

Chapter one

Introduction

Vincent J. van Heuven^{*} & Myrna Laksman^{**}

^{*}Leiden University Centre for Linguistics

^{**}Program Studi Prancis, Universitas Indonesia, Jakarta

1.1 The proposal

In the spring of 1995 a call for research proposals was published by the Royal Netherlands Academy of Arts and Sciences (KNAW), soliciting projects submitted jointly by Indonesian and Dutch research groups. A collaborative research proposal was then formulated by a small group of linguistic phoneticians at the University of Indonesia and at Leiden University, asking for a subsidy of around Mf 1.5 (now approximately k€ 680). The grant money covered five PhD projects, each of which was to result in a doctoral thesis, the appointment of two half-time postdoc for four years, and the transfer of equipment (computers, recorders, microphones) and speech processing software to a phonetics laboratory to be founded by the University of Indonesia.

In terms of content the project was to do two things at the same time. First we would run a rather broad survey study on about 30 languages spoken in the Indonesian archipelago, in an attempt to roughly inventorize the prosodic systems of these languages. In a second stage of the work, each researcher would then single out one (or two) language(s) in his or her area for an in-depth study of the phonetic details of its (word) prosody. This work would be done by the five PhD candidates, two of whom would be supplied by Leiden University and three by the University of Indonesia. One postdoc would develop diagnostic tests that would allow the PhD candidates to efficiently determine the setting of prosodic parameters in perceptual experiments with native listeners. The second postdoc would expand the existing typological database StressTyp (Goedemans, van der Hulst & Visch 1996a, b) on stress systems in the languages of the world so that it could accommodate a wider range of word-prosodic systems, including tone systems, many of which can be found in the Indonesian archipelago (especially on and around Papua Province).

Within Leiden, the project was ground breaking in that it was the first to straddle the divide between the “theoretical” linguists in the Holland Institute of (Generative) Linguistics HIL and the “descriptive” linguists in the School of Asian, African and Amerindian Studies CNWS.¹

There were several boundary conditions on getting the grant, some of which were hard to meet. For instance, the partner universities were required to contribute matching funds, a requirement that could hardly be satisfied by the Dutch counterpart, and which was unrealistic in the case of the Indonesian counterpart. Nevertheless, memoranda of understanding were signed, and the KNAW decided to subsidize the project, but limited the funding to Kf 851 (now approximately K€ 387 for the four-year period). Although our (realistic) budget was slashed in half, we decided to go ahead and accept the subsidy. We appointed two part-time postdocs, but had to transfer one of these to other funding after the first year of her appointment. Instead of a 12-months stay in Leiden, the Indonesian PhD candidates would only spend six months in the Netherlands. PhD candidates would not be appointed on a regular salary but on low-budget scholarships.² In the summer of 1997 we got the green light, and appointed two PhD candidates in Leiden, as well as two part-time postdocs, also in Leiden. Three more PhD candidates were targeted by the Universitas Indonesia in Jakarta.

1.2 Research on prosody

The full title of the KNAW-funded research project was *Phonetics and phonology of (word) prosodic systems in the languages of Indonesia*. It was soon abbreviated to *PIL (Prosody in Indonesian Languages)*. We aimed to study word prosodic properties in a selection of languages in the Indonesian area. By prosody we mean the ensemble of melodic, temporal and dynamic properties of language and speech. These comprise relatively slowly varying properties of speech that are characteristic of linguistic units above the level of the individual vowel or consonant. The phonetic components of prosody are (i) variation in pitch, as determined by the repetition rate of the vocal cord vibration, (ii) variation in loudness, as determined by sound intensity and spectral balance due to differences in vocal effort, (iii) variation in quality (timbre) due to articulatory precision, and (iv) timing variations due to

¹ Interestingly, in 2001 the research institute HIL was formally liquidated and merged with functional linguists into a new Leiden research institute on linguistics ULCL (Universiteit Leiden Centre for Linguistics). This institute would be short lived, as in the summer of 2005 all Leiden linguists – descriptive, comparative, functional, experimental and theoretical (generative) alike – were joined into a single comprehensive linguistics research institute LUCL (Leiden University Centre for Linguistics).

