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 groningen

# ANNUAL REPORT 2014

## Center for Language and Cognition Groningen



## Foreword

On behalf of the Center for Language and Cognition Groningen (CLCG), we are pleased to present the 2014 Annual Report. The CLCG is a research institute within the Faculty of Arts of the University of Groningen. It is home to all the linguistic research carried out within this faculty. The CLCG continued its research into 2014 and this report summarizes the institute's activities during the year.

This year's annual report comes in a new format – the annual report brochure! Aside from being an informative medium, this annual report brochure presents a brief overview about the background of the CLCG and highlights some of the research activities and performances of its staff members in 2014 showing that we are keeping the CLCG an exciting and stimulating place to work.

A substantial appendix, including a full list of publications of all CLCG staff members in 2014, their lectures and other academic and professional activities, may be found on the institute's website, <http://www.rug.nl/research/clcg/> (see the section on “Annual Reports”).

Petra Hendriks



*Prof. Petra Hendriks, Director CLCG*

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## 1 ABOUT CLCG

### Mission

The Center for Language and Cognition Groningen (CLCG)'s mission is to conduct and support high-quality linguistic research and disseminate the results of this research to the international scientific community and to society at large.

Research in CLCG focuses on the dynamics of language. From a variety of monodisciplinary and multidisciplinary perspectives, CLCG studies computational processing of language, neurolinguistic processing and language development, processes in discourse and communication, and variation and change in linguistic structure and meaning. The aim is to uncover the processes that underlie the use of language in individuals and society.

CLCG recognizes special responsibilities in the following areas:

- CLCG fosters interdisciplinary approaches to the study of language. The contribution of CLCG to the cognitive neurosciences is reflected in the affiliation of several CLCG members with the Research School of Behavioural and Cognitive Neurosciences (BCN). CLCG also actively contributes to the interdisciplinary strategic focus area Healthy Ageing of the University of Groningen through its research on typical and atypical language development and health communication.
- Linguistic research in CLCG works hand in hand with the instructional

needs of the faculty, e.g., in the languages spoken in modern Europe.

- CLCG has a special responsibility for the Dutch languages and dialects, especially those spoken in the northern Netherlands (Dutch, Frisian and Lower Saxon, including Grunnings).

### Research integrity & governance

The quality of research conducted at the University of Groningen is assessed against the highest international standards. In addition, the University complies with the behavioural rules drawn up by the Association of Universities in the Netherlands (VSNU: Vereniging van Universiteiten), which can be found in the Dutch Code of Conduct for Scientific Practice. Important values in this code of conduct include care, reliability, verifiability and independence. The University of Groningen also has its own regulations for the protection of academic integrity, describing which actions must be taken in the event that academic norms are violated.

#### *Shared responsibility*

All those involved in teaching and research at the University of Groningen are jointly responsible for preventing and identifying academic misbehaviour. Upon being appointed, researchers declare that they are familiar with the Dutch Code of Conduct for Academic Practice and will obey it. In 2014 the Faculty of Arts issued, in cooperation with the directors of the three research institutes, a protocol regarding research integrity. Research integrity is now a regular part of the assessment interviews with PhD's especially in the first year progress assessment interview.

## Organisation of the institute

### Director

Prof. P. Hendriks

The CLCG consists of four Research Groups, organized by subdiscipline:

- Computational Linguistics
- Discourse and Communication
- Neurolinguistics and Language Development
- Theoretical and Empirical Linguistics

### Coordinators of the Research Groups

Prof. G.J. van Noord (Computational Linguistics)

Prof. J.C.J. Hoeks (Discourse and Communication)

Prof. Y.R.M. Bastiaanse (Neurolinguistics and Language Development)

Dr. M. de Vries (Theoretical and Empirical Linguistics)

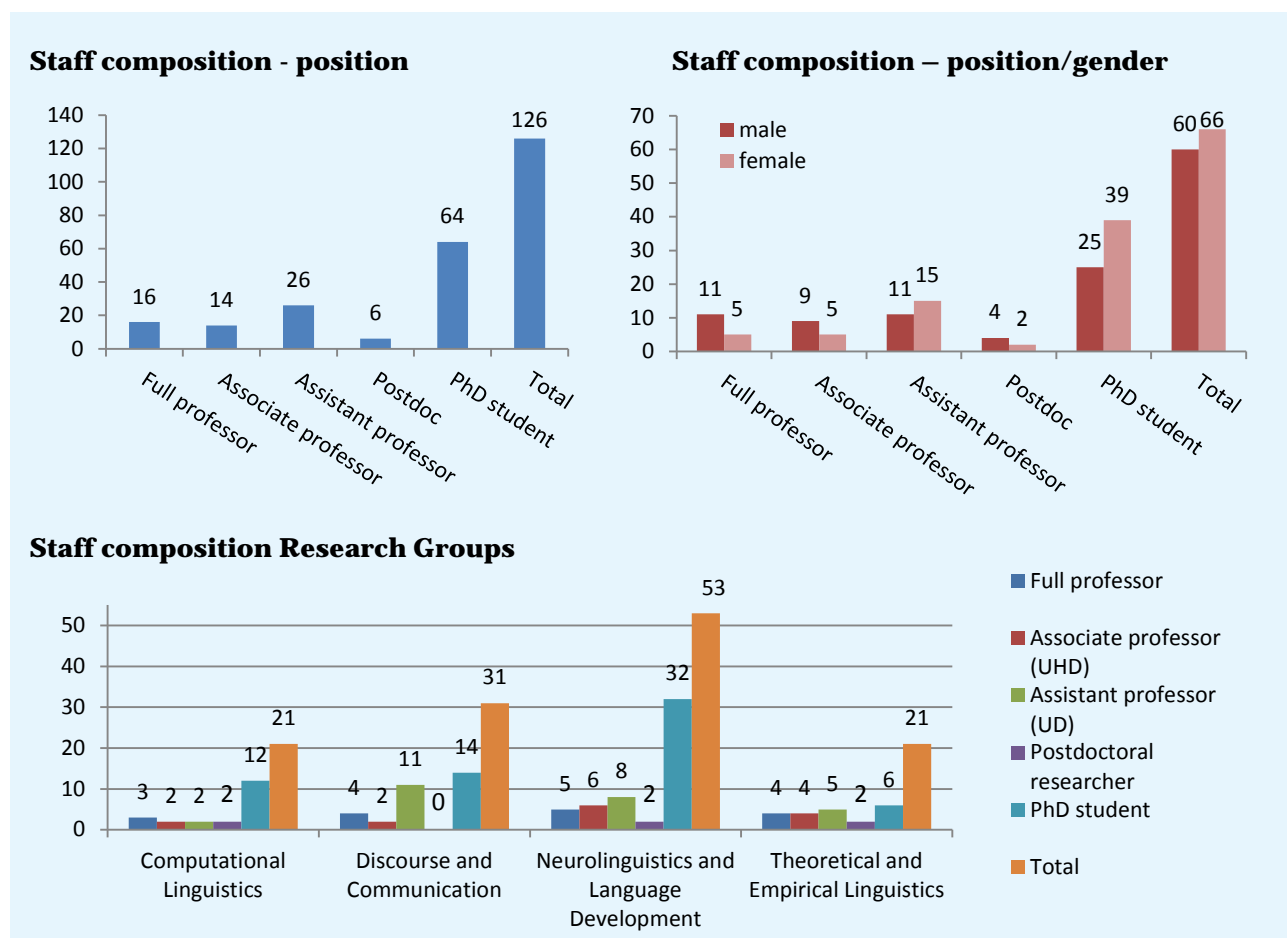
### Advisory Board

Prof. Roelien Bastiaanse, Prof. Johan Bos, Prof. Kees de Bot, Prof. Kees de Glopper (chair), Prof. Jack Hoeksema, Prof. John Hoeks, Prof. Carel Jansen, Dr. Bob de Jonge, Prof. Tom Koole, Dr. Wander Lowie, Prof. Ben Maassen, Prof. John Nerbonne, Prof. Gertjan van Noord, Prof. Gisela Redeker, Prof. Siemon Reker, Dr. Laurie Stowe, Dr. Mark de Vries, Prof. Gerry Wakker, Prof. Jan-Wouter Zwart

### Staff

A complete list of research staff members can be found in the online version of this report

(<http://www.rug.nl/research/clcg/>). CLCG welcomed Eva Juarros Daussà, Malvina Nissim, and Gregory Mills as new staff members in 2014.



