**Dr Jeff Hanna**
**Freie Universitaet Berlin**
**Sommer Semester 2014**
**Seminar: Introduction to Neurolinguistics**
**BA Aufbaumodul Sprachfunktion 16671/16672**
**Di 12:00-14:00, JK 29/118**
**Mi 12:00-14:00, JK 29/124**

**jeff.hanna@gmail.com**

# Introduction to Neurolinguistics

This seminar gives an introduction to the study of language as realised by the brain. We provide a history of the discipline, a basic overview of the relevant tools, and discuss most major neurolinguistic theories.

The seminar is 'hands-on' and empirically focussed, and so most weeks we will approach the topic with actual articles from the field of neurolinguistics. These may sometimes be challenging, but allow the student to see the state of the art for himself.

## Requirements

To receive credit for this course you must meet three requirements:

1) Attend regularly; you may miss no more than three seminars.
2) Give a presentation.
3) Submit an essay of approximately 2000 words on a psycho/neurolinguistic topic.

## A note on language

The field of neurolinguistics is conducted almost exclusively in English, and so all the texts will be in English. I will lecture in German as much as possible, but will often need to switch to English. Students are welcome however to discuss and ask questions in German, give their required presentations in German, and write their essays in German.

## Presentations

I strongly encourage you to arrange a Sprechstunde when planning your presentation. I can help you understand the text, and choose which parts to emphasise in the presentation, and which to ignore.

Presentations should be 30-60 minutes long. You may use Powerpoint or not. If so, you may use your own laptop, or mine, but be aware that my laptop only has Open Office, not Powerpoint. Your presentation may not look the same on my computer as yours, especially if you use a lot of fancy graphics, etc. **If you want to use a Mac for your presentation,** this is ok, but you must either bring a VGA adaptor so it can be connected to the beamer, or tell me **before the day of class** that you need an adaptor, specifying which model of Mac you use, so I can bring the appropriate one.

**Hausarbeit (Essay)**

The Hausarbeit must be handed in by **15 September 2014.** After this, students may hand in their essays by **29 September 2014** and lose one full point from their mark. After 29 September, no essays will be accepted, without an Aertzliches Attest. **Do not ask for extensions to the deadline.**

The student may choose any topic in psycho/neurolinguistics. Any topic which is covered in class is also appropriate for an essay. I am happy to provide some help getting started, but the student should remember that finding good sources and exploring the research material are primarily the student's own responsibility.

**Sprechstunde**

Sprechstunde are conducted nach Termin. Just send me an email or talk to me after class to arrange an appointment. **My office is JK 31/223.**

**Articles**

The required reading can be found on our lab website:

http://www.geisteswissenschaften.fu-berlin.de/v/brainlang/teaching/index.html

Because the materials are copyrighted and cannot be freely distributed on the internet, it requires a username ('fub'), and a password, which will be given to you in class.

**Programme**

**Week 1: Introduction**

**Week 2: Aphasias and the clinical method**

Texts: Broca (1861) 'Remarks on the seat of spoken language' and Broca (1865) 'On the site of the faculty of articulated speech'

Introduction to the early years of brain-language research methods, and the foundational neurolinguistic theories of Broca, Wernicke, and Geschwind.

**Week 3: A brief introduction to neuroimaging tools and methods**

No text

The mechanical bases of EEG, MEG, MRI (MRT), and TMS are introduced, as well as the Event-Related Potential (ERP) technique.

**Week 4: Functional vs distributed processing**

Text: Kanwisher (2010) 'Functional specificity in the human brain'

Are specific areas of the brain devoted to specific tasks, or are psychological functions distributed broadly throughout the brain?

**Week 5: Single word processing, part 1**

Text: Marslen-Wilson (1994) 'Morphology and meaning in the English lexicon', pp. 3-10

When do we understand a word? How do we build complex words out of simpler parts? Can we measure this happening in 'real time'? We cover some classic behavioural experiments which made important contributions to this subject.

**Week 6: Single word processing, part 2**

Text: Marslen-Wilson (1994) 'Morphology and meaning in the English lexicon', pp. 10-31

Continued from previous week

**Week 7: Inflection and the brain**

Text: Marslen-Wilson & Tyler (2007) 'Morphology, language, and the brain: the decompositional substrate for language comprehension'

How do we recognise the inflectional status of verbs? How does the brain break apart inflectionally complex words into meaningful units?

**Week 8: Semantic processing and the N400**

Text: Kutas & Federmeier (2011) Thirty years and counting: Finding meaning in the N400 component of the event-related brain potential.

This paper summarises and explores the research on the oldest and most famous linguistic event-related potential: the N400.

**Week 9: Temporal theories of language processing: serial models.**

Text: Friederici (1995) 'The time course of syntactic activation during language processing'

We explore here the idea that language processing proceeds in discrete stages, i.e. that when a word is encountered its various levels of linguistic meaning - syntactic, semantic, etc - are performed in a row, like in a factory assembly line.

**Week 10: Temporal theories of language processing: parallel models**

Text Pulvermuller & Shtyrov (2006) 'Language outside the focus of attention, the mismatch negativity as a tool for studying higher cognitive processes'

Here we explore an alternative theory: that all aspects of language processing are underway immediately and simultaneously (or perhaps near simultaneously).

**Week 11: Second language acquisition**

Text: Morgan-Short & Ullman (2012) 'The neurocognition of second language'

How is acquiring a second language different than acquiring a first language? Is it actually different? Why does it seem to become more difficult the older you are?

**Week 12: Embodied cognition**

Text: Pulvermuller & Fadiga (2010) 'Active perception: sensorimotor circuits as a cortical basis for language'

Where does motor/sensory processing end and cognitive processing begin? Do they begin and end?

**Week 13: Mirror neurons and language evolution**

Text: Corballis (2010) 'Mirror neurons and the evolution of language'

Mirror neurons have lately become a hot topic in cognitive neuroscience. What are mirror neurons, and can they tell us anything about the nature of language?

**Week 14: Brain circuits and language**

Text: Pulvermuller (2010) ‘Brain embodiment of syntax and grammar: Discrete combinatorial mechanisms spelt out in neuronal circuits’

So much research is focussed on where and when in the brain. What about how? How can a language actually be built, at the neuronal level?