggle for our very existence. At some point it even seemed as if our subject would disappear altogether. However, a few years ago a training program in Logopedics started in Lund. This included two terms of Phonetics and one term of Psychology, as a prerequisite for the following clinical studies. Phonetics became for the first time part of a job-oriented line of studies. At the same time several students who were or wanted to become educational speech therapists etc, started to follow our courses. This was very heartening. Because of these categories with new and different needs, our subject naturally got a somewhat different bias than before. When we were at our peak we had been able to offer our students alternative courses - not so later on, unfortunately, although our situation in 1979 should have been reason enough.

Subjects like linguistics change and develop continuously - I say linguistics and not phonetics because after all they are two sides of the same coin: human languages. That is as it should be. But also central political programs for the schools, the university and education as a whole change - but whether those changes always represent positive development may be more doubtful, so it seems to me. I have heard a rumour that there are plans to eliminate education in the humanities altogether, at least for the present and in the name of the economy. I think such a step would be disastrous. What western "humans" are running the risk of losing is their soul - as humans. And that cannot be remedied by any technical or economical tricks, however refined. What is needed is instead *more* "humanity".

The rumour may be unfounded. Nevertheless I am glad to give over the job as the head of phonetics to younger forces. For it is clear that a lot of strength and vitality will be needed in the future, perhaps now more than ever.