## PhD programme

Within the RUG, CLCG participates in the Graduate school for Humanities (GSH). Formally the GSH is responsible for recruiting and selecting graduate students, for assigning them to supervisors, and for monitoring their progress toward the PhD degree. Nevertheless, CLCG members are involved in all of these processes. The director of the CLCG carries out the first year assessment interviews on behalf of the GSH.

CLCG is also affiliated with various research schools. Many CLCG PhD students participate in Groningen's Research School of Behavioral and Cognitive Neurosciences (BCN), a local interdisciplinary research school that brings together research from five different faculties of the University of

Groningen. Likewise, many of the CLCG PhD students choose to participate in the national graduate school in linguistics, LOT (Landelijke Onderzoeksschool Taalwetenschap). One of the major tasks of BCN and LOT is offering training courses to PhD students. Various PhD students attend courses that are organized by BCN and LOT, while some senior CLCG researchers teach such courses.

We hope to continue to serve as an excellent training center for students interested in research careers. In 2014, two PhD projects were defended. A list of CLCG PhD students, together with the source of funding for their project and the title of their project can be found on the CLCG website.

## Externally funded projects/ grants

Sixteen ongoing externally funded projects continued, five projects were completed, and five projects were initiated in 2014:

Title	Grant	Period
• Asymmetries in grammar (Petra Hendriks)	NWO-VICI	2007-2014
• Modeling textual organization: coherence and cohesion (Gisela Redeker, Markus Egg)	NWO-Open Competition	2007-2014
• Linguistic, sociolinguistic, social and sociodemographic factors of bilingual development among migrants (Kees de Bot)	NWO	2007-2015
• Crossing communication borders: first language reversion in healthy, aging Dutch migrants in Australia (Merel Keijzer)	NWO-VENI	2010-2015
• The Conversation Frame: Linguistic Forms and Communicative Functions in Discourse (Esther Pascual)	NWO-VIDI	2010-2015
• How teeth can brush a child: A neurocomputational account of the Semantic Illusion in language comprehension (John Hoeks, John Nerbonne)	NWO-DG	2010-2015
• The age effect in bilingual development (Monika Schmid)	NWO-VICI	2010-2016
• INCPAR (Incomplete Parenthesis) (Mark de Vries)	ERC-Starting Grant	2010-2016
• Developmental project (DEVO #1): Experimenting with mixed modes of data collection (Yfke Ongena)	NWO-MaGW	2010-2016
• Putting things together: how entities are grouped in natural language interpretation (Jakub Dotlacil)	NWO-VENI	2011-2014
• International adoption and language development. a perspective from Kindertransport survivors development (Monika Schmid)	NWO-Open Competition	2011-2015

• Language use in real time: the dynamics of lexical knowledge in L1 and L2 (Kees de Bot)	NWO-DG	2011-2015
• Neurolinguistic profiles of developmental dyslexia in a longitudinal perspective (Ben Maassen)	NWO-Open Competition	2011-2016
• IDEALAB International Doctorate in Experimental Approaches to Language and Brain	EU-EACEA	2011-2019
• Klinische implementatie van procesdiagnostiek en indicatiestelling van complexe, senso-motorische spraakstoornissen bij kinderen (Ben Maassen)	Revalidatie-fonds	2012-2014
• Mutual intelligibility of closely related languages in Europe (Charlotte Gooskens)	NWO-Open Competition	2011-2016
• IROHLA “Intervention Research On Health Literacy among Ageing population” (Carel Jansen en John Hoeks)	EU FP7	2012-2016
• Lassy Search interface (Gertjan van Noord)	Clarin	2013-2014
• Literate: Early identification and prevention of reading problems in alphabetic and semanto-phonetic writing environments (Ben Maassen)	Marie Curie EU (IRSES)	2013-2017
• Improving speech learning models and English pronunciation with articulography (Martijn Wieling)	NWO-VENI	2013-2017
• QT Leap (Gertjan van Noord)	EU FP7-ICT	2013-2017
• Effectiveness of explicit vs. implicit L2 instruction (Kees de Bot)	NWO-DG	2013-2018
• PaQu (Gertjan van Noord)	Clarin	2014
• A Crosslinguistic Perspective on Children's Acquisition of Grammar Meaning Interface (Angeliek van Hout)	Van Gogh Program	2014-2016
• Grasping Meaning across Languages and Learners (GraMALL) (Angelique van Hout)	NWO- Int. in the Hum.	2014-2017
• Frontiers of Language Variety (John Nerbonne)	NWO- Int. in the Hum.	2014-2017
• Parsing Algorithms for Uncertain Input (Gertjan van Noord)	Nuance Foundation	2014-2018

## CLCG Research output – overview

CLCG research output 2014	
Journal article	69
Book chapter	22
Conference proceeding	21
Book	3
Non-refereed publication	8
Review	4
Edited journal	1
Edited book	5
Doctoral thesis	2
Professional publication	12
Popular publication	15
<b>Total</b>	<b>162</b>

## 2 Research within CLCG

### Computational Linguistics

#### Staff Members

Gertjan van Noord (coordinator), Johan Bos, Leonie Bosveld-de Smet, Gosse Bouma, Çağrı Çöltekin, Charlotte Gooskens, Gregory Mills, John Nerbonne, Malvina Nissim

#### Associated Members

Vincent van Heuven (Leiden University)

#### Postdocs

Wilbert Heeringa, Anja Schüppert, Martijn Wieling

#### PhD Candidates

Valerio Basile, Johannes Bjerva, Harm Brouwer, Kilian Evang, Jelena Golubovic, Rob van der Goot, Dieke Oele, Oscar Strik, Simon Šuster, Femke Swarte, Noortje Venhuizen, Stefanie Voigt

### Goals of the research group

The computational linguistics group focuses on language processing by computer, both from a theoretical, experimental and applied perspective. Important research areas include computational dialectology, computational syntax and semantics, and language technology applied to Dutch. In the last decade, research in computational dialectology has been an important focus of the group, with NWO-funded research projects of John Nerbonne, Wilbert Heeringa, Charlotte Gooskens and most recently Martijn Wieling (Veni project). Gabmap, software developed by this group, now has over twenty active users world-wide.