² Ironically, within months after the appointment of the two PhD candidates in Leiden, the university changed its policy and decided that all PhD candidates with European Community citizenship were to receive a regular salary rather than a grant. Eventually, Leiden University agreed to supplement the difference between the regular salary and the PhD grant for our two candidates, so that our budget would not be depleted any further.

acceleration and deceleration. Linguistic distinctions that are contingent on these parameters are, among others, tone, intonation, accent, stress, and rhythm.

Melodic and rhythmic structure can be studied, on the one hand, in terms of its organizational principles on an abstract level, which task is undertaken by prosodic phonologists of various denominations. In experimental phonetics, on the other hand, these properties are studied on a rather more concrete (physical and/or psycholinguistic) level, such that melodic and rhythmic descriptions of a language can be converted into audible utterances, and tested for perceptual adequacy. We believe that prosody can be fruitfully studied only if postulated abstract structural properties are checked against phonetic speech data; conversely, just determining the phonetic realization of prosody seems a senseless undertaking unless the results can be fitted into a consistent phonological model of prosodic structure. The inseparability of phonological theory and phonetic realization is essential to our research methodology.

In experimental phonetics, the formal properties of melody and rhythm are measured from acoustical analyses of human utterances, and then verified in auditory experiments using the technique of speech synthesis or partial resynthesis of human speech. These techniques allow the researcher to regenerate the original recording but with changes in melody, rhythm or any other relevant auditory property.

Melodic and rhythmic patterns differ systematically across languages to the extent that a native listener will be able to discriminate the melodies and rhythms in his own language from those of other languages much better than chance. A listener is also able to determine to what extent a given melody or rhythm conforms to the norms that apply to his native language. Therefore, both the abstract structure of prosody and its phonetic implementation are essential parts of the scientific description of any human language.

The Indonesian area comprises Austronesian and Non-Austronesian (traditionally called Papuan) languages, which are divided into several subfamilies. In total, some 800 languages are spoken in the area, of which comparatively few have been studied. Numerous dictionaries and grammatical studies have appeared on Indonesian languages. However, phonological and phonetic aspects have received comparatively little attention, and prosodic phenomena like stress and intonation even less.

The long-term goal of the present project was to provide a full specification of all the languages in the Indonesian area in terms of their prosodic properties. For the mid-term this ambitious goal was narrowed down to a study of word prosodic properties in a small selection of languages. For any language to be selected into the sample, published descriptions had to be available in the literature. Claims that have been made with respect to phonological structure can then be verified on the basis of examples encountered in the publications, and checked against the judgments of native language consultants. The resulting information can be interpreted in terms of a number of structural parameters, which have been selected such that the word prosodic system of any language can be characterized compactly and adequately. This part of the results was stored in the StressTyp database, a computer-readable collection of data that eventually specifies the word-prosodic parameter settings for

all the world's languages. This database is an important research tool for language typology studies.

At the end of the project, the research could and would be continued and extended to include as many of the remaining languages as is felt necessary to prosodically map out the entire Indonesian area. Indonesian has been introduced as the national language, and is rapidly replacing regional languages. From a linguistic point of view, it is of the utmost importance to document the disappearing languages before they die out, and – to the extent that they do not – monitor their change under the influence of the national language or other major languages. The present program has thus been the seed of a much larger, long-term undertaking to be carried out in the next decades. One of the partner institutions, Pusat Bahasa, has started to train some 30 young linguists/phoneticians to be sent out to do the fieldwork needed to accomplish this goal.

1.3 Researchers and projects

One PhD candidate was Belgian national Bert Remijsen, who had written his Master's thesis on phonetics in Leiden in 1996, and had since then worked in the speech technology industry with the then extremely successful company Lernouts & Hauspie Speech Products. Bert immediately agreed to switching careers, and became an experimental phonetic field worker overnight. He took courses in practical Indonesian and linguistic fieldwork. He was ready to be sent to the Indonesian area of his choice, the Raja Ampat islands, one year later. The second candidate was Ruben Stoel, who had just completed his Master's thesis as a descriptive linguist on the morphology of Manado Malay at the Leiden department of Languages and Cultures of South-East Asia and Oceania. He came highly recommended but had no experience in experimental phonetics. So Ruben took crash courses in experimental phonetics, statistics and acoustic analysis. Then he returned to the area of his choice – obviously Manado, the capital of Sulawesi – for an extended period of fieldwork.

