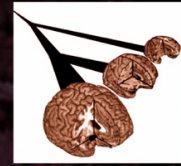
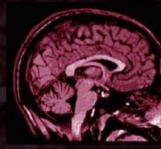
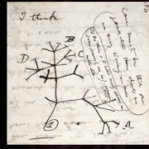


第八届演化语言学国际研讨会



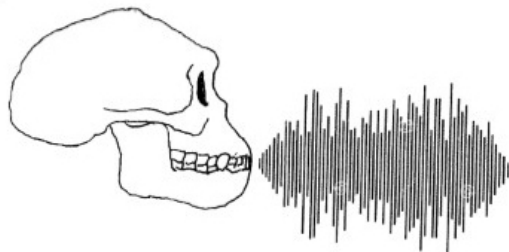
8th International Conference in Evolutionary Linguistics

CIEL8 Conference Schedule and Abstracts

Indiana University Bloomington

August 8 – 10, 2016

Hosted By:
Indiana University



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And:



The Stone Age Institute

Monday, August 8

Location:		Woodburn Hall Room 100	
		Morning session chair: P. Thomas Schoenemann	
Time	Event	Speaker	Talk Title
9:00-9:10 AM	Welcome	P. Thomas Schoenemann	Welcome
9:10-10:10 AM	Keynote 1	William S.-Y. Wang	Exaptation
10:10-10:30 AM	Tea/coffee break		
10:30-11:30 AM	Keynote 2	Daniel Everett	Homo erectus and the semiotic progression
11:30 AM-12:00 PM	Invited talk	Robert Port	How confusing spoken and written language undermines linguistic thought
12:00-12:30 PM	Invited talk	David Pisoni	Cochlear Implants and Hearing Loss: A New Look at the "Forbidden Experiment" in Language Development and the Evolution of Spoken Language
12:30-1:00	Conference group photo		
1:00-2:30 PM	Lunch		
		Afternoon session chair: Robert Port	
2:30-3:30 PM	Keynote 3	Salikoko Mufwene	The co-evolution of speech and pragmatics
3:30-4:00 PM	Tea/coffee break		
4:00-4:15 PM	Talk	Fenk-Oczlon Gertraud	Commonalities between vowel systems and musical scales from an evolutionary perspective
4:15-4:30 PM	Talk	Ivan Yifan Zou, Steve Ka Hong Wong & William Shi-Yuan Wang	The role of language and music in dementia among the Chinese population
4:30-4:45 PM	Talk	Yang Ruoxiao	Learning to read in traditional and simplified Chinese scripts shape adult readers' perception of Chinese characters and visual attention
4:45-5:00 PM	Talk	Xia Quansheng, Gong Wenxiao & Ly Yong	Syntactic category of constituent components in the processing of compounds: evidence from noun compounds in Mandarin
5:00-5:15 PM	Talk	Manson Cheuk-Man Fong, Ivan Yifan Zou, Patrick Chunkau Chu & William S.-Y. Wang	Do FN400 potentials index conceptual priming during old/new judgment?
5:15-5:30 PM	Talk	Ahmet Naim Çiçekler	Genitive case licensing in the subject of compound clauses in Old Anatolian Turkish
5:30-6:30 PM	Free time		
6:30-9:30 PM	Reception at Stone Age Institute (bus from circle at IMU Hotel entrance)		

Tuesday, August 9

Morning and Concurrent English Afternoon Sessions

Location:		Woodburn Hall Room 100	
		Morning session chair: Shen Zhongwei	
Time	Event	Speaker	Talk Title
9:00-10:00 AM	Keynote 4	Kong Jiangping	A preliminary study on the evolution of vocal tract
10:00-10:20 AM	Tea/coffee break		
10:20-10:50 AM	Invited talk	Rob Shumaker	Vocal fold control beyond the species-specific repertoire in an orang-utan
10:50-11:20 AM	Invited talk	Peng Gang	The influence of speech variation on L2 tone learning
11:20-11:50 AM	Invited talk	Murielle Fabre	Cerebral encoding of syntactic-levels in the Mandarin Chinese Left-Periphery: insights from fMRI
11:50 AM-12:20 PM	Invited talk	Tyler Marghetis	Where is tomorrow? How high is a year? Space-time metaphors emerge from individual biases, social interaction, and cultural transmission
12:20-2:00 PM	Lunch		
Location:		Woodburn Hall Room 100 (note: see concurrent session)	
		Afternoon session chair: Colin Allen	
2:00-3:00 PM	Keynote 5	Jared Taglialatela	What can the socio-communicative behavior of chimpanzees and bonobos tell us about the origins of human spoken language?
3:00-3:15 PM	Talk	Lana Ruck	The value of praxis-based studies for understanding language evolution
3:15-3:30 PM	Talk	Guo Chunjie	A cognitive account for co-evolution of the stone tools making and word classes
3:30-4:00 PM	Tea/coffee break		
4:00-4:15 PM	Talk	Dong Hongyuan	Historical sources of alveolar-velar correspondences in Chinese Dialects
4:15-4:30 PM	Talk	Zhu Junling	Lexical diffusion in sound changes in the dialects of immigrant communities of Linyi City
4:30-4:45 PM	Talk	Valentyna Skybina	What it takes to become a pluricentric language
4:45-5:00 PM	Talk	Gertraud Fenk-Oczlon & August Fenk	Language evolution and systemic typology
5:00-5:15 PM	Talk	Nicholas Toth & Kathy Schick	Stone Tools and Cognition
5:15-5:30 PM	Talk	P. Thomas Schoenemann	The evolution of Broca's area

Tuesday, August 9 Concurrent English Afternoon Session (continued)

5:30-5:45 PM	Talk	Colin Allen, Hongliang Luo, Jaimie Murdock, Jianghui Pu, Xiaohong Wang, Xiaoliang Wang, Wenjing Yuan, Kun Zhao & Yanjie Zhai	Topic modeling the Hàndiǎn (汉典)
5:45-8:25 PM	Free time (conference attendees have dinner on their own)		
8:25-9:30 PM	Art Museum tour (everyone wishing to attend must be at the Art Museum no later than 8:25)		

Tuesday, August 9 Afternoon Chinese Concurrent Session

Location:		Woodburn Hall Room 101	
		Afternoon session chair: Yang Ruoxiao	
3:00-3:15 PM	Talk	Li Zhen	最佳关联交际理论的神经认知学理据剖析
3:15-3:30 PM	Talk	Chu Hangjun	语言的进化与自然选择——语言进化适应论的发展历程及相关争议
3:30-4:00 PM	Tea/coffee break		
4:00-4:15 PM	Talk	Wang Hao	西南官话仁富小片方言来源与形成研究
4:15-4:30 PM	Talk	Lu Xiaoyu	通过临海方言“以=”看 <i>tc-</i> 类近指词在吴语区的分布与演变
4:30-4:45 PM	Talk	Xu Xin	基于语料库的“在 N 的 V 下”历时研究
4:45-5:00 PM	Talk	Lin Zhu	中国英语学习者的语音数据分析：基于语音语料库的建设
5:00-5:15 PM	Talk	He Ren	先秦汉语“V+N”式定中结构研究
5:15-5:30 PM	Talk	Li Guilan	汉语东南方言和壮侗语状语后置构式的比较研究
5:30-5:45 PM	Talk	(see concurrent session in Woodburn Hall Room 100)	
5:45-8:25 PM	Free time (conference attendees have dinner on their own)		
8:25-9:30 PM	Art Museum tour (everyone wishing to attend must be at the Art Museum no later than 8:25)		

Wednesday, August 10

Morning and Afternoon English Concurrent Sessions

Location:		Woodburn Hall Room 100	
		Morning session chair: P. Thomas Schoenemann	
Time	Event	Speaker	Talk Title
9:00-10:00 AM	Keynote 6	Wu Yicheng	Constructionality and hidden complexity - The diachronic evolution of non-canonical [V+NP] expressions
10:00-10:20 AM	tea/coffee break		
10:20-10:50 AM	Invited talk	Shen Zhongwei	Language transmission, language acquisition, and dialect formation
10:50-11:20 AM	Invited talk	Charles Lin	Typological and processing origins of aesthetic prescriptivism in language
11:20-11:50 AM	Invited talk	Rachel Edwards	The evolution of language, creativity and narrative
11:50 AM-12:20 PM	Invited talk	Ljiljana Progovac	A reconstruction of early human (and Neanderthal) grammars
12:20-2:00 PM	Lunch		
		Afternoon session chair: Charles Lin	
2:00-3:00 PM	Keynote 7	Jackson Gandour	Lexical tone, neuroplasticity and language evolution
3:00-3:15 PM	Talk	Feeney Andrew	Language evolution, dual processing and the Representational Hypothesis: a unified account of the emergence of language
3:15-3:30 PM	Talk	Mohammad Salehi	Ambiguity and garden path sentences
3:30-4:00 PM	tea/coffee break		
4:00-4:15 PM	Talk	Zhou Changyin	Sustained anterior positivity related to the complexity of argument structure: An ERP experiment on the comprehension of Chinese applied-object structures
4:15-4:30 PM	Talk	Weng Chuan-Hui	Synchrony-diachrony interaction of the permissive, causative and passive Rang in Chinese
4:30-4:45 PM	Talk	Lin Chia-Hua	How can the developments in linguistics benefit neurolinguistics? An Instrumentalist approach
4:45-5:00 PM	Talk	Khadeejah Alaslani	A glottochronological Guess on Al-Fayfayah's position in Semitics
5:00-6:00 PM	Closing address	TBD	Summary of CIEL8, preview of CIEL9 to be held at Yunnan Nationalities University in Kunming, China
6:00-7:00 PM	Free time		
7:00-9:30 PM	Closing reception dinner		

Wednesday, August 10

Morning and Afternoon Chinese Concurrent Sessions

Location:		Woodburn Hall Room 101	
		Morning session chair: Xia Quansheng	
Time	Event	Speaker	Talk Title
10:20-10:50 AM	Invited talk	Shi Feng	关于汉语普通话语音的调查和实验的分析和思考
10:50-11:20 AM	Invited talk	Hu He	阿尔泰语系语言元音声学空间分布特征比较研究
11:20-11:50 AM	Invited talk	Li Dandan	北方官话“自个儿”等“A个儿”代词的来源
11:50 AM-12:20 PM	Invited talk	Liu Juan	子尾词在山东淄博方言中的内部变化试析
12:20-2:00 PM	Lunch		
		Afternoon session chair: Shi Feng	
3:00-3:15 PM	Talk	Peng Zeyun	词中的语素义类似字中的形旁——符号理据和价值的区别
3:15-3:30 PM	Talk	Zhang Xuenian	福建武平军家话与江西金溪原乡语言的微观比
3:30-4:00 PM	tea/coffee break		
4:00-4:15 PM	Talk	Liu Jinrong	拉祜语四音格词中的汉语借词
4:15-4:30 PM	Talk	Li Yanzhi	On the constructionalization of [NP1+Vi+le (了)+NP2] in Mandarin Chinese
4:30-4:45 PM	Talk	Hsu Yu-Yin & Charles Lin	Lexical Effects on Quantifier Scope Processing in Chinese
4:45-5:00 PM	Talk	(see concurrent session in Woodburn Hall Room 100)	
5:00-6:00 PM	Closing address	(see concurrent session in Woodburn Hall Room 100)	
6:00-7:00 PM	Free time		
7:00-9:30 PM	Closing reception dinner		

Abstracts

Wednesday 4:45-5:00 PM Woodburn Hall Room 100

A glottochronological Guess on Al-Fayfiyah's position in Semitics

Khadeejah Alaslani, Northeastern Illinois University

Alfayfiyah (also known as Fayfa, Faifa, Fifa, and Fifi) is an understudied and endangered language spoken in Fayfa Mountains, southwest of Saudi Arabia. It is distinguished among the Saudi Arabic speakers for its convoluted dialect. As the position of Fifi within Semitic and Afro-Asiatic is not clear, Swadesh lists for Fifi, Hijazi, Najdi, Sharqi and MSA were collected and analyzed to propose subgrouping relationships among the languages, and Fifi's position in particular. The main goal behind the comparative study of the lexicon is for a glottochronological guess on Alfayfiyah's position in the Semitic group.