Research in computational syntax has been a further important focus, with NWO-funded research projects of van Noord and Bouma, several NWO Stevin projects and a number of smaller scale

Clarín projects. As a result, tools (parser and generator) and resources (annotated treebanks) have been developed for Dutch which are widely used by researchers around the globe.

### Highlights 2014

On Friday 25 April 2014, John Nerbonne (photo) received a Royal Decoration. Nerbonne has been appointed Knight of the Order of the Netherlands Lion for his



scientific achievements as a leading interdisciplinary researcher combining computational linguistics with dialectology in a unique and innovative way – so much so that his approach is now known as the Groningen School. He has been the head of the Alfa-informatica department and turned the Groningen Computational Linguistics research group into one of the strongest in Europe. In addition, he was the Director of the Center for Language and Cognition Groningen (CLCG) of the University of Groningen for no less than thirteen years, with five years being the standard.

Endowed chair Johan Bos focuses on research in computational semantics. The Groningen Meaning Bank, a large English corpus annotated with formal meaning representations, is a first concrete result. In 2014, an NWO Vici grant has been prepared to strengthen this development, extending the research to languages other than English.

A further highlight of 2014 was the Methods in Dialectology conference, in Groningen, August 11-15. John Nerbonne

was overall chair, Charlotte Gooskens chaired local arrangements, and Martijn Wieling was webmaster. The conference had 225 participants from over 15 different countries. The program included plenaries *inter alia* by Jacob Eisenstein and Mark Liberman, both of whom focused on computational advances and opportunities.

### **Improving speech learning models**

Martijn Wieling continued his NWO-funded Veni project "Improving speech learning models and English pronunciation using articulography" which started in 2013. One can clearly distinguish the pronunciation of a non-native speaker, but how the movements of the tongue and lips of the non-native speaker differ from those of a native speaker is unclear. Wieling measures how people use their tongue and lips when pronouncing certain words by tracking the movements of sensors attached to the articulators. Wieling has (co-)authored seven peer-reviewed scientific publications. In addition, he gave three invited lectures (in Nijmegen, Groningen and Ghent) and two invited two-day statistics courses (at Leiden University and the University of Oldenburg).



### **Parsing uncertain input, machine translation & web based search interface**

In 2014, van Noord's project funded by Nuance Foundation on parsing uncertain input was started (PhD: Rob van der Goot).

QTLeap (Quality Translation by Deep Language Engineering Approaches) is an EU-funded project (7th framework programme) on machine translation, where Groningen (van Noord) co-operates with several universities (Lisbon, Prague, Sofia, Berlin, San Sebastian), DFKI Berlin, and Higher Functions (a Lisbon based company). Dieke Oele works as a PhD for this project.

Van Noord received funding from Clarin to develop PaQu: a web-based search interface to syntactically annotated corpora.

Gosse Bouma, Valerio Basile, Ashwin Ittoo, Elisabeth Métais and Hans Wortmann were guest editors for a special issue of *Data and Knowledge Engineering*, dedicated to results of a workshop at the 17<sup>th</sup> International conference on Applications of Natural Language Processing to Information Systems organized (NLDB) in 2012 in Groningen.

### **PhD defenses**

Three dissertations with a link to the computational linguistics group were defended successfully in 2014.

Brouwer *cum laude* defended his PhD-thesis on neuro-computational modelling of language comprehension supervised by John Hoeks (Discourse & Communication), and John Nerbonne (second promotor, Computational Linguistics). Ken Decker received his



PhD on designing and promoting Creole writing systems (supervised by John Nerbonne). Nerbonne was also promotor of the PhD thesis of Jacky Benavides (not in CLCG, but in ICOG).

### Other activities

- John Nerbonne founded an open access book series *Language Variation* with Language Science Press (<http://langsci-press.org/catalog/series/lv>).
- John Nerbonne visited Freiburg during the second half of 2014 as part of an NWO internationalization grant with Freiburg and Leuven.
- John Nerbonne delivered the opening, plenary keynote to 320 conference participants at the first *Digital Humanities im deutschsprachigen Raum* in Passau in March.
- Gertjan van Noord was the president of the Association for Computational Linguistics (ACL). In this capacity, he gave a "presidential address" at the opening of the ACL Annual Meeting (about 1400 participants), June 23, Baltimore. In December, he was keynote speaker at the TLT13 conference in Tübingen.
- Johan Bos was keynote speaker at POLTAL-2014 and CNL 2014. He was also general chair of SEM-2014 and President of SIGSEM (ACL special interest group).
- Three group members received grants: Bos for the project 'Lost in Translation- Found in meaning' (NWO), Van Noord for 'Parsing Algorithms' (Nuance Foundation), Nerbonne for 'Frontiers of Language Variety' (NWO).

### Key publications - Computational Linguistics

**Bouma, G. & Nerbonne, J.** (2014).

Applying the Espresso Algorithm to large parsed corpora. In: J. Hoeksema and D. Gilbers (eds.), *Black Book: A Festschrift in honor of Frans Zwarts*, University of Groningen.

**Strik, O.** (2014). 'Explaining tense

marking changes in Swedish verbs: An application of two analogical computer models'. *Journal of Historical Linguistics*, 4(2), 192-231.

**Süster, S. & van Noord, G.** (2014).

'From neighbourhood to parenthood: the advantages of dependency representation over bigrams in Brown clustering'. *Proceedings of COLING*. Calzolari, N. & al, E. (eds.). Reykjavik, 1382-1391.

**Venhuizen, N., Bos, J., Hendriks, P., & Brouwer, H.** (2014). How and Why

Conventional Implicatures Project. *Proceedings of Semantics and Linguistic Theory (SALT)*, 24, 63-83, New York.

**Wieling, M., Montemagni, M., Nerbonne, J., & Baayen, R.H.** (2014).

Lexical Differences between Tuscan Dialects and Standard Italian: A Sociolinguistic Analysis using Generalized Additive Mixed Modeling. *Language*, 90(3), 669-692.

## Highlighted publication - Computational Linguistics

**Wieling, M., Montemagni, M., Nerbonne, J., & Baayen, R.H.** (2014). Lexical Differences between Tuscan Dialects and Standard Italian: A Sociolinguistic Analysis using Generalized Additive Mixed Modeling. *Language*, 90(3), 669-692.

This study uses a generalized additive mixed-effects regression model to predict lexical differences in Tuscan dialects with respect to standard Italian. We used lexical information for 170 concepts used by 2,060 speakers in 213 locations in Tuscany. In our model, geographical position was found to be an important predictor, with locations more distant from Florence having lexical forms more likely to differ from standard Italian. In addition, the geographical pattern varied significantly for low- versus high-frequency concepts and older versus younger speakers. Younger speakers generally used variants more likely to match the standard language. Several other factors emerged as significant. Male speakers as well as farmers were more likely to use lexical forms different from standard Italian. In contrast, higher-educated speakers used lexical forms more likely to match the standard. The model also indicates that lexical variants used in smaller communities are more likely to differ from standard Italian. The impact of community size, however, varied from concept to concept. For a majority of concepts, lexical variants used in smaller communities are more likely to differ from the standard Italian form. For a minority of concepts, however, lexical variants used in larger communities are more likely to differ from standard Italian. Similarly, the effect of the other community- and speaker-related predictors varied per concept. These results clearly show that the model succeeds in teasing apart different forces influencing the dialect landscape and helps us to shed light on the complex interaction between the standard Italian language and the Tuscan dialectal varieties.