The first (half-time) postdoc was Rob Goedemans, who defended his doctoral dissertation in Leiden on the phonetics and phonology of onset-sensitive stress systems in 1998. Rob was (and still is) one of the founding fathers of the StressTyp database on word-prosodic systems. His ambition was to add hundreds of South-East Asian languages to his database, and to coordinate the typological aspects of our project. Ellen van Zanten, the second part-time postdoc got a one-year appointment but had to be taken off the project at the beginning of the second year due to insufficient funding. She then got a part-time position subsidized by the Netherlands Organization for Research NWO, with different tasks, but managed to contribute significantly to the KNAW project in her spare time.

In the fall of 1997 the Universitas Indonesia had found its three PhD candidates. All three were tenured personnel at either the university or at the National Language Institute (Pusat Pembinaan dan Pengembangan Bahasa, or Pusat Bahasa for short) in Jakarta, and had been singled out by their respective departments as future experts in experimental phonetics. The first candidate, Lilie Roosman, had done her Master's study in Leiden, and had since then been appointed

as a lecturer in the Dutch department (Program Studi Belanda) at UI. The second candidate was Rahyono, a young lecturer at the Javanese Studies Department of UI. The third candidate was Sugiyono, a member of the linguistic staff of the Pusat Bahasa. It took until the summer of 1999 for the Indonesian candidates to write their dissertation prospectus and be formally admitted to the PhD program. Lilie was allowed to complete and defend her thesis at Leiden University, while the two male candidates would defend their dissertations at the Universitas Indonesia. The work in Leiden would be coordinated by Vincent van Heuven, while Myrna Laksman coordinated the activities in Jakarta. During the project the Indonesian candidates were largely relieved of their teaching duties so that they could work more or less full time on their project, and spend time in the Netherlands as well as in the area of their choice.

Lilie Roosman chose to work on the prosody of Betawi Malay (spoken in the inner city of Jakarta) and on Toba Batak (spoken on the isle of Sumatra). As a language instructor on Dutch she was also interested in the question to what extent the word prosody of these two Indonesian languages would influence the pronunciation of Dutch as a foreign language. Rahyono decided to study aspects of the intonation system of Javanese, specifically the melody of clause typing in the Javanese *acrolect* spoken at the Yogyakarta Sultan's court. Sugiyono decided to work on the sentence melody of Kutai Malay, spoken on the isle of Kalimantan.

To compensate for the delay in the start of the Indonesian part of the project, the KNAW allowed us to extend the program by two years and six months, so that it would be formally completed by the end of the year 2003.

1.4 Products

Bert Remijnsen finished his dissertation in the fall of 2001 after exactly four years, and defended it in Leiden in January 2002. Rahyono and Sugiyono finished their dissertations before the summer of 2003, in less than four years' time. They defended their theses (Rahyono 2003, Sugiyono 2003) on the same day, in Jakarta with Vincent van Heuven present as a guest promotor or referent. These two theses were written in Indonesian but highlights of the dissertations had been translated by Ellen van Zanten into Dutch/English for Vincent's sake (who regrettably never learnt to speak or read Indonesian). Ruben Stoel, who had meanwhile accepted a postdoc position at the University of Potsdam in 2003, defended his dissertation early in 2005. After the formal termination of the KNAW project, Lilie Roosman spent another year in Leiden – funded by the Nederlandse Taalunie – in order to finish her dissertation. She defended her dissertation in Leiden in the spring of 2006 with Dr. Rahayu S. Hidayat, vice dean of the Humanities Faculty of UI, present as a committee member. Both Lilie Roosman's (Roosman 2006) and Bert Remijnsen's (Remijnsen 2001) dissertations were published in the LOT dissertation series (nrs. 129 and 49, respectively).³ Ruben Stoel's dissertation (Stoel 2005) appeared in the CNWS publication series.

³ LOT: Landelijke Onderzoekschool Taalkunde (National Research School in Linguistics in the Netherlands). The Holland Institute of Generative Linguistics (HIL), the Universiteit

Postdocs Goedemans and van Zanten produced several articles together, two of which are also included in the present volume. Goedemans also contributed four maps (Goedemans & van der Hulst 2005a, b, c, d), on the geographic distribution of word-prosodic systems in the South-East Asian area, to the World Atlas of Linguistic Structures (WALS) produced by the Max Planck Institute for Evolutionary Anthropology in Leipzig (Comrie, Dryer, Haspelmath & Gil 2005). Goedemans' maps were based on the StressTyp database, after inclusion of typological data collected as part of the KNAW project.