This research deals with the descriptions and analyses on the Swadesh lists of MSA, Fifi, Hijazi, Sharqi, and Najdi, in which all of them supply several similarities and differences. All of these dialects are spoken in Saudi Arabia. Fifi is spoken in Fayfa Mountain, southwest Saudi Arabia; Hijazi is spoken on the western coast; Sharqi is spoken in Al-Sharqiya province, at the eastern region; Najdi is spoken at the north central part of the kingdom, in and around Riyadh.

It is a widely held view that Hijazi Arabic is not pure Saudic because it has many borrowings from other dialects like Egyptian, Jordanian, and Palestinian. Najdi and Sharqi tend to have greater similarities to Modern Standard Arabic. On the other hand, a much debated question is whether Fifi is a dialect of Arabic or of another language. It is believed that Fifi is a dialect of Himyaritic and that Himyaritic and Classical

Arabic both belong to the Arabic language family (Alfaifi, 2014). However, many scholars hold the view that Himyaritic was a pre-Islamic and medieval language that was spoken in Yemen and that it was not Arabic. Al-Hamdānī (died in 945 or after 971 AD), mention a language not only different from Arabic, but even hardly comprehensible to a native speaker of Arabic.

One of the methods to compare the above-mentioned dialects is to conduct a comparative analysis to examine how they are similar or different from each other. Morris Swadesh came up with a basic word list, known as the Swadesh word list. Through electing these basic words from a number of languages, a comparative study can be easily conducted. As it is widely known that each language is a structurally distinctive system of communication, any two languages can be analyzed to find out their contrast.

The approach applied in this study was qualitative. Fifi, Hijazi, Najdi, Sharqi word lists were collected via online communication tools with my four informants, they are all native speakers of their dialects. MSA word list was collected from an online resource. To obtain accurate data, the native consultants were asked to record all the basic words. In essence, each word articulated by the informants was recorded, and noted in the field-notes.

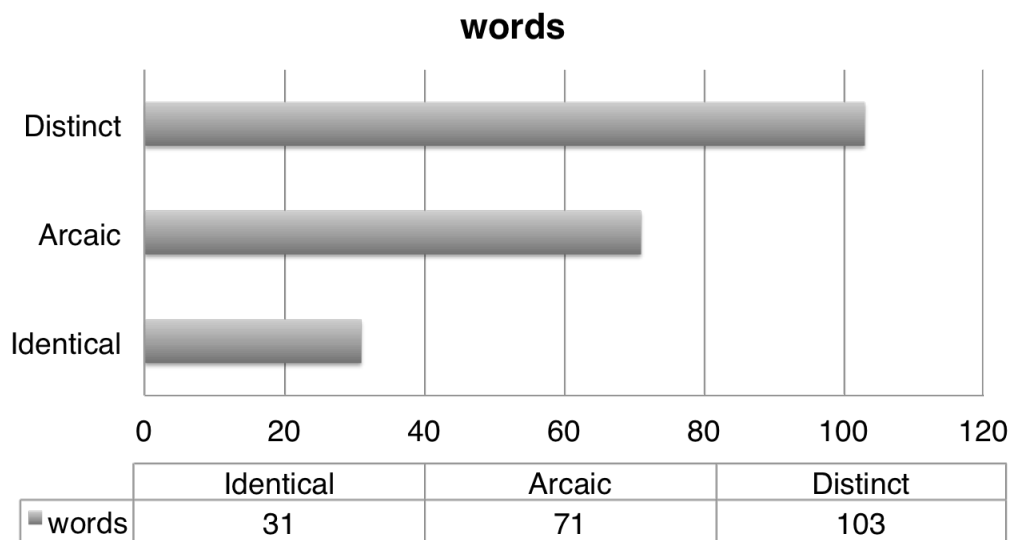
After I did the cognates determinations I started to see three very obvious patterns. These three patterns are AAAAA with 77 words; ABAAA with 64 words; and ABCCC with 14 words. The least category, which is the third pattern, displays a colloquially strong relationship in which all of N, S, and H are identical, thus cognates. This representation might be contributed to the substitution of the unliked MSA word. For Fayfa, it has commonly been assumed that F is descended from Himyaritic, whether Himyaritic is descended from Arabic or from another language remain a very controversial argument.

Calculations:

To do a liberal calculation of the percentage of the 206 words, I have to find the number of cognates between each two languages. What I did is I counted how many times each two languages share cognates. After that, I found their percentages. The languages addressed here are as following:

	Cognate percentages
MSA & F	85 cognates out of 203 = 41.87%
MSA & N	153 cognates out of 203 = 75.37%
MSA & S	152 cognates out of 203 = 74.88%
MSA & H	159 cognates out of 203 = 78.33%
F & N	87 cognates out of 203 = 42.86%
F & S	82 cognates out of 203 = 40.39%
F & H	88 cognates out of 203 = 43.35%
N & S	180 cognates out of 203 = 88.67%
N & H	171 cognates out of 203 = 84.24%
H & S	169 cognates out of 203 = 83.25%

MSA & F in specific:



Diversification Time: $t = (\ln C) \div (2 \ln r)$, in which:

$t = 1000$ s of years of separation , $C =$ percentage of cognates between 2 languages , $r =$ a constant. % retention = .81 (per millennium), $\ln =$ natural logarithm: $\ln x = \log_e x$, $e = 2.718281828... = \lim (1 + 1/n)^n$

Diversification Time

MSA & F	$C = 41.87\%$, $-0.87 / 0.48 = 1,812$
MSA & N	$C = 75.37\%$, $-0.28 / 0.48 = 583$
MSA & S	$C = 74.88\%$, $-0.29 / 0.48 = 604$
MSA & H	$C = 78.33\%$, $-0.24 / 0.48 = 500$
F & N	$C = 42.86\%$, $-0.85 / 0.48 = 1770$
F & S	$C = 40.39\%$, $-0.9 / 0.48 = 1875$
F & H	$C = 43.35\%$, $-0.84 / 0.48 = 1750$
N & S	$C = 88.67\%$, $-0.12 / 0.48 = 250$

N & H

C = 84.24%, $-0.17 / 0.48 = 354$

H & S

C = 83.25%, $-0.18 / 0.48 = 375$

Subgrouping:

MSA & F: languages in a family, **MSA & N:** languages in a family, **MSA & S:** languages in a family, **MSA & H:** languages in a family, **F & N:** languages in a family, **F & S:** languages in a family, **F & H:** languages in a family, **N & S:** dialects, **N & H:** dialects, **H & S:** dialects

¹ http://www.rapidtables.com/calc/math/Ln_Calc.htm

References:

Alfaifi, Hassan J. (Name in Arabic). Third Edition.

Hetzorn, Robert. 1997. *The Semitic Languages*. Routledge.

John Huehnergard and Aaron D. Rubin. 2011. Phyla and Waves: Models of Classification of the Semitic Languages. In Stefan Weninger (ed.), *The Semitic Languages: An International Handbook*, 259-278. Berlin: Mouton.

Lewis, M. Paul, Gary F. Simons, and Charles D. Fennig (eds.). 2016. *Ethnologue: Languages of the World*, Nineteenth edition. Dallas, Texas: SIL International. Online version: <http://www.ethnologue.com>.

Rabin, Chaim. 1951. *Ancient West-Arabian*. London: Taylor's Foreign Press.

Rubin, Aaron D. 2008. The Subgrouping of the Semitic Languages. *Language and Linguistics Compass* 2. 61-84.

Swadesh, Morris. 1955. Towards greater accuracy in lexicostatistic dating. *International Journal of American Linguistics* 21:121-137.

Tuesday 5:30-5:45 PM Woodburn Hall Room 100

Topic Modeling the Hàndiǎn (汉典)

Colin Allen, Hongliang Luo, Jaimie Murdock, Jianghuai Pu¹, Xiaohong Wang, Xiaoliang Wang, Wenjing Yuan, Kun Zhao, and Yanjie Zhai, Indiana University

We describe a collaborative effort between Indiana University and Xi'an Jiaotong University to support exploration and interpretation of a corpus of over 18,000 ancient Chinese documents - the 汉典 corpus which we also refer to as the "Handian" corpus. We describe the corpus and introduce our application of probabilistic topic modeling to this corpus, with attention to the particular challenges posed by modeling ancient Chinese documents. We give a specific example of how the software we have developed can be used to aid discovery and interpretation of themes in the corpus, using a public interface available at <http://inphodata.cogs.indiana.edu/handian/>.

Tuesday 3:15-3:30 PM Woodburn Hall Room 101

语言的进化与自然选择——语言进化适应论的发展历程及相关争议

CHU Hangjun

自然选择在复杂认知机制的进化上扮演重要作用。语言进化适应论涵盖了主要用自然选择来解释语言进化的各种理论。适应论支持者虽然对语言选择优势的认识尚存在争议，但一致认为自然选择才是解释语言进化最重要的科学理论。他们和批评者观点的差异主要体现在

为在语言进化问题上对各种进化机制解释力认识的不同。我们认为上述差异的实质是一种程度区别而非绝对不同，相关学者语言观的差异是造成本领域研究出现众多学术争论的重要原因之一。

Monday 5:15-5:30 PM Woodburn Hall Room 100

GENITIVE CASE LICENSING IN THE SUBJECT OF COMPUND CLAUSES IN OLD ANATOLIAN TURKISH

Ahmet Naim ÇIÇEKLER

It is indicated by some researchers that in Western and Eastern group of Turkic Language there is genitive case assignment, but this process of assignment is made in different ways. Miyagawa (2008) mentions there are two different genitive case assignments in Altaic languages. One is C-licensing, the other is D-licensing. And Modern Turkish belongs to the C-licensing category.

