

Kimmo Koskenniemi's first 60 years¹

Kimmo Matti Koskenniemi was born on September 7, 1945, in the city of Jyväskylä in the interior of Finland, close to those dialect areas where the purest forms of Finnish are claimed to be spoken. Kimmo was the youngest of four sons born to Matti and Sirkku Koskenniemi. Both of his parents were deeply involved with education, his mother as a primary school teacher and his father as one of the leading authorities on education and teacher training in Finland, affiliated as professor of practical pedagogics at the Teacher's College of Jyväskylä 1944-1948 and later at the Universities of Turku and Helsinki.

Kimmo matriculated from one of Finland's top high schools, Helsingin Suomalainen Yhteiskoulu (Helsinki Finnish Co-educational School), and went on to study mathematics and computer science at the University of Helsinki. He was an unusually successful student, obtaining the degree Bachelor of Science in two years and, on top of that, the degree Master of Science in just another year, in 1967.

Kimmo did his military service in the turbulent years 1968-1969, completing his duties in affiliation with the Defence Staff (Pääesikunta), as one of the first officers receiving special training based on their civilian skills (for Kimmo, mathematics and computer science). He was discharged as Second Lieutenant in the spring of 1969.

Kimmo entered working life already in 1966 when he was employed as programmer at the Department of Seismology, University of Helsinki. In the fall of that year he also started teaching, as teaching assistant of mathematics at the Helsinki University of Technology. In 1967 he entered the payrolls of the Computing Centre of the University of Helsinki which was to become his employer for the next 15 years. There he worked as mathematician, senior planning officer, assistant, specialist researcher, and Division Head. Over these years, administrative duties accumulated and gave Kimmo a solid managerial experience even if they also detracted from his scholarly aspirations.

Kimmo's old interest in natural languages grew stronger in the course of the 1970's to the point where he started full-blown academic study of general linguistics, eventually completing his major in this subject in 1979. Since he was a youngster, Kimmo had known the Parpola brothers Asko and Simo, both renowned scholars in ancient languages, and these acquaintances also paved his way to linguistics. Kimmo's first publications from 1979 and 1980 were written jointly with Asko Parpola and treated methodological (including computational) and corpus-linguistic aspects of deciphering the Indus script.

In 1981 Kimmo joined the Department of General Linguistics where he was one of the driving forces in the project "Automatic Analysis of Finnish" sponsored by the Academy of Finland 1981-1984. If ever a project has turned out an excellent result, this holds of Kimmo's PhD thesis *Two-level morphology: A general computational model for word-form recognition and production* (Department of General Linguistics, Publications No. 11, Helsinki 1983). The degree was conferred upon Kimmo in March, 1984, after a public

¹ This biography appeared in A. Arppe, L. Carlson, K. Lindén, J. Piitulainen, M. Suominen, M. Vainio, H. Westerlund and A. Yli-Jyrä, eds., *Inquiries into Words, Constraints and Contexts. Festschrift in the Honour of Kimmo Koskenniemi on his 60th Birthday*. Gummerus Printing, Saarijärvi 2005, xiii-xv.

defence where professor Lauri Karttunen acted as official opponent.

The two-level model TWOL (building on early work by C. Douglas Johnson, Martin Kay, and Ronald M. Kaplan) soon became a classic and the de facto standard of the rapidly evolving field of computational morphology, a position it has retained to this very date. I know of no better way to describe the basic ideas than to cite Lauri Karttunen and Kenneth R. Beesley's "A Short History of Two-level Morphology":

"Koskenniemi invented a new way to describe phonological alternations in finite-state terms. Instead of cascaded rules with intermediate stages and the computational problems they seemed to lead to, rules could be thought of as statements that directly constrain the surface realization of lexical strings. The rules would not be applied sequentially but in parallel. Each rule would constrain a certain lexical/surface correspondence and the environment in which the correspondence was allowed, required or prohibited. For his 1983 dissertation, Koskenniemi constructed an ingenious implementation of his constraint-based model that did not depend on a rule compiler, composition or any other finite-state algorithm, and he called it TWO-LEVEL MORPHOLOGY. Two-level morphology is based on three ideas: (i) Rules are symbol-to-symbol constraints that are applied in parallel, not sequentially like rewrite rules. (ii) The constraints can refer to the lexical context, to the surface context, or to both contexts at the same time. (iii) Lexical lookup and morphological analysis are performed in tandem."

(<http://www.ling.helsinki.fi/~koskenni/esslli-2001-karttunen/>)

It is extremely uncommon for PhD dissertations to have such a dramatic impact. The search key "two-level morphology" yielded more than 7,000 hits in June, 2005, and the CiteSeer information service lists 109 citations of Kimmo's 1983 dissertation. Evan Antworth's widely used implementation of the two-level model bears the name of the original inventor, giving us PC-KIMMO.

For 20 years now, Kimmo has been a major character on the international scene of computational linguistics and his work was instrumental in launching the Center of Excellence status of the Research Unit for Computational Linguistics (RUCL, 1985-1994) and the Research Unit for Multilingual Language Technology (RUMLAT, 1995-1999), both at the Department of General Linguistics in Helsinki.

Teaching of computational linguistics started incrementally at the University of Helsinki in the late 1980's. Kimmo had been appointed Docent in 1984, and from April, 1990, he has been professor of computational linguistics (with tenure from May, 1992). The 1990's were economically tough in Finland and Kimmo had to invest an enormous amount of work in designing an up-to-date multidisciplinary curriculum for computational linguistics and related disciplines. The full-blown result of this is the nationwide KIT-network (Language Technology Teaching Network) where ten Finnish universities collaborate. This would not have come about without Kimmo's untiring efforts. Closely related to these endeavours are Kimmo's activities in the Nordic Graduate School of Language Technology (where he is Vice-chair) and in the emerging Finnish-Baltic language technology network.

In 1986, Kimmo was one of the two founders of Lingsoft, Inc. where he has acted both as Chief Executive Officer and Chairman of the Board. The success of Lingsoft (which at times had more than 50 employees) is largely due to Kimmo's diligence, foresight, and strategic eye.

Some five years ago Kimmo was offered to become President Elect of the Association of Computational Linguistics. Had he accepted and taken on this duty, he would later have

become President of the Association. It is indicative of Kimmo's deep sense of responsibility and determined prioritization that he declined the offer, preferring to devote his energy to developing the KIT network.

As colleague, friend, project leader, and Department Chair, Kimmo is widely known for his smooth manners, his supportive and collaborative attitude, and his meticulous objective scrutiny of whatever problems he is confronted with. The Department of General Linguistics, staff and students alike, and a wide array of colleagues and friends world-wide offer their congratulations to Kimmo on his sixtieth birthday, wishing him many prosperous years to come.

Fred Karlsson