



# Unraveling language

Max Planck Institute for  
Psycholinguistics Nijmegen



## Language: still a scientific puzzle

**Language, especially the ability to speak, is a uniquely human skill. No animal is capable of remotely similar achievements. Language is central to the success of our species. Yet, we still have only a rudimentary understanding of how it may have evolved, how it works as a system and how it is realised in our brain. We do not even know yet how much language really varies across cultures.**

How do we learn, produce and understand languages? Language is delivered as an unbroken stream of sound - how do very young children manage to extract words from this sound stream? And how can they build up a vocabulary out of the always varying and often rather imperfect speech which they hear around them? Why is learning a second language in adulthood so difficult and why do we hardly ever reach full mastery?

At the Max Planck Institute for Psycholinguistics Nijmegen, we study the mental processes that support speaking, understanding and learning languages of

### Did you know that

*First language acquisition is an extraordinary human skill. No animal is capable of remotely similar achievements. Teaching other creatures, chimpanzees for instance, sign language is a disappointing business.*

different types. We focus on the neural and genetic basis of language, language comprehension, language production, language acquisition, and language, culture and cognition. But our daily work is organised in multidisciplinary projects (see below). Contributing disciplines range from linguistics to psychology, anthropology, sociology, acoustics, computer science, medicine and neuroscience.

### Unique in the world

The Max Planck Institute for Psycholinguistics is one of some 80 research institutes of the German Max Planck Society. The MPI in Nijmegen is one of the few outside Germany and it is the only institution in the world entirely devoted to psycholinguistics: the study of how we produce and understand language, and how we acquire these skills as first or second language learners. The institute has close connections with the Donders Institute for Brain, Cognition and Behaviour in Nijmegen.

The atmosphere of the institute is thoroughly international. Researchers come from all over the world (there are about 20 nationalities) and there are over 50 active collaborations with universities or institutes in the US, Europe, Australia, Korea, China, and Japan. Besides this, there are collaborations with other Max Planck Institutes (Evolutionary Anthropology, Human Cognitive & Brain Science, Biological Cybernetics, Social Anthropology, History of Science, etc.). A global network of computer servers allows the fast interchange of data from language archives in Argentina, Brazil, Colombia, Peru, Mexico, Namibia, Georgia, Moscow, Sweden, London, Leiden, and Canberra.

### Multidisciplinary research projects

Language is a highly complex communication system which has to be studied from many different perspectives. At the institute we therefore have several multidisciplinary research projects that cross-cut the research groups and draw on the different expertise within the institute. The great proportion of our research is done in these projects. They provide an excellent training ground for PhDs and Postdocs and offer leadership possibilities for senior staff. Moreover, projects are very flexible, allowing fast response to new developments.



### Unraveling speech

*'I studied experimental psychology at Oxford University. Language always struck me as a particularly exciting domain of cognition. I'm particularly interested in speech comprehension. How on earth can we extract words and meanings from the speech signal so quickly and easily? We have to recognise the individual words in spoken language in order to understand the speaker's message. Spoken word recognition is an amazing, incredibly complex human skill. It's a major scientific challenge to find out how it works. The word decoding process is very fast, efficient and it seems so easy, but when you actually start thinking about it, it's not. Try listening to a language you don't know, say Turkish. It's like a burbling stream of sounds. How then do speakers who do know the language recognise the individual words in this speech stream? We've already learnt a great deal about this skill, but there is still much left to discover. I've worked at the MPI since 1993. The atmosphere of multidisciplinary collaboration has always been challenging, but is also very stimulating. There is a great deal of technical and intellectual support for our research. This is an ideal place to explore speech and language.'*

**James McQueen**  
staff member Language  
Comprehension group



### Go against conventions

*'The human brain is a fabulous machine, with incredible computational power and flexibility, outperforming any supercomputer in many ways. And having a flexible communication system is a big part of this. In cognitive science, we've been trying to discover how this system works from the outside. But with neuroimaging, we can also look into the brain directly. Of course, you don't always understand what you're seeing there. But the human brain is so complex, you need every measure you can get. Most neuroimaging research on language is rather conservative: lights are dimmed, and unrelated, isolated sentences flash by on the screen. But people don't use language in isolation. There's always a specific setting, and we're constantly trying to relate linguistic messages to the current situation, our goals and values, and so on. Also, we don't just wait for what's coming, we predict what speakers are going to say. I want to understand how this works in everyday situations. Outside of the lab, for example, language interacts with how we feel about things. So we're now studying how people's mood or moral value system affects language processing. What I like about my job is that I can go into no-go areas and go against conventions. The MPI is a good place to do so.'*