In structures of Modern Turkish showing nominal coherence, the inner clause subject is assigned with genitive case. In other words, the inner clause subject is assigned with genitive case as a result that the inner clause predicate taking –Dlk, -AcAk, and –mA morphemes takes a possessive suffix coherent with the subject. Miyagawa (2008) shows Modern Turkish within the category of Tüm-assigning languages. The process of assigning the inner clause subject with genitive case takes place in inner clause.

Another issue related to the assignment of genitive case in Modern Turkish is that supposing the processes mentioned above take place within the inner clause, it is obligatory for the inner clause subject to be assigned with genitive case. In Old Anatolian Turkish, genitive case assignment occurs with morphemes –Dlk, and –AcAk. The inner clause

predicate nominalized with these two morphemes has a harmony with its subject by taking a possessive suffix coherent with the subject; and as a consequence of this harmony, the process of assigning the inner clause subject with genitive case takes place. That is to say, just like in Modern Turkish, genitive case assignment occurs with processes taking place within the inner sentence. Accordingly, Old Anatolian Turkish, which is a historical period of Modern Turkish, must be considered in Tüm-assigning languages. Because of the reasons mentioned above, the assignment of inner clause subject with genitive case in Old Anatolian Turkish shows similarity with Modern Turkish, but genitive case assignment, contrary to Modern Turkish, is seen as a result of studies to be used optionally. Whereas there is not nominative case assignment in structures showing nominal coherence in Modern Turkish, it is seen in Old Anatolian Turkish that structures showing nominal coherence are assigned also with nominative case. Moreover, nominative case assignment is proportionately more than genitive case assignment.

In 13th century texts the subject is seen to be assigned with nominative and genitive cases in positions where there is nominal coherence. When a comparison is made between two cases, the frequency of nominative case (%78) is seen to be more than genitive case (%22).

In texts from 14th century, it is seen that in inner clauses where there is nominal coherence the sentence is assigned with %85 nominative and % 15 genitive cases in proportion. This situation shows the appearance in 14th century has a dual structure. In proportion to the previous century, as the main reason of the increase in nominative case, we may put forward that –AcAK morpheme began to be used and it chose mainly the nominative case.

When texts from 15th century, which is accepted to be the last period of Old Anatolian Turkish, are analyzed; it was observed that nominative case is % 62 and genitive case is % 38. Compared to 14th and 15th centuries, the rate of genitive case assignment in sentences with

nominal coherence increased clearly. This shows the case suffix which the inner clause subject is assigned to became closer to genitive case.

Miyagawa (2008) states about Turkish that the inner clause subject is only assigned with genitive case; but that situation is optional in Japanese, that is to say, both nominative and genitive case assignments are possible. The optional situation between genitive and nominative cases seen in Old Turkish is also observed in Old Anatolian Turkish even if nominative case assignment is more in proportion. As a result, predicates in Old Anatolian Turkish to which –Dlk and–AcAk morphemes are added have nominal coherence with their subjects. As a consequence of this coherence, contrary to Modern Turkish, not the obligatory genitive case, but the optional assignment of both two cases is possible.

When we analyze the general proportion of Old Anatolian Turkish, nominative case assignment is seen as % 73 and genitive case assignment is % 27. When sample sentences assigned with both nominative and genitive cases are analyzed, no formal or syntactic difference is encountered between them. This case supports the argument of Guzev and Deniz-Yılmaz (1999) asserting some affixes are used optionally in Old Anatolian Turkish, which is based on Melnikov's principle Using Affixes Economically (Eklerin Tasarruflu Kullanılması) in Turkish. Thus, as there is no parameter about what situations are available for nominative and genitive case assignment in structures showing nominal coherence, it can be stated that, in Old Anatolian Turkish, the inner clause subject assigns either nominative or genitive case optionally in structures showing nominal coherence.

Briefly, genitive case in Modern Turkish is assigned by –Dlk, -AcAk and –mA when these morfems agree with the subject of inner clause. The genitive case assignmet occurs inside the inner clause. Old Anatolian Turkish which is a historical period of Modern Turkish shows pallelism with Modern Turkish in that the genitive case assignmet occurs in

inner clause also. In Old Anatolian Turkish genitive case assignment is optional on contrary to Modern Turkish. In this study, under which circumstances genitive case assignment in Old Anatolian Turkish will be examined.

Tuesday 4:00-4:15 PM Woodburn Hall Room 100

Historical sources of alveolar-velar correspondences in Chinese Dialects

DONG Hongyuan

This paper looks at a rare type of sound correspondence between an alveolar initial, e.g. t-, and a velar initial, e.g. k-, in Chinese dialects. The aim of this paper is to identify the sources of such correspondences. Although many previous studies have touched upon this phenomenon, e.g. Bao (2006), Baxter and Sagart (2014), no systematic analysis of this phenomenon across different dialects has been given. I examined all the dialect data given in “汉语方音字汇”, and picked out all those words that have an alveolar-velar correspondence across many different dialects. Indeed this correspondence is very rare, and the more representative data are given in the following table. The Middle Chinese initials of these characters are given in parentheses after the entry words. The dialect locations are also given after each pronunciation.

	猪 (知)	畜 (彻)	展 (知)	粥 (章)
Alveolar	ty (Fuzhou)	t ^h ɪk (Xiamen)	tien (Chaozhou)	tiu (Shuangfeng)

Velar	k ^h y (Jian'ou 豨)	xøyʔ (Fuzhou)	kĩ (Shuangfeng)	kiok (Chaozhou)
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I will argue that these four words represent at least three different sources ranging from Old Chinese, Middle Chinese and more recent innovations.

The word 豨 has an initial t- in Fuzhou, and it has been widely agreed upon that Fuzhou initial t- here is a preservation of the Old Chinese initial t-. On the other hand, the Jian'ou pronunciation has a velar initial k^h-. But the etymological character for this pronunciation is 豨. According to the book *Fāngyán* by Yang Xiong (in late Old Chinese period), the word for “pig” in the Chu area was 豨 (“南楚谓之豨”). Thus this t-k^h correspondence might have been a dialect difference in Old Chinese.

Now let's look at the word 畜. Xiamen has a t^h- initial, while Fuzhou has a x- initial. This correspondence might have come from Middle Chinese, since the word 畜 also had a pronunciation with the 晓 initial in Middle Chinese, which could develop into the x- initial in Fuzhou.

The word 展 represents another source. The Chaozhou dialect has a t- initial, which corresponds well to the original initial in Old Chinese. However the initial k- in Shuangfeng is rather unusual, since there is no written record for the existence of such a velar initial for this word. According to Blevins and Grawunder (2009), the t-k alternation is perceptually quite close and leads to variations across many different languages. Thus it is very likely that this k- initial in Shuangfeng is a more recent innovation.

The word 粥 is a little ambiguous. Since the Middle Chinese initial of this word is 章, the Old Chinese initial should be k-, and the Chaozhou

pronunciation is consistent with this. As to the initial t- in Shuangfeng, there are two competing theories. It could either be a preservation of older features (e.g. Luo 1940), or a more recent innovation (e.g. Bao 2006). Suppose it represents an older feature, then this could be another case of dialect variation in Old Chinese. If this is a more recent innovation, it could be similar to the t-k alternation as discussed by Blevins and Grawunder (2009).

Therefore the alveolar and velar correspondences in Chinese dialects might have come from three different sources. Some may be due to dialect variation in Old Chinese. Some may correspond to a distinction in Middle Chinese, and some may be more recent innovations.

References:

Bao, H. (鲍厚星). 2006. *Xiāng Fāngyán Gàiyào*.

Blevins, J. & Grawunder, S. 2009. *KL > TL sound change in Germanic and elsewhere: Descriptions, explanations, and implications.

Baxter, W.H. & Sagart, L., 2014. *Old Chinese: A new reconstruction*.

Luo, C. (罗常培). 1940. *Línchuān Yīnxì*.

Wednesday 11:20-11:50 AM Woodburn Hall Room 100

The Evolution of Language, Creativity and Narrative

Rachel EDWARDS

Any account of the role of creativity and innovation in the evolution of language appears to face a fundamental dichotomy: either humans think in the languages they speak, or in another, unarticulated system. While the former of these hypotheses have advocates from both generative linguistics (e.g. Hinzen and Sheehan, 2013) and the diffuse

community labelled 'cognitive linguistics' (e.g. Pederson et al., 1998), it nevertheless leads inexorably to the notion of linguistic relativity, associated with Whorf (1956), and in particular the stronger version of linguistic determinism. If there is an orthodox position now, it is that thought exists prior to its external expression, as Penn et al. note 'the adaptive advantages of being able to reason in a relational fashion have a certain primacy over the communicative function of language' (2008: 123). Moreover, as Schoenemann maintains '[symbols] for things must logically be applied to things that in some sense already exist in our own cognitive world. From an evolutionary perspective, there would be no point to communication (and therefore language would not have evolved) if such cognitive categories did not already exist' (1999: 319). However, the relationship between a biologically endowed capacity for thought and a culturally determined conventional system for representation is not straight forward and recent interdisciplinary studies suggest a growing coevolution between culture and genes (Laland et al., 2010; Morgan, 2015; Richerson et al., 2010).

The creativity in tool manufacture and use has often been cited as evidence for the appearance of language. Scarred animal bones found in Ethiopia and dated from 2.5 mya show evidence of having been stripped of meat and thus the use of 'Oldowan industry' (early lower palaeolithic) stone flakes found nearby, associated with *Australopithecus garhi*. However these Mode1 category industries are not substantially different from the employment and modification of available materials for the construction of ad hoc tools by present day chimpanzees and it is reasonable to assume that such skills were transmitted through observation and emulation. It is rather the advent of Mode 2, Acheulean (mid-lower palaeolithic) hand-axes at approximately 1.75 mya in Africa, and subsequently in other parts of the world, that indicates a cognitive breakthrough (Beyene et al., 2012). These tools, manufactured by *Homo erectus*, were mainly of a uniform size and differ in a qualitative sense from preceding hominin and

contemporary non-hominin tools, their manufacture involving mental rehearsal, taking a large lump of rock and, from this, imagining a finished tool, and so repeatedly knapping the rock until the desired shape is achieved (Wynn, 2012). The appearance of Mode 2 tools followed a period of genetic changes which resulted in some reorganisation of the brain, including greater lateralisation, and a doubling in brain size, an alteration that carried such deleterious effects that it must have been the result of a significant adaptive pressure. The cultural advancements that accompanied this period also included the first migration out of Africa indicating a capacity for innovation and accommodation to new environments, far quicker than evolutionary change could accomplish. There are also suggestions that *H. erectus* made use of fire and engaged in coordinated hunting and scavenging (Lynch and Granger, 2008).