## Discourse and Communication

### Staff Members

John Hoeks (coordinator), Veerle Baaijen, Marcel Bax, Titus Ensink, Kees de Glopper, Myrte Gosen, Mike Huiskes, Carel Jansen, Tom Koole, Femke Kramer, Jacqueline van Kruiningen, Harrie Mazeland, Yfke Ongena, Esther Pascual Olivé, Gisela Redeker, Ielka van der Sluis, Ninke Stukker

### PhD Candidates

Lennie Donné, Agnes Engbersen (external), Christina Englert, Rimke Groenewold, Marieke Haan, Anke Herder (external), Frans Hiddink (external), Michelle Knight (external), Ruth Koops van 't Jagt, Joëlle Ooms, Nynke van der Schaaf (external), Ellen Schep (external), Lucas Seuren, Kashmiri Stec, Albert Walsweer (external), Louise van Weerden (external), Lambert Zaad (external)

## Goals of the research group

The Discourse and Communication group conducts quantitative and qualitative research on language and communication. Our research addresses a variety of themes within the broad field of communication research. Object of study are communication processes in general, but also more specifically the design and optimization of communication products, the persuasive effects of these communication products, the development of communication skills, and the way these skills are taught in primary and secondary education and trained in the workplace. Communication is investigated primarily in professional settings such as health care (persuasive health campaigns; doctor-patient conversations), and education (teacher-

student interaction), but also in public and private organisations (persuasive effects of advertisements; interaction and conversation during meetings; campaigns on sustainability). Our research program is closely linked to the University of Groningen research focus areas Healthy Ageing and Sustainable Society.

## Highlights 2014

### PhD defense

A major highlight in 2014 was the *cum laude*

PhD thesis of Harm Brouwer (photo) on ERP interpretation and computational



modeling. He was supervised by John Hoeks (Discourse and Communication) and John Nerbonne (second promotor, Computational Linguistics).

### Communication in health care settings

The group maintained a strong focus on communication in health care settings: Jansen co-authored papers on the use of rhetorical figures in HIV/AIDS messages, on cultural aspects of fear appeals, on the use of 'photonovelas' to reach low literate audiences, and on health literacy of older adults. Groenewold and Huiskes published papers on speech comprehension in individuals with aphasia. Koole co-authored a paper on medical decision-making and investigated whether conversation analysis could be used to improve the communication of an individual with ALS.

### Communication in Educational setting

In the educational setting, Baaijen and colleagues published on writing performance and Glopper and colleagues on the role of context in writing research. Koole (together with Elbers) published an article on the concept of 'responsiveness' as an interactional phenomenon based on an analysis of dyadic teacher–student interactions in Dutch 1st grade secondary school mathematics classes.

### General aspects of communication

Regarding general aspects of communication, Hoeks and Brouwer wrote a chapter on conversation processing in the brain. Stec and Huiskes published papers on multimodal communication, and Stec on gestures. Stukker wrote about directness in direct mailing letters. Haan and Ongena wrote about hard-to-survey populations. Pascual published a book on fictive interaction. Redeker co-edited a book on discourse coherence and co-authored a paper on signalling discourse relations.

### Inaugural lecture

In 2014, Tom Koole (photo) held his inaugural lecture 'The interaction tool' as professor of Communication- and information Sciences, in particular professor in Language and Social interaction.



### Key publications - Discourse & Communication

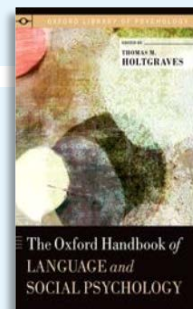
**Baaijen, V. M., Galbraith, D., & de Glopper, C. (2014).** Effects of writing beliefs and planning on writing performance. *Learning and Instruction, 33*, 81-91.

**Duizer, E., Koops van 't Jagt, R., & Jansen, C. (2014).** Zoete verleiding: Een onderzoek naar de effecten van een fotoverhaal over diabetes bij laaggeletterden. *Tijdschrift voor Taalbeheersing, 36(3)*, 293-330.

**Koole, T. & Mak, P. (2014).** Using Conversation Analysis to Improve an Augmented Communication Tool. *Research on Language and Social Interaction, 47(3)*, 280-291.

**Stec, K. & Huiskes, M. (2014).** Co-constructing referential space in multimodal narratives. *Cognitive Semiotics, 7(1)*, 31-59.

**Hoeks, J. & Brouwer, H. (2014).** Electrophysiological research on conversation and discourse processing. In: Holtgraves, T. (ed.), *Handbook of Language and Social Cognition*. Oxford University Press, pp. 365-386.

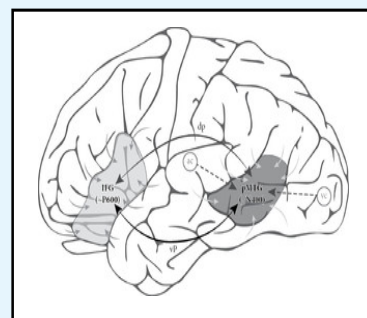


### Highlighted Publication Discourse & Communication

**Hoeks, J. & Brouwer, H. (2014).** Electrophysiological research on conversation and discourse processing. In: Holtgraves, T. (ed.), *Handbook of Language and Social Cognition*. Oxford University Press, pp. 365-386.

Research into the electrophysiology of language comprehension has essentially been “speakerless”. This has left three vital aspects of communication- it is social, pragmatic, and dynamic – severely underresearched. This chapter makes a case for the investigation of language users involved in active conversation and describes the problems and possibilities that accompany this choice of subject. It gives an overview of what currently is known about how the social, pragmatic, and dynamic puzzles of communication are resolved by the brain, and it describes the well-filled toolbox of language-related event-related brain potential (ERP) components (e.g. Nref, N400, P600) that are at our disposal.

*Figure:* Schematic overview of a typical retrieval-integration cycle in the left hemisphere. Depending on whether the linguistic input is spoken or written, an incoming word reaches the left posterior middle temporal gyrus (pMTG) via either the auditory cortex (ac) or the visual cortex (vc), respectively. The pMTG then retrieves the lexical information associated with a word from the association cortices, which generates the N400 component. Via the dorsal pathway (dp) or the ventral pathway (vp), the retrieved information is connected to the left inferior frontal gyrus (IFG), where it is integrated with its prior context (the prior mental representation of what is being communicated; MRC) into an updated representation of what is being communicated (an updated MRC). This integrative processing generates the P600 component. Finally, the updated MRC is connected back to the pMTG via one of the pathways, providing a context for upcoming words, upon which a new retrieval-integration cycle may start.