**Jos van Berkum**  
staff member Language  
Production group

### Did you know that

*In normal conversation we retrieve words from our mental lexicon at a rate of two to three per second! This very fast process is usually fully automatic; we don't have to pay much attention to it.*

### Cracking the speech code

One of our projects concerns the way in which we 'decode' speech. How do we recognise the individual words in spoken language? 'If you don't recognise words, you'll never be able to understand the speaker's message', says James McQueen, coordinator of this project. 'The acoustic speech signal is a continuous stream of burbling sounds, but we hear separate words. How does the listener deal with this segmentation problem? Another challenge the listener has to face is that there is enormous variability in the acoustics of speech. Because of differences, for example, in the way talkers speak, in the speed at which they speak, and in the contexts in which words are spoken, different versions of the same word can sound very different indeed. But these words must all be recognised as meaning the same thing, in spite of this variability. In this project we are trying to find out how the human mind solves speech-recognition problems such as segmentation and variability. In other words, we are trying to find out how listeners crack the speech code.'

### Language in daily life

Another institute project uses the tools of cognitive neuroscience to find out how our language machinery functions in daily life. How do the neural systems for language operate in the social context of communication? And how do they interact with other brain systems, like those for vision, motor control, emotion and attention?

'In most cognitive neuroscience research, the comprehension and production of language is studied under highly artificial conditions that eliminate most of the natural context for language use', says coordinator Jos van Berkum. 'For research on syntax, that may not be not so bad. But if you want to know how people interpret language, then you have a real problem. In this project, therefore, we look at the brain as it works on language in somewhat richer contexts. For, contextual factors like what has been said before, the scene you're looking at, knowledge about the speaker, gestures, and even your personal value system all influence language understanding immediately. It's high time to have some everyday language in the neuroscience lab.'

### Learning multiple languages

Our third project is devoted to how adults learn second and third



*The current board of directors (f.l.t.r.): Wolfgang Klein, Stephen Levinson, Anne Cutler and Peter Hagoort*



### Did you know that

Babies are able to recognise words in their native language before knowing their meaning, even in their first year of life!

languages. How do the representations of a new language develop and then coexist with the representations of other languages in the brain of an adult individual? What knowledge can adult listeners extract after seven minutes of exposure to continuous speech in an unknown language?

'We have a study of Chinese people who come to Holland and start taking up a course of Dutch', says one of the coordinators Peter Indefrey. 'We asked ourselves how their grammatical abilities develop, and how that might change their brain responses to Dutch. The biggest changes occur after three to six months of learning. At that point the brain responses of the Chinese learners start looking like those of native Dutch speakers. That's surprisingly quick! It's one of our nicest findings, because it wasn't really known before. Another important research finding is that everybody who speaks two languages uses the same brain area for both languages. It's not a special or a new area, as was previously thought.'

### Comparing everyday conversations

The project on multimodal interaction also examines language and cognition in everyday life, but focussing on just one crucial arena: the use of language in face to face interaction. Our communicative actions in everyday conversation consist not just of words strung together with grammar, but they are also clothed in a particular sound envelope (intonation, stress, speed and tempo, voice quality), and augmented with hand gestures, eye gaze, and facial expressions. The general hypothesis is that patterns of linguistic interaction emerge from general principles of social action and social organisation. So, while language structure may vary significantly, language use may have universal properties.

'In this project we're really interested in social interaction and the social context of language', says Nick Enfield, one of the coordinators. 'We collect natural conversations in very different languages. Our most recent project examines ten languages from five different continents and areas: Asia, Europe, Africa, the USA, and Oceania. We compare how people ask and reply to questions in the course of everyday life. If languages are so extremely different around the world, what is common to them? We're all from the same species, but languages vary radically. What's the nature of this diversity? Collecting language data helps us to understand.'