A cultural revolution on such a scale is indicative of far greater cooperation than any that exhibited by any extant species of primate, and the presence of cooperation is a necessary condition for the emergence of language. Presuming that language in its modern form and the human modifications for speech did not appear *de novo* in the last few hundred thousand years, it seems most plausible that *H. erectus* was endowed with a form of protolanguage, building on the gestural communicative abilities of apes demonstrated in their natural environment, and the basic use of symbols following training in captivity (Gibson, 2012). However, this period in hominin evolution corresponds to a classic stage of punctuated equilibrium (Gould and Eldredge, 1993) and the subsequent million years are characterised by almost complete stasis. As the archaeologist J. Desmond Clark is reported to have observed, as Acheulean axes ‘had hardly changed shape through a million years...and across three continents’, then, if these hominins had language ‘these ancient people were saying the same thing to each other, over and over and over again’ (Stringer, 2011: 125).

The next period of cultural innovation in the hominin lineage begins around 500 kya and includes the construction of more sophisticated tools, formal artefacts, art, structures for living, transportation of valued materials over distances, rituals, migration and adaptation to new environments, accompanied by further brain growth and reorganisation culminating in the speciation event of *Homo sapiens* by 200 kya. As McBrearty and Brooks conclude, there was ‘a gradual assembling of the package of modern human behaviors in Africa’ between 250-300 kya (2000: 453). This species was endowed with a unique mode of cognition with distinctive characteristics including recursive creativity, conscious reflection and logical rule-based, abstract thinking enabling the construction of internal narrative with multiple participants (e.g. Evans and Frankish, 2009; Eagleman, 2011). Most significantly, *H. sapiens* developed a complex system of symbols for the external representation of this mode of thinking: modern language with the properties of recursive embedding, and complex temporal, spatial and existential displacement.

Modern language, we argue, evolved as a result of the need to externalise creative narrative, a universal property of human cultures, not merely the utilitarian exchange of useful information (see also Tomasello, 2008). The ability to engage, as both tellers and listeners, in extended narratives, despite the cost in terms of time (if not energy), is an evolved trait and it is only through narrative that we, as individuals, came to develop advanced autobiographical memory and thus a sense of self (and others) and the ability to create and imagine future scenarios. Narrative helps to harness and stabilise memories for extended periods of time and also enables memories or stories to be shared with ever larger groups of people. Greater group size means that there can be greater social cooperation and efficient division of labour. We propose that language therefore, evolved in one breeding group of hominins for the purpose of narrative, which facilitated social

and cultural innovations as well as greater social cohesion and enabled that group to outcompete rival hominin groups.

References:

Beyene, Y., Kato, S., WoldeGabriel, G., Hart, W. K., Uto, K., Sudo, M., Kondo, M., Hyodo, M., Renne, P. R., Suwa, G. & Asfaw, B. (2012) The characteristics and chronology of the earliest Acheulean at Konso, Ethiopia. *Proceedings of the National Academy of Science* 110, 5, 1584–1591.

Clayton, N. S. & Dickinson, A. (1998) Episodic-like memory during cache recovery by scrub jays. *Nature*. 395, 272-274

Eagleman, D. (2011) *Incognito : the secret lives of the brain*. Edinburgh, New York: Canongate.

Evans, J. S. B. T. & Frankish, K. (2009) *In two minds : dual processes and beyond*. Oxford; New York: Oxford University Press.

Gibson, K. (2012) Language or protolanguage? A review of the ape language literature. In: Tallerman, M. & Gibson, K. (eds.) *The Oxford Handbook of Language Evolution*. Oxford: Oxford University Press.

Gould, S. J. & Eldredge, N. (1993) Punctuated equilibrium comes of age. *Nature*, 366, 223-227.

Hinzen, W. & Sheehan, M. (2013) *The philosophy of universal grammar*. Oxford: Oxford University Press

Laland, K. N., Odling Smee, J. & Myles, S. (2010) How culture shaped the human genome: bringing genetics and the human sciences together. *Nature reviews Genetics*. 11, 137-148

Lynch, G. & Granger, R. 2008. *Big brain: the origins and future of human intelligence*. Basingstoke: Palgrave Macmillan.

McBrearty, S. & Brooks, A. S. (2000) The revolution that wasn't: a new interpretation of the origin of modern human behavior. *Journal of Human Evolution*, 39, 453-563.

Morgan, T. J. H., Uomini, N. T., Rendell, L.E., Chouinard-Thuly, L., Street, S. E., Lewis, H. M. Cross, C. P., Evans, C., Kearney, R., de la Torre, I., Whiten, A. & Laland, K. N. (2015) Experimental evidence for the co-evolution of hominin tool-making teaching and language. *Nature Communications*. 6, Article number: 6029

Pederson, E., Danziger, E., Wilkins, D., Levinson, S., Kita, S. & Senft, G. (1998). Semantic typology and spatial conceptualization. *Language*. 74, 557-589.

Penn, D. C., Holyoak, K. J. & Povinelli, D. J. (2008). Darwin's mistake: Explaining the discontinuity between human and nonhuman minds. *Behavioral and Brain Sciences*, 31, 109-+.

Richerson, P. J., Boyd, R. & Henrich, J. (2010) Gene-culture coevolution in the age of genomics. *Proceedings of the National Academy of Science*. 107, suppl. 2, | 8985–8992.

Schoenemann, P. T. 1999. Syntax as an emergent characteristic of the evolution of semantic complexity. *Minds and Machines*, 9, 309-346.

Stringer, C. 2011. *The Origin of Our Species*. London: Allen Lane.

Tomasello, M. 2008. *Origins of Human Communication*. Cambridge, MA: MIT Press

Whorf, B. L. (1956) *Language, thought, and reality; selected writings*. Cambridge, MA: Technology Press of Massachusetts Institute of Technology.

Wynn, T. (2012) The Palaeolithic Record. In: Tallerman, M. & Gibson, K. R. (eds.) The Oxford Handbook of Language Evolution. Oxford: Oxford University Press.

Monday 10:10-11:10 AM Woodburn Hall Room 100

***Homo erectus* and the Semiotic Progression**

Daniel EVERETT

This paper argues that language is primarily a tool for communication, not primarily a means of thought expression. It makes the case that language has its roots in (likely) intentional iconicity of Australopithecines and probably had reached the level of a G1 grammar (linear ordering of symbols + gestures & pitch modulation, or triality of patterning) more than one million years ago. Other forms of language, e.g. hierarchical, recursive grammars, are later embellishments that are functionally useful (Simon 1962) yet are neither necessary nor sufficient to have human language. This talk considers the evolution of culture among early hominins and how gap between indexes and icons to symbols might have been bridged. I argue that *Homo erectus* is the inventor of language via symbols and discuss how symbols could have led to what I refer to as triality of patterning, the hallmark of all human languages, found in no other species we are aware of currently. The central claim is that the “Semiotic Progression” (indexes → icons → symbols → triality) predicted implicitly by C.S. Peirce offers the best model the appearance of language in the genus *Homo*.

Tuesday 11:20-11:50 AM

Woodburn Hall Room 100

Cerebral encoding of syntactic-levels in the Mandarin Chinese Left-Periphery: insights from fMRI

Murielle FABRE, *INALCO, CRLAO (CNRS UMR 8563, INALCO/EHESS) & Collège de France - Chaire de Psychologie cognitive expérimentale & Cognitive Neuroimaging Unit of INSERM U992 (UNICOG, NeuroSpin – CEA)*

In the last two decades, a variety of approaches using brain-imaging methods have sought to characterize the regions implicated in syntactic processes to reveal part of the neural organization of language, a key issue for the origins and development of human language. Recent quantitative neuropsychological data have proven to support the linguistic hypothesis that words in a sentence are combined into hierarchical structures, pinpointing a perisylvian network of regions - encompassing inferior frontal regions and temporal ones - implied in the sentence structure processing (Pallier et al., 2011). However, the detailed view of which brain region codes for the different aspects of the sentence structure, and how the human brain computes and represents syntactic structures remain two open questions.

The actual state of the art is compelling researchers to deepen their understanding of the cerebral encoding of the different levels of linguistic representation and of the complexity parameters of sentence tree structure. Sentence hierarchical structure building is questioned by investigating experimentally the encoding of syntactic representation of the Chinese Left-Periphery and of syntactic movement. The central point of the current fMRI experiment (functional Magnetic Resonance Imaging study with 20 Mandarin native speakers), is that sentence domains including sentence Left-Periphery (e.g. [CP [IP [VP]]]) might be

an important complexity parameter to be considered in order to understand sentence cerebral encoding.

Previous typological and formal research on the syntax of the Mandarin Left-Periphery (see Topic and Focus literature : Badan 2008 ; Badan & Del Gobbo 2011 and 2015 ; Paul 2002, 2005, 2015 ; Shyu 1995 and 2001, and others) offers rich testing hypothesis to focus on the processing and cerebral encoding of the syntactic representation-levels present in Topic-Comment articulation, Focus, and more particularly on the properties of the sentence-initial Topic field, and on the contrastive interpretation of preposed objects.

Chinese Topic-Comment articulations are in fact the ideal testing-ground to investigate sentence hierarchical structure without the presence of overt functional elements (i.e. topic heads, although Mandarin Chinese might have some) and to investigate Topic-Comment articulations that are not generated through syntactic movement (i.e. Left-Dislocation/Topicalisation in condition c6 vs. Base-Generation for sentences with no movement analysis in conditions c2, c3, c4, see Table 1). Not only is the prevalence of Topic-Comment structures a typological very distinctive feature of Mandarin Chinese, but it was also shown that young children in the early stages of syntax acquisition have the ability to distinguish between the notions of subject and topic (Chien, 1983). Moreover, from a more formal point of view the traditionally labeled topic-prominence parameter can be reinterpreted by admitting that in the T-C articulation Topic projection's functional head is not filled by movement, but via an other syntactic process, namely External Merge (i.e. Base-Generation).

The issue of the informational value of topic is addressed by comparing brain activation for Scene-Setting Topic condition (c3) where the first DP plays the role of an adverbial frame localizing the following Comment clause, with (c2) and (c1) SVO Baseline conditions, which differ minimally in terms of lexical material (i.e. contrast c3/c2 > c1 only the first NP differs, see Table 1).