## Neurolinguistics and Language Development

### Staff Members

Roelien Bastiaanse (coordinator), Wander Lowie, Gerard Bol, Kees de Bot, Hilde Hacquebord, Petra Hendriks, Bart Hollebrandse, Angeliëk van Hout, Roel Jonkers, Merel Keijzer, Hanneke Loerts, Ben Maassen, Djaina Satoer, Monika Schmid, Laurie Stowe, Wim Tops, Marjolijn Verspoor

### Associated Members:

Ken Drozd (University of Applied Sciences, Hanzehogeschool Groningen)

### Postdocs:

Sylvia Martinez-Ferreiro, Simone Sprenger, Rasmus Steinkraus

### PhD Candidates:

Miren Arantzeta Pérez\*, Seckin Arslan\*, Sanne Berends, Christopher Bergmann, Elisabeth Borleffs (external), Laura Bos\*, HuiPing (Belinda) Chan (external), Toivo Glatz, Mirjam Günther-van der Meij, Sana Haidry\*, Nienke van der Hoeven-Houtzager, Jakolien den Hollander, JunPing Hou (external), Joost Hurkmans (external), Mufeeda Irshad (external), Fedor Jalvingh (external), Bernard Jap\*, Yinxing (Ivan) Jin (external), Folkert de Jong (external), Stefanie Keulen, Kirsten Kolstrup, Sanne Kuijper, Conny Lahmann, Aleyda Linares Calix, Camila Martinez Rebolledo (external), Nienke Meulman, Ruggero Montalto, Jessica Overweg, Rika Plat, Srdjan Popov\*, Rui Qin\*, Audrey Rouse-Malpat, Bregtje Seton, Ellie van Setten-Huizinga, He (Sabrina) Sun (external), Corinne Tilma (external), Eabele Tjepkema (external), Margreet Vogelzang, Sri Wachyunni (external), Jinxing Yue\*

\*PhD candidates IDEALAB (<http://em-idealab.com/>)

### **Goals of the research group**

The Neurolinguistics and Language Development research group is a strongly interdisciplinary group that investigates the organization of language in the brain, the way language is processed and how languages are learned.

These topics are researched through the study of aphasia, developmental disorders and typical first and second language development, as well as through experimental approaches to language processing, language learning and language attrition. Language disorders and aphasia are studied through the comprehension and production of various aspects of verbs (in impaired language acquisition and in aphasia), phonological processing (in aphasia and dyslexia), print decoding (in dyslexia), speech disorders (in children and adults), sentence processing (in non-brain-damaged and aphasic speakers) and ambiguity resolution (in normal speakers and schizophrenic patients). To investigate these, a wide variety of methods is employed, ranging from spontaneous speech analysis and response time experiments to EEG and functional Magnetic Resonance Imaging techniques.

The group's research on language development includes the acquisition, maintenance and loss of a first, second, or foreign language. Social processes as well as cognitive processes are investigated regarding language use and language development through (i) first language acquisition, (ii) bilingualism, (iii) the development of bilingual education in the Netherlands, and (iv) language attrition. Within these domains, several members focus on the interface between interactive or socio-cultural and usage-based cognitive processes, whereas others operate from a theory-driven perspective. In the domain of first language acquisition there is a focus on the acquisition of semantics and pragmatics.

## Highlights 2014

### NWO grant for international research

Angeliek van Hout was awarded an NWO grant for international research on language development among children. In collaboration with teams from eight different universities, Van Hout will carry out research on the way children learn sentence meaning in different languages. The nine cooperating teams come from the universities of Groningen, Cambridge, Greenwich, Nantes, Milano-Bicocca, Nova de Lisboa, Autònoma Barcelona, Pompeu Fabra (Barcelona) and the Zentrum für Allgemeine Sprachwissenschaft (Berlin). In total 19 senior researchers will participate in the project to find an answer to the question 'How do children learn sentence meaning?' The team plans to prepare a European research proposal to do more research on aspects of sentence meaning in different child languages, to see how the wide variation across languages determines the acquisition process.

### Book publication

Petra Hendriks published a monograph on asymmetries between language production and comprehension that presents the final results of her NWO Vici project "Asymmetries in grammar".

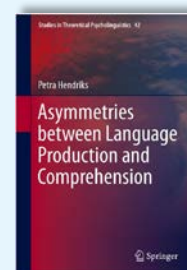
### Other activities

- In October, Van Hout organized a 2-day kick-off meeting of the project 'Grasping Meaning across Languages and Learners' (GraMALL) at the University of Groningen.
- The NWO Vici project "Asymmetries in Grammar" was successfully completed.
- Group members organized the EUROCALL Conference in Groningen under the theme CALL Design: Principles and practice.
- Jonkers was session chair at the 15<sup>th</sup> International Conference of the Clinical Linguistics and Phonetics Association, Stockholm, Sweden.
- Keijzer was organizer of the 'Georgetown University Round Table of Languages, and Linguistics', Washington D.C., US.

### Highlighted publication - Neurolinguistics and Language Development

**Hendriks, P.** (2014). *Asymmetries between language production and comprehension*. Studies in Theoretical Psycholinguistics, Vol.42. Springer, Dordrecht.

This book asserts that language is a signaling system rather than a code, based in part on such research as the finding that 5-year-old English and Dutch children use pronouns correctly in their own utterances, but often fail to interpret these forms correctly when used by someone else. Emphasizing the unique and sometimes competing demands of listener and speaker, the author examines resulting asymmetries between production and comprehension. The text offers examples of the interpretation of word order and pronouns by listeners, and word order freezing and referential choice by speakers. It is explored why the usual symmetry breaks down in children but also sometimes in adults. Gathering contemporary insights from theoretical linguistic research, psycholinguistic studies and computational modeling, *Asymmetries between Language Production and Comprehension* presents a unified explanation of this phenomenon.



## Key publications - Neurolinguistics and Language Development

**Meulman, N., Stowe, L. A., Sprenger, S. A., Bresser, M. & Schmid, M. S.** (2014). An ERP study on L2 syntax processing: When do learners fail? *Frontiers in Psychology*, 5, 1-17.

**Bos, L. S., Dragoy, O., Avrutin, S., Iskra, E. & Bastiaanse, R.** (2014). 'Understanding discourse-linked elements in aphasia: A threefold study in Russian'. *Neuropsychologia*, 57, 20-28.

**Hendriks, P.** (2014). *Asymmetries between language production and comprehension*. Studies in Theoretical Psycholinguistics, Vol.42. Springer, Dordrecht.

**Lowie, W., Plat, H. & de Bot, K.** (2014). Pink Noise in Language Production: A Nonlinear Approach to the Multilingual Lexicon. *Ecological Psychology*, 26(3), 216-228.

**Terband, H., Maassen, B., Guenther, F. H. & Brumberg, J.** (2014). Auditory-motor interactions in pediatric motor speech disorders: Neurocomputational modeling of disordered development. *Journal of Communication Disorders*, 47, 17-33.

## Theoretical and Empirical Linguistics

### Staff Members:

Mark de Vries (coordinator), Evert van Emde Boas, Dicky Gilbers, Nanna Hilton, Jack Hoeksema, Peter Houtzagers, Bob de Jonge, Eva Juarros Daussà, Wolfgang Kehrein, Remco Knooihuizen, Siemon Reker, Willem Visser, Gerry Wakker, Jan-Wouter Zwart

### Postdocs:

Jakub Dotlacil (Veni), Marlies Kluck, Anja Schüppert, Craig Turnbull-Sailor

### PhD Candidates:

Bernat Bardagil-Mas, Freerk Berghuis (external), Güliz Güneş, James Griffiths, Amber Nota, Sander Orriens, Remco van Pareren, Pavel Rudnev, Leanne Schreurs (external)

## Goals of the research group

The research group Theoretical and Empirical Linguistics studies the syntax, semantics, morphology, phonology, and phonetics of a variety of languages with a view to enrich our empirical knowledge as well as our theoretical understanding

of the nature of the human language faculty.