### Exploring categories and concepts

A large multidisciplinary project studies how language interacts with other representational systems (like those for vision, sound, smell, taste,



### Learning languages

*'I want to understand language learning better. Why is it so different for children and adults? Most people think that children are better language learners than adults. If one looks at the end of the learning process, this is true indeed: most of the time adult learners can easily be distinguished from native speakers of a language, even after many years. If one looks at the beginning of the learning process, things look a bit different. It takes children quite some time to get from their first contact with the surrounding language, to actually using it for communication. Adults, even at the very beginning, are good in communicating with a language that is still under construction. They are experienced language users and can exploit this experience in order to communicate with a few words and hardly any grammar. The languages that evolve may be simple, but they are quite systematic and efficient, signalling relations between parts of speech within and across utterances in a more transparent and less arbitrary way than fully-fledged languages do. This institute attracts people from all over the world. The research opportunities here are indeed excellent. We work in teams and are allowed to invest time in developing new ideas, or trying out new methods. I really like this pioneering spirit.'*

**Christine Dimroth**  
staff member Language  
Acquisition group



### Language and genetics

*'When I was ten years old, I already wanted to be a scientist. Scientific research is really exciting compared to anything else. I'm interested in the history of humans and I discovered that genetics is a pretty good tool for studying it. And so is language. Only humans have language and it is interesting to know how we got it. You have linguistic diversity on the one hand and genetic diversity on the other, but what is the connection between them? That's what I'm trying to find out. From my point of view, language is a very special cultural feature that is easier to study in a genetic context. Currently, we understand much more about genes than about language. Genes have a simple means of transmission: your genes come from your parents. But for language you have all kinds of mechanisms, one specific word may come from your ancestors, neighbours, friends, television, and so on. Contact is a more important, much faster, influence on language, and the history is more difficult to reconstruct. But there actually might be a slight connection between the genes of a population and the languages spoken by it. Tone languages, for instance, might be under such genetic biasing. However, and that is a positive thought, I have been known to be wrong more often than not.'*

**Dan Dediu**

staff member Language and Cognition/Language Production group

and touch) and explores semantic regularities in how these domains are coded within and across languages. 'How do we think about the things that we experience and feel? Is it shaped by the particular language we speak, or is it the same for all speakers of different languages?', asks Asifa Majid, who coordinates the project with Gunter Senft. 'It is claimed that language is very good at describing colour and shape, but we seem to be very bad at describing taste and smell. Why is that so? Is it something peculiar about English or Indo-European languages, or is it a more general thing about the human language faculty? We have some intriguing evidence that other languages may have developed many words for smell. If so, then it would be a language specific issue and would suggest much more fluidity between the language faculty and other parts of the mind. But it takes a team of researchers years to collect data from the wide variety of languages needed to be able to answer such questions.'

### Decoding sentence structures

Another cross-linguistic project inquires into the way in which sentences are structured to indicate what is new and what is taken for granted, and how children learn how to code for this in their native language. The project includes first as well as second language acquisition by speakers of German, Dutch, Serbian, Chinese, Polish, Turkish and English. It takes up questions like: How do speakers adapt their utterances to the context? When do children begin to mark information structure distinctions? And what are the developmental patterns in second language learners?