	Sentence structure	NP1	Hierarchical marking	NP2	Adv.+ VERB	COMPLEMENT 补语	Left-Periphery Parameters per CONDITION
c 1 Baseline	SVO Baseline	Determiner	Subordinator	Subject	VP	Complement in great quantity.	Baseline no CP position
		That tree	modifier (<i>de</i>)	leaves	already became yellow		with 'complex' subject
		那颗桃树	的	叶子	已经黄了	一大片。	no TOP = no Left Periphery
c 2 B-G	Gapless Base-Generated Topic	Topic	Comma / Pause	Subject	VP	Complement in great quantity.	Aboutness Topic (AT): highest in CP
		That Tree	,	leaves	already became yellow		Base-Generated no move
		那颗桃树	,	叶子	已经黄了	一大片。	Aboutness interpretation of the topic
c 3 B-G	Gapless Scene Setting Topic	Topic Space	Comma / Pause	Subject	VP	Complement in great quantity.	Scene-setting Topic: lower than AT in CP
		That Garden	,	leaves	already became yellow		Base-Generated no move
		那座果园	,	叶子	已经黄了	一大片。	Topic DP giving a spatial frame localizing the comment
c 4a B-G	Base-Generated Topic + Resumptive	Topic Object	Comma / Pause	Subject	Adv.+ Verb Resumptive pron.	Complement	Hanging Topic (HT) + resumptive pronoun
		Mister Wu	,	John	already knows + him	for a longtime.	Base-Generated no move
		吴先生 <i>i</i>	,	玛丽	已经认识 他 <i>i</i>	很久。	Topic bare DP no reconstruction
c 5 to discuss	OSV Topic + optional gap	Topic Object	Comma / Pause	Subject	Adv.+ Verb + <i>pro/trace?</i>	Complement	Left Dislocated (LD) + optional resumptive
		Mister Wu	,	John	already knows __/ <i>proi</i>	for a longtime.	Movement or null object : to be discussed
		吴先生 <i>i</i>	,	玛丽	已经认识 __ <i>proi</i>	很久。	Island test - reconstruction, ect.
c 6 A-bar mov	OSV Left Dislocated Topic + trace	Topic (DP) object	Comma / Pause	Subject	Adv.+ Verb + <i>trace</i>	Complement	Left-Dislocation (LD) targeting CP
		That book	,	Mary	already bought + __ <i>t</i>	for a long time.	A-bar Movement
		那本书 <i>i</i>	,	玛丽	已经看过 __ <i>t</i> <i>i</i>	一次。	Crossing tensed boundary no possible resumption
c 7 A mov	SOV Contrastive Topic or Positional Focus	Subject	.	Object	adv+ Verb + (Gap)	Complement	Contrastive Topic(Badan)/Positional Focus (Shu)
		Mary	,	that book <i>i</i>	already bought __ <i>i</i>	once.	A Movement in the IP - No CP layer
		玛丽	,	那本书 <i>i</i>	已经看过 __ <i>i</i>	一次。	Contrastive interpretation - preposed object
c 8 A-bar mov	<i>Lian</i> Focus - sentence internal	Subject	<i>lian</i>	Object	adv+ Verb + (Gap)	Complement	FOCUS : Movement in the IP - No CP layer
		Mary	<i>lian</i>	this book	<i>ye</i> + bought + __	for a long time.	A-bar Movement
		玛丽	连	这本书	也 已经看过 __	好几次。	sentence-internal <i>lian</i>

Table 1 Detailed experimental design of the fMRI Experiment on Chinese Left-Periphery. The experimental design aims at directly contrasting the brain activation related to these eight conditions. In addition to the previous contrasts, this experiment also attempts to tackle the broader question of the cerebral encoding of dependency links inside the sentence that has undergone syntactic movement transformations. This dependency can be achieved by overt or non-overt linguistic means, and Chinese offers an interesting and particular configuration where animacy gives rise to a more or less overt realization of the object constituent in the Comment clause, preserving the same surface word order. The very minimal contrast between c4 condition and c5 (see Table 1) allows to observe the difference between a coreference link achieved by means of an overt Resumptive (c4), Base-Generated Topic with resumptive [$O_iSV + resumptive_i$] or by a non-overt linguistic mean in (c5), a trace [$O_iSV + trace_i$], i.e. [$Topic_i + S + V + trace_i$].

Chinese left-periphery properties present also the opportunity to obtain a contrastive interpretation without moving constituents to the

Left-Periphery: in cases of sentence-internal lian-Focus (c8) and of preposed object (c7). Namely, this property allows the decorrelation of pragmatic and contrastive interpretation from the position in the Left-Periphery: c7 and c8 have a strong Pragmatic and contrastive interpretation without being moved to the LP.

Group-level analyses reveal different brain maps for the above cited different contrasts. Interestingly, Broca subpart Pars Triangularis is involved in the processing of Topic-Comment vs. SVO baseline (c2 > c1), Temporal Pole and Inferior Frontal Gyrus are involved in Object fronting through topicalisation, Base generation vs. A-bar movement to the Left-Periphery elicit a different set of brain areas (see Figure 1), and, last but not least, contrastiveness feature and lian-Focus elicit among other areas also posterior Superior Temporal Sulcus (pSTS) activations.

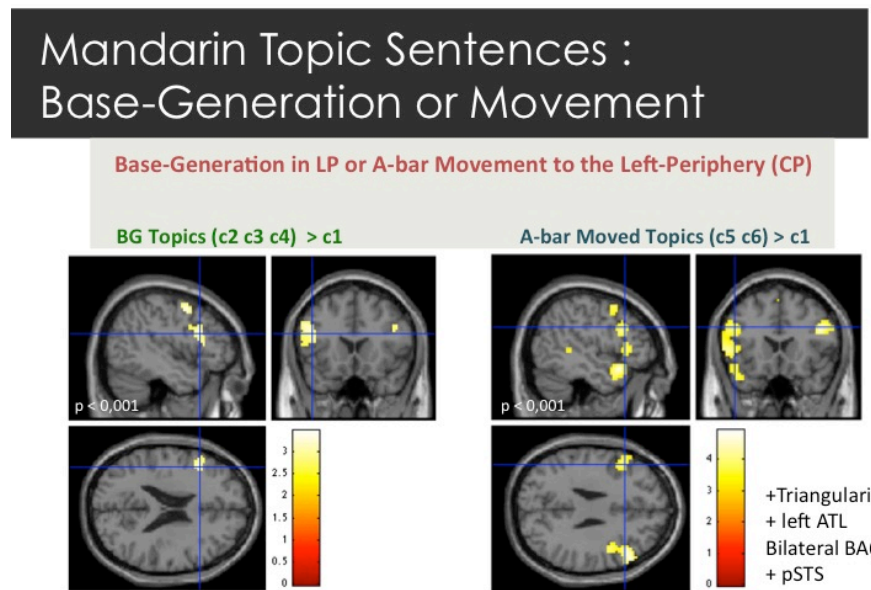


Figure 1 Base generation vs. A-bar movement to the Left-Periphery elicit a different set of brain areas.

To conclude, leveraging on fine-grained linguistic analyses of the Chinese Left-Periphery – both from typological and formal perspective – the present pluridisciplinary approach aims at investigating experimentally through neuro-imaging techniques the issue of the

cerebral representation of Topic and Focus in Mandarin Chinese and of the hierarchical organization of sentence in the Left-Periphery.

Wednesday 3:00-3:15 PM Woodburn Hall Room 100

Language evolution, dual processing and the Representational Hypothesis: a unified account of the emergence of language

Andrew FEENEY

There is much disagreement in the broad field that constitutes language evolution over almost every aspect of the picture of how language emerged in our species (see e.g. Bickerton, 2007). This is a consequence both of the paucity of palaeontological evidence (and the total lack of any linguistic evidence *per se*) from the periods at the heart of the question, and the cross-disciplinary nature of the investigation. This paper draws on the most recent empirical findings from the domains of evolutionary biology, paleontology, ethology, and cognitive psychology and seeks to synthesise the findings, from a linguistic perspective, into a coherent overall theory. I suggest that all current hypotheses can be classed on the basis of two binary distinctions as outlined in figure 1. The first pair, often referred to as 'nativist', are: A) a module of the mind/brain for language evolved in a classical neo-Darwinian manner; B) a module of the mind/brain for language emerged suddenly (in evolutionary terms) – a catastrophist account. The second pair consists of C and D. A range of non-nativist hypotheses are included in the third option: C) language itself evolved as a domain general, socio-cultural system. The final option D), which has scant support, is another catastrophist account: that language appeared suddenly with no domain specific modification to the brain. I argue that

all four possibilities give rise to significant problems in accounting for the evolution of language as a result of a failure to clarify the relationship of phonology, syntax and semantics.

	Gradual	Sudden
Module of the Mind	A	B
Socio-Cultural System	C	D

figure 1: possible accounts of language evolution

This causative tension is resolved in the view of language outlined in the Representational Hypothesis (Burton-Roberts, e.g. 2011) in which language is understood to be social, conventional system of symbolic sounds for the representation of mind internal structured semantic content.

The evolution of hominins stretches back some 7.5 million years to our last common ancestor with chimpanzees, our closest extant relatives in the animal kingdom (Sun *et al*, 2012). By scrutinising the cross-disciplinary data it becomes clear that there were two significant periods of rapid evolutionary change, corresponding to stages of *punctuated equilibrium* (Gould and Eldredge, 1993). The first of these occurred approximately two million years (mya) ago with the appearance of the genus *Homo* immediately following a period associated with a comparatively large number of changes to genes and genomic regions, particularly in the Human Accelerated Region 1 influencing brain lateralisation, organisation and connectivity as well as a doubling in overall brain size (Stringer, 2011; Kamm *et al.*, 2013). This era saw the first irrefutable evidence of cognitive behaviour that distinguishes the species from all others, including sophisticated tool

use, rapid adaptations to new environments and possibly the controlled use of fire (Beyene et al., 2012; Wynn, 2012; Lynch and Granger, 2008). These developments all indicate a greater degree of cooperation than that exhibited by any previous hominin or modern non-hominin species. However, the subsequent period of roughly a million years is characterised by almost complete cultural stasis in which there are no further significant changes. A second period of evolutionary activity began around five hundred thousand years ago, again involving reorganisation and growth of the brain with associated behavioural innovations, and gave rise to modern humans by at least two hundred thousand years ago (d'Errico and Henshilwood, 2011).

Based on the premise that 'there is a fundamental duality in human reasoning' (Frankish, 2009: 105) and the evolutionary rationale that owning two processing systems minimizes the effect that the brain has as an extremely expensive organ by off-loading as much of the work as possible to a less resource demanding automatic system, I adopt the approach of *dual processing theory* in which modern humans are understood to possess two mental systems (Eagleman, 2011; Evans, 2010). System One is primitive, unconscious, fast and automatic; System Two is evolutionarily recent, conscious, slow and reflective. The first period of significant evolutionary change in hominins resulted in greater cooperation but still under that control of the cognitive capacity evident in modern chimpanzees, System One. It is, however, the second breakthrough that constituted a great leap forward, involving the emergence of System Two type cognition including an advanced theory of mind and a fully recursive, creative cognitive capacity.

I suggest that as a consequence of the first of these evolutionary breakthroughs, the species *H. erectus* was endowed with a gestural, and then vocal protolanguage consisting of the simple concatenation of symbols (e.g. Jackendoff, 2002; Tallerman, 2012). It is certainly the case that the earliest adaptations that benefit vocalisation (descended

larynx, loss of air sacs, and possibly greater thoracic control and greater tongue innervation) are presumed to have first appeared contemporaneously with early *Homo*. The second breakthrough constituted a great leap involving the emergence of advanced theory of mind and a fully recursive, creative cognitive capacity; fully complex language evolved from its precursor protolanguage to represent the intricacy of System Two thinking. I propose that the theory outlined in the Representational Hypothesis clarifies an understanding of the nature of language as having evolved to represent externally this wholly internal, universal cognition, and it is the latter which is the sole locus of syntax and semantics. By clearly distinguishing between a phonological system for semiotic representation, and that which it represents, a syntactico-semantic mentalese (e.g. Carey, 2011; Fodor, 1975, 2008; Harnard, 2010; Wyn et al, 2009), the Representational Hypothesis offers a fully coherent and consistent understanding of the human faculty for language and its evolution.