A core characteristic of this research is in-depth cross-linguistic comparison, both synchronically and diachronically. The group aims to contribute to the abstract formalization of the properties of language. In addition, the group is interested in sociolinguistic aspects of language variation. Working from hypothetic-deductive methods next to bottom-up strategies, the boundaries between fundamental principles, generalizations, and parametric variation and change are investigated. Specific fields of investigation include: the syntax and semantics of complex construction types (parentheses, dislocation, coordination, relative clauses), the foundations of syntactic structure and the role of the interfaces with the sound and meaning components of the grammar, ellipsis phenomena, information structure, polarity items, morphosyntactic dependencies and

typological variation, Dutch corpus linguistics, phonology as human behaviour, musical aspects of phonology, tonal accents and prosody.

A strength of the research group is the combination of a theoretical orientation with the empirical study of language data from a variety of families, including West and North Germanic, Romance, Slavic, and outside of the Indo-Germanic group, Turkish, Avar and Je in particular.

### Highlights 2014

#### Ellipsis and Parenthesis

Various articles on ellipsis and parenthesis were published in 2014, under the umbrella of the ERC-funded project 'Incomplete Parenthesis'. In addition, an edited volume on this topic was established.

#### PhD research

Four PhD theses were finalized (defenses are all in 2015), on the following subjects: the syntax and pragmatics of appositional constructions, the history of verbal inflection in Germanic, the syntax-prosody interface and parentheses in Turkish, and long-distance dependencies in the grammar of Avar.

#### Inaugural lecture

In 2014, Jan-Wouter Zwart (see photo) held his inaugural lecture as professor of theoretical linguistics.



### Other activities

- There was collaboration within CLCG with researchers from the Neurolinguistics and Language Development group and the Computational Linguistics group (see the lists of publications on the CLCG website for some results).
- Fieldwork was performed in Brazil.
- Various seminars were organized such as the Syntax Seminar, meetings on Phonetics & Phonology, Language Variation & Change, Grammaticalization, and other subjects.

#### Key publications - Theoretical and Empirical Linguistics

**Güneş, G.** (2014). Constraints on Syntax-Prosody Correspondence: The Case of Clausal and Subclausal Parentheticals in Turkish. *Lingua*, 150, 278-314.

**Heeringa, W., Swarte, F., Schüppert, A. & Gooskens, C.** (2014). Modeling Intelligibility of Written Germanic Languages: Do We Need to Distinguish Between Orthographic Stem and Affix Variation? *Journal of Germanic Linguistics*, 26(4), 361-394.

**Hoeksema, J.** (2014). The Middle Dutch negative clitic: Status, position and disappearance. *Lingua*, 147, 50-68.

**Kluck, M., de Vries, M. & Ott, D.** (eds.) (2014). *Parenthesis and Ellipsis: Cross-linguistic and Theoretical Perspectives*. Berlin: Mouton De Gruyter. (Studies in Generative Grammar; vol. 121).

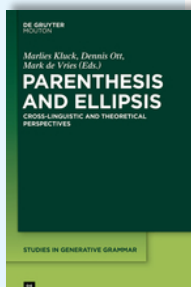
**Ott, D.** (2014). An ellipsis approach to Contrastive Left-dislocation. *Linguistic Inquiry*, 45(2), 269-303.



### Highlighted publication - Theoretical and Empirical Linguistics

**Kluck, M., Ott, D., & de Vries, M.** (eds.) (2014). *Cross-linguistic and Theoretical Perspectives*. Berlin: De Gruyter/Mouton.

This volume presents a cross-section of research addressing the Interaction of two prominent areas in linguistic theory: parenthesis and ellipsis. The contributions address various theoretical questions raised by 'incomplete' Parenthetical constituents, covering a diverse empirical domain and various subfields of linguistics.



## 3 CLCG IN SOCIETY

The societal relevance of the research groups' work is evident from commissioned research, applied research activities, and media attention for several publications. CLCG members have also effectively engaged with audiences through public lectures and debates, professional and popular publications, and non-traditional media such as blogs and websites.

### Computational Linguistics

#### 'Straight to the point'

In 2014, Gosse Bouma, in cooperation with Bert Alkemade Creatieve Interactie, started the NWO-KIEM project 'Direct ter Zake' ('Straight to the point') on information extraction from policy documents on social welfare, housing, mobility, and health professionals.

Information extraction can help to control information streams by making connections between people, organisations and events. The result will be used in automated question-answer systems for the construction of ontologies and for the visualisation of information.

KIEM enables consortia (consisting of at least one researcher employed at a Dutch university and at least one private partner) to develop sustainable partnerships.

### Key activities & publications with societal impact - Computational Linguistics

[Interview]

**Martijn Wieling.** Invited guest at the talkshow *Stand van Stad*, September 28, 2014, [https://www.youtube.com/watch?v=ztwO42\\_oYQ4](https://www.youtube.com/watch?v=ztwO42_oYQ4).

[Press release]

**Martijn Wieling:**

- "New linguistic tools can predict your dialect characteristics", LSA, September 24, 2014.
- "To um or to er? Studies probe how brains fill the speech-thought gap", *The Times*, October 4, 2014, <http://www.thetimes.co.uk/tto/news/uk/article4227955.ece>.
- "Um or er: which do you, um, use more in conversation?", *The Guardian*, October 6, 2014. <https://www.theguardian.com/science/shortcuts/2014/oct/06/um-er-conversation-english-speakers-socio-linguistics-edinburgh-university>

[Movie item]

**Martijn Wieling.** "Tong en lippen bepalen uitspraak", *Unifocus*, January 8, 2014. <https://youtu.be/cG1IAjFhOuM>

## Discourse and Communication

### Health Communication

A highly visible area of valorisation for the Discourse and Communication group is in health communication. Research here is not only oriented towards acquiring scientific knowledge, but also to address societal issues. Jansen and Koole collaborate with universities in South Africa: Koole to address health issues such as diagnosis and medical decision making in South African genetic counselling, while Jansen investigated the form and function of HIV/AIDS campaigns.

In addition, Koole looked into the use of conversation analysis to improve the communication of an individual with ALS.

### Talking to your doctor

Jansen, Hoeks, and Koops van 't Jagt are involved in the EU funded IROHLA project, targeting elderly people with low health literacy in Europe, and looking at ways to improve communication with this vulnerable group (e.g., through photonovelas).

The photo story 'Talking to your doctor' (see photo) is developed by PhD student Ruth Koops van 't Jagt and graphic designer Ype Driessen for the IROHLA project, which focuses on health literacy in the ageing population. The photo stories aim to increase older patients' awareness, communicative self-efficacy and intentions with regard to conversations with their GP.

### Emotion in emergency calls



Tom Koole studies the conversations between the 112 emergency services and people reporting an accident, crime or fire. Such phone

conversations need to be conducted efficiently and clearly. Emotion, responses, and effects call-takers in emergency call-centres report that one of their most difficult tasks is to deal with emotional callers since these have problems in collaborating to achieve the goal of the call, the quick and accurate gathering of required information.

Koole and colleagues formulated a number of recommendations and best practices for call-takers in emergency call-centres about how to deal interactionally with emotional callers and with other communication pitfalls that occur in emergency calls. The 112 emergency services have recently adapted their conversation protocol (e.g. the



Page from the photonovela 'Talking to your doctor' © University of Groningen, 2014.

formulation of the opening utterance of the emergency call) based in part on the research Koole has conducted.



Femke Kramer organized a 'Kenniscafé' lecture on this topic where Koole was invited speaker. In 2014, Kramer was discussion leader of four Kenniscafé's

organized by the Studium Generale Groningen.