### Language from a neurobiological view

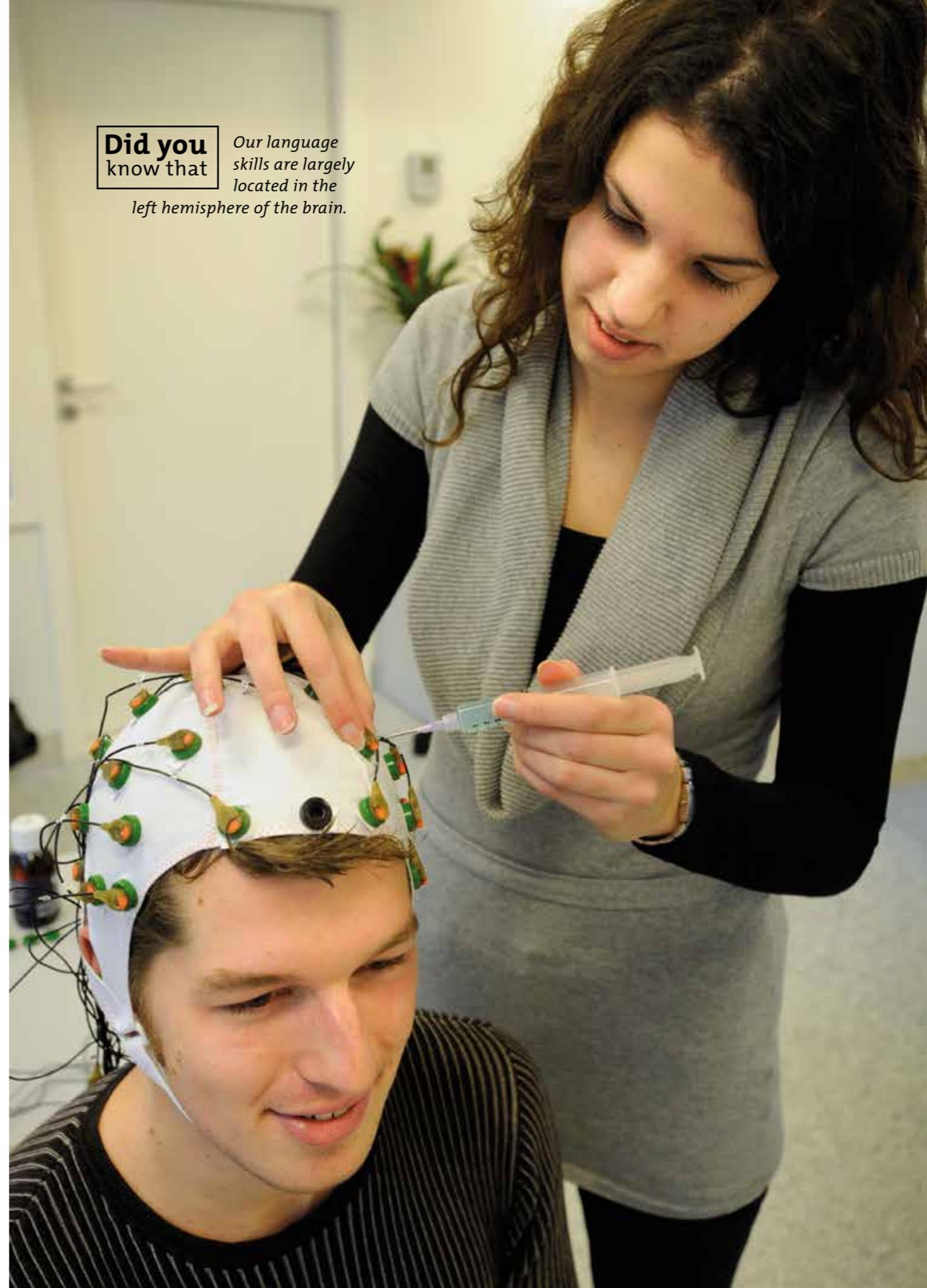
The project on unification develops a neurobiological perspective on language comprehension and production. Core questions are: How are different sources of information that are retrieved from memory or provided by sensory input, unified (made to fit into a coherent package) into an interpretation (comprehension) or a well-crafted spoken utterance (production)? Which neural networks are recruited for these unification operations? And to what degree are these networks shared between production and comprehension, and what is their dynamic interplay with memory components (mental lexicon, memory trace of the prior discourse)?

### Understanding spoken language

How do infants derive phonology from speech input? What limits

**Did you know that**

*Our language skills are largely located in the left hemisphere of the brain.*



## Did you know that

Six-month-old babies are equally good at recognising speech contrasts in their mother tongue and in a foreign language. At the age of ten months, infants are already losing this ability in a foreign language.



exist on learning in the mature adult state, or what constrains later phonological learning? What determines retuning of native categories, as when one experiences a new accent? What may be adjusted, what cannot be? Phonological knowledge is tuned by experience throughout life. It starts in infancy and changes by exposure to new accents, languages and every time we encounter a new speaker. The goal of this project is to understand and model the effects of perceptual experience in speech processing, and the consequences of perceptual learning for the comprehension of spoken language.

### Documenting disappearing languages

Our project on language documentation is of a slightly different kind. Language documentation is important because languages disappear at the rate of perhaps as much as one per week! This is happening because 80% of the languages of the world have under 100,000 speakers and are under pressure from larger languages. Each loss represents millennia of cultural evolution and an important scientific data point. Moreover, only the current diversity gives a reasonable basis for the inference of 'language universals'. Current work at the institute involves over 20 languages around the world, many of them with only a few thousand speakers. We try to build a full picture of language use in these communities, documented for instance through digitised video footage with aligned text, coded grammar and lexicon. This rich data allows enhanced comparative linguistics, exploiting new computational techniques.

### Independent junior research groups

Apart from the main research groups, there are several independent junior research groups at the Max Planck Institute for Psycholinguistics. They are set up for about five years each.