References:

- Beyene, Y., Kato, S., WoldeGabriel, G., Hart, W. K., Uto, K., Sudo, M., Kondo, M., Hyodo, M., Renne, P. R., Suwa, G. & Asfaw, B. 2012. The characteristics and chronology of the earliest Acheulean at Konso, Ethiopia. *Proceedings of the National Academy of Science* 110, 5, 1584–1591.
- BICKERTON, D. 2007. Language evolution: A brief guide for linguists. *Lingua*, 117, 510-526.
- BURTON-ROBERTS, N. 2011. On the grounding of syntax and the role of phonology in human cognition. *Lingua*, 121, 2089-2102.
- Carey, S. 2011. Precipice of The Origin of Concepts. *Behavioral and Brain Sciences*. 34, 113-U117
- EAGLEMAN, D. 2011. *Incognito : the secret lives of the brain*, Edinburgh ; New York, Canongate.
- D'ERRICO, F. & HENSHILWOOD, C. S. 2011. The origin of symbolically mediated behaviour: From antagonistic scenarios to a unified research

strategy. *In: HENSHILWOOD, C. S. & D'ERRICO, F. (eds.) Homo symbolicus : the dawn of language, imagination and spirituality.* Amsterdam: John Benjamins.

EVANS, J. S. B. T. 2010. *Thinking twice : two minds in one brain,* New York, Oxford University Press.

Fodor, Jerry A. 1975. *The language of thought.* New York: Crowell

Fodor, Jerry A. 2008. *LOT 2 : The language of thought revisited.* Oxford New York: Clarendon Press: Oxford University Press

FRANKISH, K. 2009. Systems and levels: Dual-system theories and the personal-subpersonal distinction. *In: EVANS, J. S. B. T. & FRANKISH, K. (eds.) In two minds : dual processes and beyond.* Oxford ; New York: Oxford University Press.

GOULD, S. J. & ELDREDGE, N. 1993. Punctuated equilibrium comes of age. *Nature*, 366, 223-227.

Harnad, Steven. 2010. Eliminating the "concept" concept. *Behavioral and Brain Sciences*. 33, 213-+

JACKENDOFF, R. 2002. *Foundations of language : brain, meaning, grammar, evolution,* Oxford ; New York, Oxford University Press.

Kamm, G. B., F. Pisciotto, R. Kliger & L. F. Franchini. 2013. The Developmental Brain Gene NPAS3 Contains the Largest Number of Accelerated Regulatory Sequences in the Human Genome. *Molecular Biology and Evolution*. 30, 1088-1102

Lynch, G. & Granger, R. 2008. *Big brain: the origins and future of human intelligence.* Basingstoke: Palgrave Macmillan.

STRINGER, C. 2011. *The Origin of Our Species,* London, Allen Lane.

TALLERMAN, M. 2012. Protolanguage. *In: TALLERMAN, M. & GIBSON, K. R. (eds.) The Oxford Handbook of Language Evolution.* Oxford: Oxford University Press.

SUN, J. X., HELGASON, A., MASSON, G., EBENESERSDOTTIR, S. S., LI, H., MALLICK, S., GNERRE, S., PATTERSON, N., KONG, A., REICH, D. & STEFANSSON, K. 2012. A direct characterization of human mutation based on microsatellites. *Nature Genetics*, 44, 1161-+.

Wynn, T. 2012. The Palaeolithic Record. In: Tallerman, M. & Gibson, K. R. (eds.) *The Oxford Handbook of Language Evolution*. Oxford: Oxford University Press.

Wynn, T., F. L. Coolidge & M. Bright. 2009. Hohlenstein-Stadel and the Evolution of Human Conceptual Thought. *Cambridge Archaeological Journal*. 19, 73-83

Monday 4:00-4:15 PM Woodburn Hall Room 100

Commonalities between vowel systems and musical scales from an evolutionary perspective

Gertraud FENK-OCZLON, *University of Klagenfurt, Austria*

Parallels between language and music are considered as a useful basis for examining possible evolutionary pathways of these achievements. In this paper we present commonalities in the sound systems of language and music and some cognitive and evolutionary explanations emphasizing the key role of vowels in the language-music relationship.

Authors looking for parallels in the sound inventories of language and music [1, 2] often compared the whole phonemic inventory to musical pitches per octave and found that the number of phonemes across languages varies to a much greater extent (“from 11 in Polynesian to 141 in the languages of the Bushmen” [1]) than the number of pitches per octave (“typically between 5 and 7” [2]). We choose a different approach in the search for analogies in the sound systems [3]: Since vowels play a decisive role in generating the sound or sonority of syllables and show all the core components of music (timbre, intrinsic pitch, intensity, duration) we compared the inventories of *vowel systems*

and *musical scales* across cultures. Striking coincidences showed in the following cornerstones: a maximum of roughly 12 elements, a minimum of 2-3 elements, and a frequency peak in 5 elements, i.e. in 5-vowel-systems and pentatonic scales. Further correspondences were found between vowel pitch and musical pitch in nonsense syllables of Alpine yodellers as well as in other Austrian traditional songs containing only several sections of nonsense syllables.

In [4] we speculated whether cultures with a higher number of vowels also tend to use a higher number of pitches in melody. First evidence for such an assumption was gained from data of Australian Aboriginal languages and music.

The present study examines this hypothesis in more detail, using Nettl's [5] descriptions of indigenous Amerindian music and linguistic descriptions of the respective languages. The results: Languages with up to 4 vowels (e.g. Navaho, Cheyenne) tend to have tritonic or tetratonic scales, languages with 5 vowels (e.g. Creek, Yuchi) pentatonic scales, and languages with more than 5 vowels (e.g. Hopi) hexatonic or heptatonic scales.

These correspondences are discussed from an evolutionary perspective on music either as "protolanguage" or on both language and music as descendents of "half-musical" utterances [6], and with respect to experimental studies [7, 8] showing strong processing interactions between vowels and melody.

Reference

1. Besson, M. & Schön, D. (2001). Comparison between language and music. In I. Peretz & R. J. Zatorre (eds.), *The Cognitive Neuroscience of Music*. Oxford: Oxford University Press, 1-15
2. Patel, A.D. (2008). *Music, language, and the brain*. Oxford: Oxford University Press

3. Fenk-Oczlon, G. & Fenk, A. (2009-2010). Some parallels between language and music from a cognitive and evolutionary perspective. *Musicae Scientiae*, special issue, 201-226
4. Fenk-Oczlon, G. & Fenk, A. (2009). Musical pitch in nonsense syllables: Correlations with the vowel system and evolutionary perspectives. In J. Louhivou et al. (eds.), *Proceedings of 7th Triennial Conference of the Europaean Society for the Cognitive Sciences of Music*, 110-113
5. Nettl, B. (1956). *Music in Primitive Culture*. Cambridge: Harvard University Press
6. Jespersen, O. (1894). *Progress in Language*. London: Swan Sonnenschein & Co
7. Kolinsky, R., Lidji, P., Peretz I., Besson, M., Morais, J. (2009). Processing interactions between phonology and melody: Vowels sing but consonants speak. *Cognition* 112, 1-20
8. Lidji, P., Jolicoeur, P., Kolinsky, R., Moreau, P., Conolly, J., Peretz, I. (2010). Early integration of vowel and pitch processing: A mismatch negativity study. *Clinical Neurophysiology* 121, 533-541

Tuesday 4:45-5:00 PM Woodburn Hall Room 100

Language Evolution and Systemic Typology

Gertraud FENK-OCZLON & August FENK, *University of Klagenfurt, Austria*

Starting point: Languages develop in accordance or in co-evolution with cognitive functions. At any point of time the constraints of our cognitive mechanisms are constraints on diachronic development, typological differentiation, and cross-linguistic variation. “Systemic Typology” takes

into account that each language goes through self-organizing processes optimizing the interaction between its (phonological, morphological, syntactical) subsystems and the interaction with its 'natural' environment, i.e. the cognitive and the articulatory system or the social-communicative environment [1].

In this paper, we focus on the 'psychological present' and a significant negative cross-linguistic correlation between the number of syllables per clause and the number of phonemes per syllable [2, 3].

Procedure: Native speakers of 51 languages from all continents (19 European, 32 Non-Indo-European) were asked to translate a matched set of 22 simple declarative sentences encoding one proposition in one intonation unit into their mother tongue. Furthermore, they were asked to count the number of syllables in normal speech. The number of phonemes was determined by the authors, assisted by the native speakers and by grammars of the respective languages.

Results: The 51 languages in our recent sample show a considerable variation in the mean number of syllables per clause, ranging from 4.64 in Thai up to 10.96 in Telugu. The mean number of phonemes per syllable is 2.24, ranging from 2.79 in German to 1.76 in Hawaiian. The results of a cross-linguistic correlation between the syllable complexity and the number of syllables per sentence: $r = -0.73$ ($p < 0.01$). This correlation has proved to be very robust; from the first computation [2] in a sample of 26 predominantly Indo-European languages up to now 51 predominantly Non-Indo-European languages it has shown only little variation within a range from -0.77 to -0.73 .

Discussion: The negative cross-linguistic correlation between number of syllables per clause and number of phonemes per syllable indicates time limits being effective on clause length – time limits regarding the psychological present (~2 sec) as well as the breath-cycle –, which force a trade-off between the length of syllables in number of phonemes and

the length of clauses in number of syllables. Thus, the segmentation of natural languages and especially the limited size of clauses can be viewed as reflecting self-organizing processes accounting for such physiological and cognitive constraints.

Furthermore, recourse will be made to other significant correlations within the framework of Systemic Typology: Languages showing high syllable complexity tend to have a high number of words per clause, a low number of syllables per word and VO word order, whereas languages with simple syllable structure tend to have a low number of words per clause, a high number of syllables per word and OV word order. Higher syllable complexity is, moreover, associated with a larger phonemic inventory and with a higher proportion of monosyllabic words.

Reference:

- [1] Fenk-Oczlon, G. & Fenk, A. (1999). Cognition, quantitative linguistics, and systemic typology. *Linguistic Typology*, 3, 151-177
- [2] Fenk-Oczlon, G. & Fenk, A. (1985). The mean length of propositions is 7 plus minus 2 syllables – but the position of languages within this range is not accidental. In: d'Ydevalle. G. (ed.), *Cognition, information processing, and motivation*. North Holland: Elsevier Science Publishers B.V. 355-359
- [3] Fenk-Oczlon, G. & Fenk, A. (2010). Measuring basic tempo across languages and some implications for speech rhythm. Proceedings of the 11th Annual Conference of the International Speech Communication Association (INTERSPEECH 2010), Makuhari, Japan, 1537-1540

Monday 5:00-5:15 PM Woodburn Hall Room 100

Do FN400 potentials index conceptual priming during old/new judgment?