### Education and training in education skills

Valorization is also prominent in the work dealing with education of and training in communication skills. De Glopper and Van Kruiningen work on the improvement of writing assessment in primary, secondary and higher education.

De Glopper is involved in collaborative work with teacher trainers and curriculum specialists on new assessment practices for reading comprehension in primary schools. Jansen was organiser and chair of the National Writing Contest that awards the best texts in financial communication (e.g. informative texts about pensions, mortgages or insurances).



On a different note, Ongena published a practical handbook on constructing questionnaires for use by both academic and societal organizations.

### Key activities & publications with societal impact - Discourse and Communication

**Dijkstra, W., Ongena, Y. & Loosveldt, G.** (2014). *Onderzoek doen met vragenlijsten: Een praktische handleiding*. Amsterdam: VU University Press.

**Geboers, B., de Winter, A. F., Luten, K. A., Jansen, C. J. M. & Reijneveld, S. A.** (2014). The association of health literacy with physical activity and nutritional behavior in older adults, and its social cognitive mediators. *Journal of Health Communication*, 19(2), 61-76.

**Glopper, K. de & Willemsen, A.** (2014). Kunnen gesloten toetsen bijdragen aan de toetsing van schrijfvaardigheid? *Levende Talen Tijdschrift*, 15(1), 31-38.

**Lubinga, E., Jansen, C. & Maes, A.** (2014). If you care, do not share': Exploring effects of using rhetorical figures in HIV and AIDS messages on young South Africans' willingness to engage in conversations. *South African Journal for Communication Theory and Research*, 40(1), 49-68.

**Wessels, T-M., Koole, T. & Penn, C.** (2014). 'And then you can decide' - antenatal foetal diagnosis decision making in South Africa. *Health expectations: an international journal of public participation in health care and health policy*, 12/2014; 18(6). DOI:10.1111/hex.12322.

## Neurolinguistics and Language Development

### Public lectures

Members of the Neurolinguistics and Language Development research group have actively contributed to dissemination of their research to a wider audience. Petra Hendriks gave two public lectures in the lecture series *RUG topvrouwen* at *Nacht van Kunst en Wetenschap* and two public lectures at the Kopfestival in Deventer.

### Applied research



Commissioned by Nuffic (organization for internalization of education) / European Platform, Kees de Bot, Marjolijn Verspoor

and Wander Lowie were active in the implementation of bilingual education in the Netherlands.

Roelien Bastiaanse has developed an application for an aphasia test on tablet computers to replace tests on paper. Both therapists and patients responded enthusiastically during the trial phase. The tablet-based diagnostic tool for aphasia will be released soon.



### Awards

Bart Hollebrandse received the Drongo award, an academic award for the best popular presentation on language. The award was presented by Rob van Hattum, Director of the Science Center NEMO, the science museum of Amsterdam, and the National Center for Science and Technology at the Drongo Festival in de Public Library of Amsterdam.

The Drongo festival is a yearly organized event about multilingualism: involving theater, lectures, and mini courses for a wide audience of all ages.



Hollebrandse will develop an Ipad-test for children, which tests their knowledge of recursion (Droste effect) in collaboration with Tom Roeper. Children participate in a game to test their recognition of the different meanings of the sentences *the elephant next to the gorilla next to the tiger* and *the elephant next to the gorilla and next to the tiger*. NEMO offers Hollebrandse the opportunity to develop the test. Hollebrandse will be allowed to conduct language tests among museum visitors.

## Key activities & publications with societal impact - Neurolinguistics and Language Development

[Public lecture]

**Hendriks, P.** Taalproblemen bij autisme. Public lecture at the *Kopfestival* in Deventer, June 21, 2014.

[Press release]

**Jonkers, R.** 'Buitenlander in eigen land'. Trouw, January 3, 2015, <http://www.trouw.nl/tr/nl/5009/Archief/article/detail/3822247/2015/01/03/Buitenlander-in-eigen-land.dhtml>

[Activity]

**Hollebrandse, B.** 'Can you put something in itself?' Child and adult participants were invited to discover the phenomenon of recursion at the *Drongo festival* in Amsterdam, September 27, 2014.

[Professional Organisation]

**Bastiaanse, R.** *Groninger Expertisecentrum voor Taal-en Communicatiestornissen* (GELC). The GELC offers researchers and professionals in the area of language and communication disorders a platform to exchange knowledge and to find expertise on (research on) language and communication disorders and on specific populations. The GELC can facilitate professionals and researchers by making clinical methods available to diverse patient populations and by gathering populations for research.

## Theoretical and Empirical Linguistics

Members of the group gave a number of public lectures and an important textbook on the Ancient Greek language, society and poetry was published.

### Databases and software tools

Public databases of parenthetical and elliptical constructions are under construction (scheduled for online publication in 2015). These contain glossed examples for crosslinguistic comparison next to information about grammatical features involved, and there is room for comments on all levels of description; they are open for contributions by linguists elsewhere as well as the general public. Furthermore, a free tool (software) to create hierarchical representations such as syntax trees or evolutionary dependencies is under development.

### Grunnings dialect Vraag&Antwoord

The research project *Vraag&Antwoord* investigates a variety of linguistic elements of 'Grunnings' by means of a series of questionnaires. The project is led by Siemon Reker, head of the *Bureau Groninger Taal en Cultuur RUG (BGTC)*. The research project successfully attracts a high number of participants growing in number each year. Thereby, it is a good example of an encounter between citizens and science. The study is partly a replication of a written survey conducted in the eighties. In a monthly updated online questionnaire, participants are presented a number of translation questions. The number of respondents who filled out the questionnaire at least



once, increased from 766 in January 2014 to over 2000 at the end of the year. The project received weekly attention from Radio Noord in radio interviews held with Reker and Eline Brontsema. These interviews were accompanied by texts written by the interviewees that offered more elaborate information in addition to issues raised in the interview. These texts were viewed by 113151 people (number provided by Rens van Stralen/ RTV Noord). Moreover, there was a two-weekly column in the local newspaper *Dagblad van het Noorden* on the research project.

Eline Brontsema became secretary of the Stichting Dutch Dialects (Streektaalfunctionaris). She co-organized the 9<sup>th</sup> Streektaalconferentie

that took place in November 2014 in the Public Library in Hoozevee.

### Oog veur Streektoal

The *Bureau Groninger Taal en Cultuur* RUG (BGTC) is a collaborative initiative of the province of Groningen and the



University of Groningen. The bureau conducts research on the dialect and culture of Groningen now

and in the past. It also maintains a database with pictures that show that Grunnings is publicly visible also nowadays. The pictures are sent in by citizens of the province of Groningen.

## Key activities & publications with societal impact - Theoretical & Empirical Linguistics

[Textbook]

**Holwerda, A., Regtuit, R., Wakker, G. & van de Wetering, R. (2014).** *Kosmos. Een nieuwe toegang tot de wereld van de Grieken*. 2e herziene druk. Houten: Hermaion.

[Public lecture]

**Hoeksema, J. (2014).** *Taal en identiteit in het hoge Noorden*. Public lecture at the *Nacht van Kunst en Wetenschap* in Groningen, May 24, 2014.