### Communication before language

The research group coordinated by Ulf Liszkowski is focussed on communication before language. It investigates the social and cognitive foundations of human communication in infancy. 'We study how infants communicate before they have language', says Liszkowski. 'How do the prelinguistic communication skills of infants - which are initially largely gestural - emerge? How do infants come to communicate about things, what are these things, with whom do they communicate, and why? And what do infants understand about persons and their mental states? For example, our recent research shows that 12-month-old infants point in



### Passion for science

*'Language development in children is extremely interesting. How do very young children learn language, despite all their physical restraints? They cannot yet tie their shoelaces, but they are able to ask their parents to do this! There is much individual variation in children's learning capacities. Why do some children learn language so much faster than others? I want to do research that has not been done before, something really new. In EEG and eye-tracking experiments, I'm going to look at what happens when infants are learning new words. They will be presented with images of objects they know, say a mouse, but cannot yet name. At the same time, they will hear the relevant word several times. Are the brain responses different the more often the infants hear the word? Can we observe a training effect? And if there is much variation between infants, how does this relate to later language development? I like to talk to mothers and young children, I really love the interaction. I couldn't just read and study all day, I would go crazy. The people at the institute know so incredibly much and their passion for science is so strong! There's a great deal of interaction and we have challenging, but always stimulating discussions. I feel extremely fortunate to be here.'*

### Caroline Junge

*PhD of Language Comprehension and Language Production group*



### Laugh about mistakes

*'Anthropological linguists are all very much interested in the relationship between language, culture and cognition. It's fascinating to be confronted with ways of speaking, behaving and thinking that are so different to ours! It gives you a broader view of life and relativises your values. You really have to like to communicate with other people to do this kind of work. You can't be a field researcher when you're not extravert and humorous. Fieldwork in a foreign culture includes making embarrassing mistakes. It inevitably leads to many misunderstandings and sometimes fieldworkers even misbehave in the eyes of their hosts. You have to be able to laugh about your own performance. Field researchers hardly have any privacy, we are constantly observed by our hosts. To live under these circumstances is somewhat demanding for an average Western-European. But we are the intruders in the societies we research, so we have to pay a price. By the way, my Kilivila is much better than my Dutch.'*

**Gunter Senft**

staff member Language  
and Cognition group

order to direct other people's attentional states to relevant things and places. They point for social purposes, for example they point expressively to share attitudes with others, or informatively to help someone find what she is looking for. This shows that young preverbal 12-month-olds already have striking social-cognitive and motivational skills which they bring to the communicative act. But how does pointing emerge? Does the social input of, for instance, parents play a role in its emergence? And do cultural differences in interactional practices influence infants' interactional skills? To this end we conduct longitudinal and cross-cultural studies. If you want to know how human communication works, it is best to look at its development. Infants' development can give us answers about why we are the way we are.'

### Understanding speech with foreign accents

Andrea Weber coordinates a research group that focusses on the perception of foreign accents. 'Multilingualism is the standard human experience', says Weber. 'It is estimated that more than half of the world's population speaks at least two languages, with numbers steadily growing. Multilingualism entails not only that we regularly listen to speech which is not in our native language, but also that we have with increasing frequency encounters in which we listen to our native language spoken with a foreign accent.'

While the former is a well studied phenomenon in psycholinguistic research, the later has received comparatively little attention to date. The general goal of Weber's research is to better understand the processing of foreign-accented speech with a focus on the role of variability in the speech signal and experience with a particular accent. 'In foreign-accented speech listeners are confronted with speech that differs markedly from the accepted language norm. The fundamental question is how listeners can arrive at a stable percept from a signal that varies noticeably from the norm? Given the increasing frequency of contact with people who speak with different accents, a better understanding of foreign-accented speech will become more and more important not only for spoken language research, but also outside the world of psycholinguistics.'