Manson Cheuk-Man FONG, Ivan Yifan ZOU, Patrick Chun Kau CHU, and William Shi-Yuan WANG, *Department of Chinese and Bilingual Studies, The Hong Kong Polytechnic University*

Objective: The frontal N400 (FN400) and parietal late positive complex (LPC) are two event-related potential (ERP) components commonly elicited in an old/new judgment task, in which subjects are asked to determine whether a given item belongs to a studied list (old) or not (new). Consistent with a dual-processing notion of memory in which the neural substrates supporting familiarity and recollection are distinct, these two temporally separated ERP components have frequently been accepted as indices of familiarity and the confidence in the recollection of studied items, respectively. However, another prominent proposal postulates that familiarity and recollection are both reflected in the LPC component, with a reduction in the FN400 magnitude indexing conceptual priming instead. The present study aims to examine the functional role of FN400 by including both pictures and visual words in the studied list.

Rationale and hypothesis: Previous works have reported that FN400 effect is present only if the studied items are presented in the same visual form during the subsequent old/new judgment, e.g., both as pictures or visual words. This result contradicts the conceptual priming hypothesis for FN400, which would predict that an FN400 effect could still be observed even if pictures and visual words were to be used, respectively, in the studied list and during the old/new judgment. One potential reason why such picture-to-word conceptual priming has not

been observed is that previous studies have not included a subsequent recollection task to measure the confidence of the old/new judgment, a factor that is known to influence both the FN400 and LPC amplitudes. In this ongoing work, we therefore re-examine the generality of the conceptual priming hypothesis by determining whether a picture-to-word priming effect can be found, when the trials in which subjects fail to recollect episodic details of the studied items are excluded.

Method: A group of 20+ university students will be asked to name a list of 80 items, which alternate between pictures and disyllabic Chinese words presented visually in groups of 20 items. Given that increasing the number of times the studied list is presented is known to enhance both FN400 and LPC, the whole list will be presented twice to increase the “memory strength” of the studied items. Subjects will then be asked to perform an old/new judgment for a word list that comprises 120 words of three memory categories: (1) old picture words (corresponding to studied pictures); (2) old repeated words (identical to the visual words in the studied list); and (3) new words. The three sets of words are matched in semantic category, familiarity, and number of strokes (separately for the first and second Chinese characters). For each word that is judged “old”, subjects will be further asked to recollect whether it has first been presented to them as picture or visual word. This recollection task provides the basis for isolating the trials in which the old/new judgment is made with high confidence for ERP analysis. The peak amplitudes and latencies of FN400 and LPC components will be measured at the frontal and parietal electrodes, respectively, and analyzed by planned pairwise comparisons among the three memory categories.

Expected findings: Both the old picture words and old repeated words are expected to elicit a less negative FN400 and more positive LPC than new words. The presence of picture-to-word priming will support the conceptual priming hypothesis of the FN400. Whether a difference in

FN400 magnitude can be observed between the two types of old words depends on a number of factors (e.g., the strength of form priming, and the differential efficiency of memory encoding for pictures and words). Thus, such comparison will be done for the sole purpose of evaluating the relative efficacy of pictures and words in eliciting the old/new effects.

Research significance: This work will shed light on the conceptual priming hypothesis of the FN400, which helps resolve the two prominent proposals regarding the association of FN400 to either conceptual priming or familiarity. Also, the present work is an initial experiment for establishing that the FN400 and LPC effects can be consistently elicited in the present paradigm, which is intended to be subsequently used for evaluating decline in episodic memory in normal aging and pathological aging. The paradigm will find potential use in the diagnosis of various neurological diseases, particularly those in which episodic memory deficit is one of the first behavioral symptoms (e.g., Alzheimer's disease).

Wednesday 2:00-3:00 PM Woodburn Hall Room 100

Lexical tone, neuroplasticity and language evolution

Jackson GANDOUR

Voice pitch is an important information-bearing component of language that is subject to experience-dependent plasticity at both early cortical and subcortical stages of processing. Pitch processing itself is influenced by linguistically-relevant functional properties of the language that an individual is exposed to. Tonal languages provide a unique window for tracing the hierarchical transformation of pitch along the auditory

pathway and beyond in the human brain, and as a consequence, affords us an opportunity to study lexical tone, neuroplasticity and language evolution. Human brain responses at both cortical and subcortical levels are differentially weighted depending on specific temporal attributes of pitch. Functional neuroimaging (fMRI) shows that pitch processing recruits the hemispheres differentially as a function of its phonological relevance to the listener. The mismatch negativity (MMN)—a neural index of early, cortical processing—shows that pitch processing is shaped by the relative saliency of tonal features. The frequency following response (FFR)—a neural index of pitch encoding at the level of the auditory brainstem—shows that enhancement of pitch features is sensitive to rapidly-changing sections of tonal contours. The cortical pitch-specific response (CPR)—a series of neural markers sensitive to temporal attributes of dynamic pitch contours (Na, Pb, Nb; Na–Pb, Pb–Nb)—reveals language-dependent sensitivity to separate attributes of pitch during early stages of sensory processing in the auditory cortex. These restrictions to separate pitch attributes suggest that relative weighting of CPR components varies depending on their sensitivity within a particular temporal window. Manipulation of pitch salience and pitch height yields heightened sensitivity in the earlier temporal window (Na–Pb). In contrast, changing rate of pitch acceleration relative to a constant rate evokes heightened sensitivity in the later temporal window (Pb–Nb). Differences in relative changes in magnitude between cortical and brainstem components may implicate transformation in pitch processing at the cortical level, presumably mediated by local sensory and/or extrasensory influence overlaid on the brainstem output. A theoretical framework for a neural network is proposed. It involves coordination between local, feedforward, and feedback components that can account for experience-dependent enhancement of pitch representations at multiple locations of an integrated, distributed pitch processing network. In regard to the theme of this conference, these empirical data on experience-dependent neuroplasticity of pitch processing may

add another perspective to include in the story of the evolution of language.

Tuesday 3:15-3:30 PM Woodburn Hall Room 100

A Cognitive Account for Co-evolution of the Stone Tools Making and Word Classes

GUO Chunjie, Nanjing University of Aeronautics and Astronautics

Recent years have seen increasing interest in the research of co-evolution of the stone tools making and language. In a study of Paleolithic technology and human evolution, Ambrose (2001) put forward a hypothesis that complex tool-making, which required fine motor skills, problem-solving and task planning might have influenced the evolution of the frontal lobe, and co-evolved with the grammatical language 300,000 years ago. By conducting a series of experiments in teaching contemporary humans the art of Oldowan stone-knapping, Morgan and his colleagues (2015) arrived at their conclusion that the stone tool-making might generate some selection for teaching and language. A series of brain imaging studies conducted by Stout et al. (2011) have shown that tools making and language use similar parts of the brain, including regions involved in manual manipulations and speech production. Uomini and Meyer (2013) applied a technique called functional transcranial Doppler ultrasonography (fTCD) to subjects in the field to monitor their brains during the vigorous activity of making stone tools, the results offered support for the hypothesis that language and tools making coevolved.

If it is possible that the stone tools making and human language could have co-evolved in the Paleolithic Ages, then what could have triggered

the neurological and cognitive mechanisms for language when our ancestors were undertaking to make their stone tools? What are the common cognitive grounds underlying the production of the stone tools and language (to be more specific, what are the common cognitive grounds in the production of different modes of stone tools and different word classes)? Is it possible for the present-day brain imaging equipments to pick up these cognitive patterns? These questions might offer some help in better understanding the co-evolution of stone tools making and human language in their earliest stages. This paper reports a series of fMRI studies on the neurological and cognitive relationships between the making of different mode of stone tools (Clark, 1969) and the different semantic pattern of word categories (Guo, 2013), in order to provide empirical evidence for the co-evolution of the stone tools making and lexical development in the Paleolithic Ages.

A group of college students are asked to have their brains scanned when they are thinking about stone tools making and the semantic meaning of some word classes. The paper is focused on this question: What are the common cognitive grounds underlying the production of different modes of stone tools and different semantic patterns of word classes? This general question is divided into 4 specific questions: (1) What cognitive properties are required in the production of each mode of the stone tools? (2) What cognitive properties are required in the production of each of different word classes? (3) What are the cognitive patterns in the evolutionary development of the stone tools making and different word classes? (4) Can the cognitive properties and patterns be mapped between the stone tools making and lexical development? The following analytical techniques are employed in the data analyses: analytical induction, cognitive analysis, contrastive analysis, logical analysis, phenomenology, and semantic analysis.

According to cognitive linguistics, human's language competence is not a specialized innate faculty of the brain, but rather a by-product of a general cognitive development in the hominin evolution. The tempo and mode of the stone tools making can help to interpret the associated cognitive and communicative (i.e. language) development of those tools makers. We argue that cognitive development for language occurs concurrently and is interrelated with the intellectual development for stone tools making. The chief reason why language could have co-evolved with the stone tools making lies in that they require the same or similar functioning in the cerebral and cognitive development. When our ancestors were undertaking to make their stone tools, the intellectual demand for problem-solving, the drive for communications, the coordination between the hand and mind, the need for voicing instead of gesturing in teaching, all this would have triggered the cognitive mechanisms for language.

References

- Ambrose, S. (2001). Paleolithic technology and human evolution. *Science*, 291, 1748-1753.
- Clark, G. (1969). *World Prehistory: A New Synthesis*. Cambridge: Cambridge University Press.
- Guo, C. J. (2013). *Semantic Studies on Item-Associate Lexicon*. Beijing: China Social Science Press.
- Morgan, T. J. H., Uomini, N. T., Rendell, L. E., Chouinard-Thuly, L., Street, S. E., Lewis, H. M., Cross, C. P., Evans, C., Kearney, R., de la Torre, I., Whiten, A., & Laland, K. N. (2015). Experimental evidence for the co-evolution of hominin tool-making teaching and language. *Nature Communications*. January, 14.

Stout, D., Passingham, R., Frith, C. D., Apel, J., & Chaminade, T. (2011). Technology, expertise and social cognition in human evolution. *European Journal of Neuroscience*, 33 (7), 1328-1338.

Uomini, N. T. & Meyer, G. F. (2013). Shared Brain Lateralization Patterns in Language and Acheulean Stone Tool Production: A Functional Transcranial Doppler Ultrasound Study. *PLoS ONE*, 8 (8), e72693.