1.5 Current employment

Bert Remijnsen is currently employed by Edinburgh University on a post-doc grant (after having done a three-year postdoc project in Leiden funded by NWO). Ruben Stoel is back in Leiden on an NWO postdoc project (after having finished his first postdoc project in Potsdam). Rob Goedemans works in Amsterdam (as a software developer for a linguistic typological database) and in Leiden (as an information manager in the Faculty of Arts), while Ellen van Zanten took her retirement in 2005; however, she is still a guest researcher at the Leiden Phonetics Laboratory. The three Indonesian PhD candidates have resumed their former duties as lecturers at the Universitas Indonesia or as researcher at the Pusat Bahasa.

1.6 Contents of the volume

This book presents selected highlights from the publications that appeared in the course of the KNAW project. None of the chapters contained in this volume have been published elsewhere at this time. However, one chapter will appear in an edited volume published by Curzon Press, one further chapter has been submitted to a professional journal.

The five PhD candidates contributed one chapter each, highlighting some aspect of their dissertation work. The postdocs contributed two co-authored chapters, while the project coordinators wrote the (present) introductory chapter. The editors of the present volume also wrote a brief conclusion chapter.

Acknowledgments

A special word of thanks should go to professor Wim Stokhof, the former director of the International Institute of Asian Studies IIAS, who was the co-applicant (with Vincent van Heuven) of the KNAW project, and to professor Anton Moeliono, the then director of the Graduate School in Linguistics of the University of Indonesia. Without their help and devotion the project would never have materialized.

Leiden Centre for Linguistics (ULCL) and the current Leiden University Centre for Linguistics (LUCL) were (are) daughter institutes of LOT.

References

- Goedemans, R.W.N. & H.G. van der Hulst (2005a) Fixed stress locations. In B. Comrie, M.S. Dryer, M. Haspelmath & D. Gil (eds) *World Atlas of Language Structures*. Oxford: Oxford University Press, 62–65.
- Goedemans, R.W.N. & H.G. van der Hulst (2005b) Rhythm types. In B. Comrie, M.S. Dryer, M. Haspelmath & D. Gil (eds) *World Atlas of Language Structures*. Oxford: Oxford University Press, 74–77.
- Goedemans, R.W.N. & H.G. van der Hulst (2005c) Weight factors in weight-sensitive stress systems. In B. Comrie, M.S. Dryer, M. Haspelmath & D. Gil (eds) *World Atlas of Language Structures*. Oxford: Oxford University Press, 70–73.
- Goedemans, R.W.N. & H.G. van der Hulst (2005d) Weight-sensitive stress. In B. Comrie, M.S. Dryer, M. Haspelmath & D. Gil (eds) *World Atlas of Language Structures*. Oxford: Oxford University Press, 66–69.
- Goedemans, R.W.N., H.G. van der Hulst & E.A.M. Visch (1996a) StressTyp: A database for word prosodic systems. *Glott International* 2, 21–23.
- Goedemans, R.W.N., H.G. van der Hulst & E.A.M. Visch (1996b) The organisation of StressTyp. In R. Goedemans, H. van der Hulst & E. Visch (eds) *Stress patterns of the world, part 1: background*. HIL Publications 2. Leiden: Holland Institute of Linguistics/The Hague: Holland Academic Graphics, 27–68.
- Rahyono, F.X. (2003) *Intonasi ragam bahasa jawa keraton Yogyakarta: kontras deklarativitas, interogativitas, dan imperativitas [Intonation of the Javanese language variety of the Yogyakarta Palace: Contrast of declarativity, interrogativity, and imperativity]*, PhD dissertation, Universitas Indonesia.
- Remijsen, B. (2001) *Word-prosodic systems of Raja Ampat languages*. LOT Dissertation Series 49. Utrecht: LOT.
- Roosman, L.M. (2006) *Phonetic experiments on the word and sentence prosody of Betawi Malay and Toba Batak*. LOT Dissertation Series 129. Utrecht: LOT.
- Stoel, R.B. (2005) *Focus in Manado Malay: Grammar, particles, and intonation*. Leiden: CNWS Publications.
- Sugiyono (2003) *Kajian psikoakustik terhadap frekuensi fundamental pada kontras deklarativitas dan interogativitas [Psychoacoustic background of the role of fundamental frequency in the contrast between statement and question intonation]*. PhD dissertation, Universitas Indonesia.