### Cross-cultural variation in human cognition

The research group of Daniel Haun on comparative cognitive anthropology is a joint research project with the Max Planck Institute for Evolutionary Anthropology in Leipzig. It aims to document the extent of cross-cultural variability in human cognition and the contextual factors driving it. The goal is to determine the underlying uniquely human

### Did you know that

*Languages are so diverse in form and meaning that it is actually quite difficult to make a list of concrete features they all share.*





### Did you know that

*There are more than 6,000 languages around the world, but languages disappear with the rate of one per week!*

set of psychological mechanisms, which allow cross-cultural behavioural variability. 'Human cognition varies across cultures', says Haun. 'Members of distinct human communities demonstrate different abilities to discriminate green and blue, 7 and 8, or right and left. Most likely, these differences do not have genetic bases, since despite the large behavioural differences between different groups, humans in general vary very little genetically. In contrast, other great ape species show much more genetic variability, but only very limited behavioural differences between groups. The substantial variability we see between human populations is due to the impact of contextual differences during cognitive ontogeny (the history of an organism from birth), rather than to differences in innate cognitive structure. However, we know little about the relative importance of different contextual factors and even less about the psychological mechanisms underlying the cross-cultural differences in the human mind. We attempt to open up a new, broader perspective of human cognitive diversity.'

### Documenting the evolution of language change

Another research group focusses on evolutionary models of language change, coordinated by Michael Dunn. 'When Darwin first proposed the theory of evolution, he made an explicit analogy between systems of biological relatedness - the tree of life - and family trees of languages', explains Dunn. Historical linguistics and biological phylogenetics (the study of evolutionary relatedness among various groups of organisms) have always had a close association on the level of methodology. But since the discovery of genetic coding by DNA in the late 1950s, evolutionary biology has had the impetus to develop methods which go far beyond the establishment of family trees. Evolutionary change can be dated and details of evolutionary history, such as past population sizes, can be reconstructed. 'My group will use these new methods in computational phylogenetics to unravel the evolutionary details of language change, and to illuminate the factors that shape human language. An evolutionary approach to these questions is crucial: there are about 6,000 languages in the world today, but the distribution of linguistic diversity is extremely skewed. 66% of people speak a language from the Indo-European or Sino-Tibetan families, and 65% of the world's languages belong to one of the six major stocks. What we know about human languages is strongly biased towards the members of these big families, but it is only possible to make sense of this linguistic variation within its phylogenetic context.'



### Field work is fun

*'When I was a child, my uncle set up a school in Sydney for teaching English to foreigners from twenty different countries. His house was full of exotic gifts and objects and that got me really interested in human diversity. Another thing was 'The Adventures of Tintin'. I read them all, a hundred times over. Every book is in a different country and they get you very inspired to travel. When I first went to university, I dropped out. I just wanted to find adventure and went on a big world tour with my backpack for nine months. Trying to learn the local language was the most fun part of it. When I got back, I wanted to study linguistics again and went to Laos. If you like puzzles and finding things out, language never stops giving you new puzzles. Working on isolated minority languages is especially rewarding. The field work is very demanding and drives people crazy. It requires a certain personality. The main criterion would be humor and the capacity to adapt. You've got to leave home, eat lousy food and get drunk with people all the time. A control freak won't survive in a field work situation. But it's exciting, it's fun and exhilarating. Besides, you don't have to go on a holiday...'*

**Nick Enfield**  
staff member of the Language and Cognition group



### Incurable curiosity

*'I like to be intellectually stimulated. If you're permanently or incurably curious, then you're well fit to be a scientist. Curiosity is the driving force and the pleasure of understanding, even partially, is the reward. Science is a means of not having to grow up too quickly and it provides a certain level of creative freedom, especially the freedom to think. In the end it is a quest for truth and our ultimate goal is a fully explicit theory of how the human brain works.*

*From a theoretical perspective, language is relatively well understood and therefore a very good cognitive domain to investigate. The human brain is a semantic engine, a complex dynamical system that interprets the world. There's consensus about the broader sketches of language. Still there are disputes about several fundamental aspects of language. One important issue today is how innate and environmental factors interact to create our language capacity. If our language acquisition device is innate, then we may investigate how genes affect the basis of human cognition, in particular human language, which is extremely interesting.'*

**Karl Magnus Petersson**  
staff member Language  
Production group

### Did you know that

*Our articulatory system was originally developed for us to breathe, drink, chew, and swallow. It gradually developed to acquire a completely different function: the execution of speech. By now, it can do both. We only risk choking when we try to combine speaking and ingesting...*

### Nijmegen Gesture Centre

What role does the body play in language processing and development? That's the central research question of the Nijmegen Gesture Center (NGC), coordinated by Asli Özyürek and Marianne Gullberg. The centre was set up in 2003 and developed out of an institute's project on gestures. It unites researchers on this topic at the Max Planck Institute and Radboud University Nijmegen. 'We try to bring together all people doing research on how bodily actions might be recruited during language processing, such as in the use of gestures during speaking or using sign language', say Özyürek and Gullberg. 'We investigate research questions like: What do gestures reveal about thinking, language processing and communication? What role do gestures play in first and second language acquisition? What differences and similarities are found between cultures in the use of the body to communicate? And what role does the body play in the structures of sign languages, that is, the languages of deaf communities? We also investigate what emerging sign languages and not fully conventionalised gesture systems of the deaf (so-called home sign), reveal about the human language capacity and cognition. What are the brain processes that underlie bodily aspects of communication? We try to solve all these scientific issues.'