[Public inaugural speech]

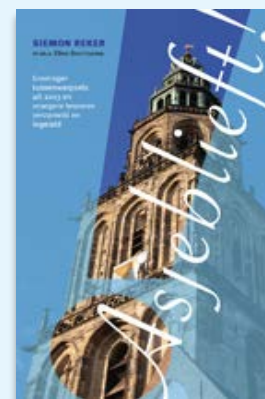
**Zwart, J-W. (2014).** *Wet en gewoonte in de taal*. Inaugural speech held for newly appointed Professor of Theoretical Linguistics, October 28, 2014, Faculty of Arts, University of Groningen.

[Publication]

**Reker, S. & Brontsema, E. (2014).** *“Asjeblijft!” Groninger tussenwerpsels 2013 en vroegere bronnen verzameld en ingeleid*. Assen: In Boekvorm Uitgevers.

[Popular publication]

**Gilbers, D. (2014).** “Een hitparade vol plagiaat”. *Quest, De 101 beste Vragen van 2014*, 6 November 2014.



## 4 Narrative

Each year one of the CLCG research groups has the opportunity to highlight research projects or activities carried out within the group in the form of a narrative, where staff members tell us about their fascination for linguistic research. This year's narrative 'Apps for Clinical Practice' is about a research project carried out by Professor Roelien Bastiaanse, head of the research group Neurolinguistics and Language Development. The narrative is provided by Saskia Visser, project leader for Science Shop Language, Culture and Communication and policy officer Public Engagement.

### Apps for Clinical Practice

The Groninger Expertisecentrum voor Taal- en Communicatiestoornissen (GETC) was founded in 2011 to combine the knowledge on language and communication disorders. By doing so, research and education on this area could be optimised and collaborations with industry and health care partners could be found. Professor Roelien Bastiaanse, professor in neurolinguistics, is the driving force behind the centre.

### 2014: Number of digital projects

One of the projects Bastiaanse worked on in 2014 is WEBLIA (Web-based reading for individuals with aphasia), funded by Stichting Afasie Nederland. WEBLIA is a web-based computer programme which generates news texts that correspond to the individual reading level of people with aphasia. Bastiaanse works in collaboration with EDIA BV. Bastiaanse says: "EDIA is a young internet company

that has designed an application to make newspaper articles accessible to second language education. Students first do a language test and based on their vocabulary the system generates appropriate texts. This is naturally also interesting for people with aphasia. They often have trouble reading newspapers, but they would like to stay informed. In spring 2014, a version has been developed specifically aimed at patients with aphasia. That way they can read recent reports (no older than 24 hours) at their own level. They can select themes that they find interesting, have the reports read to them and change the font size. A pilot study showed that it positively contributes to the everyday life of people with aphasia. In 2015, we hope that the first memberships can be provided through Afasienet.

Other projects of Bastiaanse related to the GETC focus on a new way of testing and treating aphasia. Think of for instance the therapy programme ACTIE!, based on a programme from 1977 (Bastiaanse et al.), which is appropriate for use on computers, tablets and smartphones. Moreover, therapists can now do more with the programme, e.g. provide patients with exercises they can do at home. Bastiaanse is excited about the possibilities: "I recently saw on a conference in America how effective these apps can be, especially for this target group. Doing exercises has become much easier and more fun and is therefore also more effective".

### Relevance and collaboration

It is very obvious that these projects are socially relevant. Does Bastiaanse feel the same? "Yes, definitely! It would be odd if

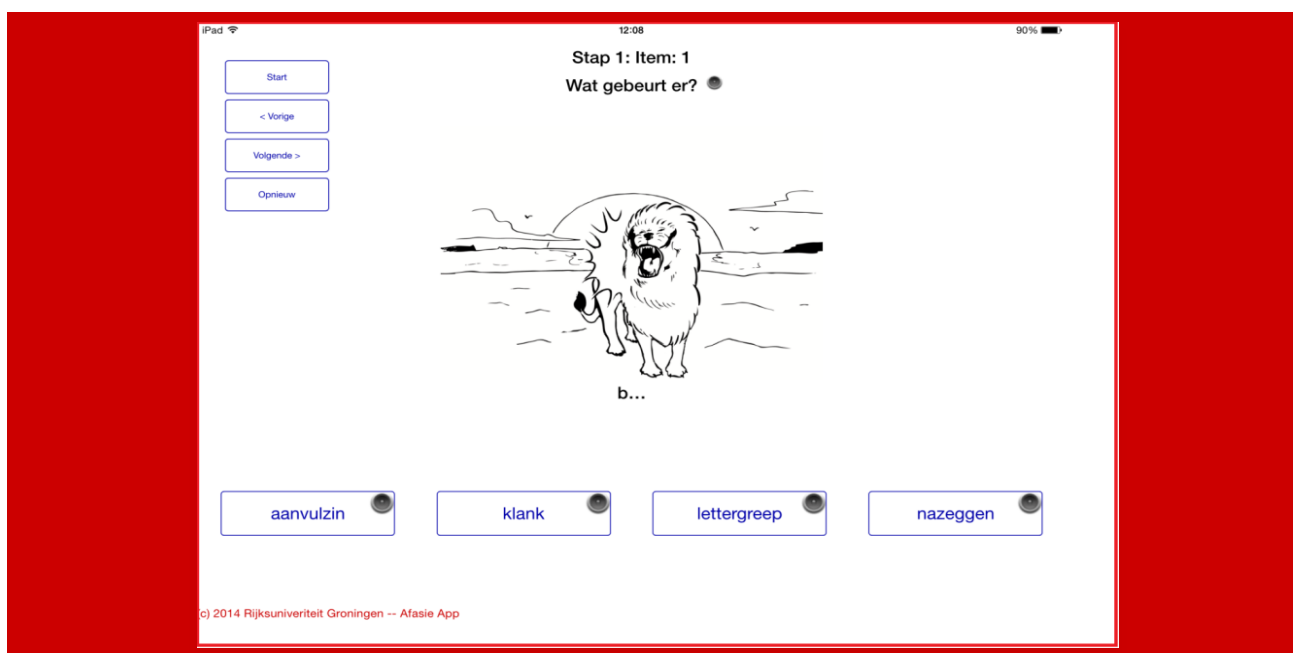
you do research on aphasia but want to that I spend about three quarter of my time on scientific research and about one quarter on the utilisation of my knowledge. I feel that it is my duty as a researcher to gain as much knowledge as possible in order to be able to perform better tests and treatments. On top of that, it is a nice bonus that people actually gain something from it. When I talk about my research during lectures, I always get questions about the application of the knowledge, with good reason. Even from an educational perspective, having contacts in the field is important. When you train students to be able to work in the field, they need good materials to work with.”

And is that also scientifically relevant? “Building apps on itself obviously is not. But through such a project you can gather a lot of data which you can use for research. It is all connected. In order for these types of projects to take off, there is an obvious need for collaboration with external partners. “The most difficult

stay distant from the application. I think aspect is finding people that can build apps and finance the project. You always have to invest first. Only once you have completely finished the project and everything works, then you can think of the return on your investment. But it is not an easy road. However, the testing itself never leads to problems. I have satisfactorily collaborated with revalidation clinics for many years.”

### Future

Many of the projects that started in 2014 will be continued in 2015. But Bastiaanse is also looking ahead. “A problem for aphasia studies has always been the fact that participant groups are too small. It is therefore difficult to demonstrate that therapy is meaningful. However, we are currently in contact with the largest aphasia centre in the world located in Moscow, where they treat 500 aphasia patients a year. We are hopefully that we can set-up a large-scale research project.”



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