The Nijmegen Gesture Centre has a fully equipped lab to investigate the multimodal aspects of communication. It has the capacity to record and investigate communicative behaviour in contextualised settings with digital technology, as well as in controlled environments using motion capture, eye-tracking systems, brain imaging techniques, and virtual reality set-ups. It is a unique location in the world for studying multimodal communication in its three-dimensional and visual character.

### Support for lab and field research

Language research requires specific technical facilities and specialised software. To collect their linguistic data, our researchers either run highly controlled experiments in a laboratory, or they record speech in natu-



### Did you know that

*We know tens of thousands of separate words, which are stored in our inner dictionary or 'mental lexicon'. These words are made up of only a tiny set of distinct sounds. On average, across languages, just over 30.*



### Did you know that

*Experimental studies on the acquisition of Chinese by speakers of Dutch show that subjects are able to identify Chinese words from non-words after seeing a 15-minutes video in which two simple stories were told in Chinese.*

ral settings. At the institute, we have a skilled technical group to support the experimental and computational work. The group also develops tools for research, which are widely used at other research centers.

Our researchers use a variety of experimental set-ups. From measuring reaction times on a millisecond basis, tracking people's eye movements with special head-mounted cameras, recording people's gestures. We also use brain imaging techniques, such as EEG, MEG or fMRI. Brain imaging is mostly done at the neighbouring Donders Institute for Brain, Cognition and Behaviour. In close cooperation with this institute, the Max Planck Institute for Psycholinguistics has also set up a baby laboratory, specially equipped to study the speech perception and language comprehension of infants and young children.

Collecting data in natural settings includes visiting schools or kindergartens, but also field sites around the world. Some of these sites are in isolated and remote areas, sometimes without access to electricity. The Technical group strives to select and adapt state of the art equipment for these difficult conditions.

These accumulated recordings amount to an enormous set of data that needs to be stored long-term. The MPI houses a large multimedia and multimodal language archive which now covers about 11 TeraBytes of digitised material. A modern multi-layer storage facility ensures that several copies are stored reliably. Part of this archive space is used by the international project Dokumentation bedrohter Sprachen (DoBeS), funded by the German Volkswagen Stiftung.

The institute has its own state-of-the-art experimental facilities. Members of the institute and guests can make use of language corpora, speech analysing tools, and different kinds of experimental labs. We have a developed subject pool, and a good range of experiment rooms for experiments with both single subjects and groups of subjects. There is a fully shielded ERP-laboratory for the recording of event-related brain potentials (ERP's) which allows simultaneous recording from 128 electrode sites. Moreover, it has the relevant stimulus presentation modalities for spoken and written language and for the recording of spoken utterances.

A virtual reality lab allows precise control of experimental conditions while still allowing realistic, interactive language use. Worldwide this is the first lab of this kind dedicated to research on language production and comprehension.



### Best place in the world to be

*'I am really interested in the link between the speech signal and its linguistic meaning. It's amazing to realise that I can make something clear to you just through differences in air pressure. How can people do this so quickly? I want to find out how this language processing works. If you're interested in language, the Max Planck Institute for Psycholinguistics Nijmegen is one of the places in the world to be. Nowhere else, at no single university, you will find so many people interested in language and doing this kind of research. That makes it really unique.'*

**Petra van Alphen**  
staff member Language  
Production group



### **Did you know that**

*When people learn a second language, it influences their first or native language.*

*At the lexical (word) level, there's a strong interaction between the two languages in two directions. At the syntactic (grammatical) level, this is less clear.*

### **Modern library for scientists**

The institute has a specialised reference library, primarily rendering services to research staff and visiting scientists. It contains almost 25,000 books, (bound) journals, journal subscriptions, yearbooks, working papers, and nearly 10,000 online journals. A number of different bibliographic databases are available for online literature searches.