Tuesday 5:00-5:15 PM Woodburn Hall Room 101

先秦汉语“V+N”式定中结构研究

任荷, 北京大学中国语言文学系

1. 议题与研究意义：汉语的词类与句法成分并非一一对应，而是呈现出一对多的复杂局面。此特征带来了一个直接后果：甲类词与乙类词按照相同的顺序组合，仍然可以构成不同的结构。具体到先秦汉语时期，词类之间（主要针对名动形三大类）的纠葛更多，边界更模糊，组合关系上的多样化也更常见。“动词+名词”（以下简称“V+N”）的组合即是如此——它们既能构成述宾关系，也能构成定中关系（例如“死人、爰子”）。造成此情形的关键在于：先秦汉语动词既能充当谓语核心，又能直接作定语修饰中心语。作谓语是动词的核心功能，前人的关注较多。“直接作定语”的功能却鲜有人关注。显然，并非所有的动词都能不借助连接词（“之”）自由地充当定语，即定语位置对于进入其中的动词具有选择限制。那么我们不禁要问：到底什么样的动词能直接作定语？能被动词直接修饰的中心语名词又有什么特征？二者是如何组合成定中结构的？听话人又是如何进行语义解读的？定中结构对于动词和名词的选择限制与述宾结构有何不同？唯有针对先秦汉语“V+N”式定中结构作出全面细

致的研究，才能回答以上问题。而对这些问题的探讨，恰可作为我们观察先秦汉语动词、名词的语义句法特征的窗口，或可由此窥见先秦汉语动词和名词的语义特征与它们的句法行为之间的制约关系及动词与名词在语境中的组合机制。

2.语料与数据：为了确保语言的同构型，我们将此研究所涉“时段”进一步限定为“春秋末至战国前期”。我们选取《左传》、《国语》和《论语》三部重要文献，穷尽考察了其中的“V+N”式定中结构。共搜集到 200 余个符合条件的组合，其中出现的定语动词有 113 个，中心语名词有 98 个。

3.程序与方法：若要揭示出“V+N”式定中结构的内在规律，最关键的是深入发掘定语动词的特征与类别。故而本文的分类描写始于动词。我们考察了 113 个定语动词在三部文献中的所有用例，继而依据它们的句法表现、语义类别及二者之间的配合关系，将这些动词大致分为十三类。在此基础上，借鉴词义分解理论和事件结构理论详细剖析了每类动词的语义句法特征。与此同时，借鉴名词的常规分类法、基本层次范畴理论及生成词库理论，描写了每类动词所搭配的中心语名词的类别与特征，并逐一探讨了动词与名词是如何组合成定中结构的。

4.初步结论：在详尽的语料分析的基础上，我们分别对定语动词、中心语名词的语义特点进行了概括，并给出了“V+N”式定中结构的整体分类。能够直接作定语的动词大多是变化动词、状态动词或表“活动事件”的过程动词，也有少部分表“一般性动作事件”的过程动词，很少有典型动作动词或“致使-变化”动词。至于能被动词直接修饰的名词，从词汇类型结构看，多为人造类名词；从词汇的范畴层级看，抽象级名词最多，基本级也不少，几乎没有具体级名词。“V+N”式定中结构的内部并非同质，应分为“称谓型”和“述谓型”两种，两种组合在“编码的复杂度、语义解读的难度、语义整合的程度、类指功能的强弱、定语动词的时间性强弱”等五个方面表现出系统性差异。

5.未来方向：将考察范围扩展到上古汉语中后期乃至中古汉语、近代汉语及现代汉语时期，对“V+N”式定中结构的历时变化进行全面描写，希望藉此窥见汉语动词“类别”的变化及动名组合机制的演化规律。

Wednesday 4:30-4:45 PM Woodburn Hall Room 101

Lexical effects on quantifier scope processing in Chinese

**Yu-Yin Hsu¹ & Charles Lin², ¹Hong Kong Polytechnic University
²Indiana University**

Language is a complex adaptive system with multiple factors interacting with one another for linguistic comprehension and production. When one says 'Every man loves a woman', does it mean every man loves a *different* woman (i.e., the surface universal quantified reading), or the same woman (i.e., the inverse existential quantified reading)? Doubly quantified sentences in English can express either the surface or the inverse scope thus denoting both universal and existential readings (e.g., May, 1985). One may wonder what factors contribute to scopal preferences in reading similar sentences in Chinese, a language that is typologically different from English.

Three approaches have been taken to understand English sentences like these. Kurtzman and MacDonal (1993) report in an acceptability task that active sentences prefer the surface scope. In an ERP study, Dwivedi et al. (2010) report that sentences are ambiguous initially, and the structural computation occurs later. However, both studies showed that stimuli did not behave uniformly, suggesting that certain verb-lexical biases exist. Although the scope preference was not the focus of their picture-priming study, Raffray and Pickering (2010) report that the surface reading was preferred.

Unlike English, it has been argued in the literature of generative syntax that Chinese only allows the surface scope (e.g., Huang, 1982; Aoun and Li, 1993). Nonetheless, it is reported that "sometimes" the inverse scope is available (e.g., *Mei ge xuesheng dou pa yi wei nan laoshi* 'Every student is afraid of a male teacher'). Concerning Chinese sentence processing, some report that no inverse scope is available (Scontras et al., 2013; Tsai et al. 2014); some others report that the inverse scope is available, but there is no consensus on what kind of condition licenses what type of scope (Zhou and Gao, 2009; Hsu and Lin, 2014). Thus, we attempt to study whether the inverse scope is available in Chinese doubly quantified sentences and what lexical effects contribute to which scope preference.

This paper report results from two online reading experiments. Assuming that verbs within each verb type are the same, we looked at the effects of different aspectuality and of verb types (action, locative, perception, psych verbs), separately.

Experiment 1 examined different types of aspectuality paired with the same action verb 'attack': perfective *le*, durative *zhe*, experienced *guo*, progressive *zai*, and the zero form. It is generally assumed that *le* indicates the end result of an event, and *guo* indicates an event has been experienced and no longer exists at the speech time. As denoting the imperfective type of aspect, *zai* indicates an action in progress, and *zhe* indicates a static durative state (Smith 1991). The mean reading time shows that the inverse reading is preferred when it is marked with imperfect durative *zhe*, and no preference is shown with the zero form, unlike aspect *le*, *guo*, and *zai*, which prefer the surface reading.

Experiment 2 used a new linguistic context to examine two different surface word orders of doubly quantified sentences. Previous studies usually used the 'Every ... a ...' order. In Chinese such quantifier order in a declarative sentence requires a marker *dou* 'all', which expresses a semantic function that is still controversial (e.g., as a distributive

operator in Lee 1986, or as a maximality operator in Xiang 2008). In light of the fact that the inverse scope of *Every > a* sentences entails the surface scope (Reinhart 1978), but that in sentences like *A kid climbed every tree*, the reading of multiple kids climbing trees is only possible when the inverse reading is available, we examined two quantifier orders (*Every ... a ...* vs. *A... every...*) in conditional SVO sentences marked by *yaoshi* 'if', i.e., an environment that can naturally accommodate both existential quantified subject without the definite-marker *you* 'exist', and *every*-quantified subject without *dou* 'all'. The results suggest that, for perception verbs such as *hear* and *watch*, in the order *Every ... a ...*, the preferred interpretation is the existential reading, and in the order *A... every...*, the preferred interpretation is the universal reading. This suggests that the inverse reading can be available in Chinese. For action and psych verbs, no obvious preference was found, a result more in line with the report in Dwivedi et al. (2010) for English, that is, quantifier sentences may remain ambiguous during processing.

Wednesday 10:50-11:20 AM Woodburn Hall Room 101

阿尔泰语系语言元音声学空间分布特征比较研究

呼和, 中国社会科学院民族学与人类学研究所

本文立足“中国少数民族语言语音声学参数统一平台”，结合实验语言学、实验音系学和统计学的理论和方法，采用定量和定性分析相结合的方法，在音段（音素）层面上，通过观察和比较蒙古、维吾尔和鄂温克等三种阿尔泰语系语言的元音变体在声学空间中分布特征和变化规律，探讨了该三种语言元音变体在声学空间中分布的差异性和共性；在音位层面上，通过分析和比较上述三种语言的音位

特点、音位范畴差异性和共性以及音位归纳规律，探讨了三种语言音位及其变体在声学空间和感知空间中分布的差异性和共性，以及不同语言音位特征之间的关联性、系统性和规则性等问题。如图 1 为蒙古语标准话词首音节短元音格局图（呼和 b, 2016）。从图 1 中我们可以看到蒙古语标准话词首音节短元音音位及其变体在声学空间中的分布特点和变化规律。

本文的目标是从语音声学空间分布特征，探索语言之间的亲属关系，试图寻找实证语言亲属关系的声学线索，为语音演变和语言亲属关系研究提供新的理论和方法，从而推动语言亲属关系特别是阿尔泰语系语言亲属关系研究。

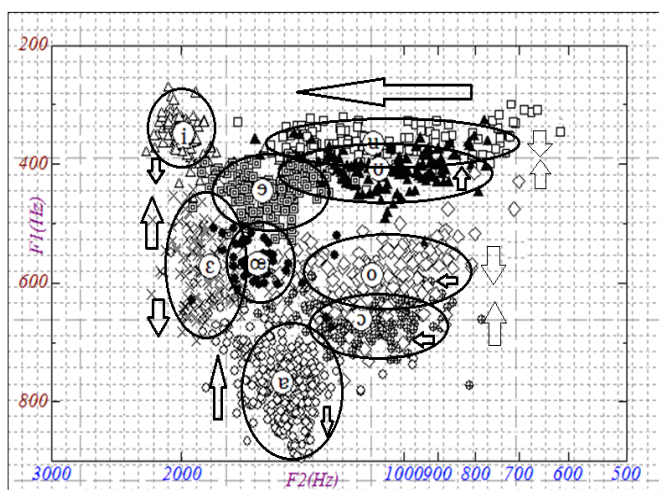


图 1 蒙古语标准话词首音节短元音格局（国际音标标记位置为平均值）（M）

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[1] 吴宗济，林茂灿主编，实验语音学概要[M]，北京：高等教育出版社，1989。

- [2] 呼和, .基于语音声学模型的阿尔泰语系语言亲属关系初探[J], 民族语文, 2013 年第 3 期。
- [3] 林焘, 王理嘉.北京语音实验录[M].北京:北京大学出版社, 1985。
- [4] 呼和, 蒙古语语音实验研究[M], 沈阳: 辽宁出版社, 2009。
- [5] 宝玉柱, 孟和宝音, 现代蒙古语正蓝旗土语音系研究[M], 北京: 民族出版社, 2011。
- [6] 呼和(a), 语言亲属关系声学语音学线索[J], 实验语言学, 2015 年第四卷第 4 号。
- [7] 呼和(b), 蒙古语元音演变的声学语音学线索[J], 中央民族大学学报 (哲社版), 2015 年第 4 期。

Wednesday 11:20-11:50 AM Woodburn Hall Room 101

北方官话“自个儿”等“A 个儿”代词的来源

李丹丹, 暨南大学

自吕叔湘先生的《近代汉语指代词》开始, 代词就一直是近代汉语研究的热点。然而, 与“您”、“们”、第一人称复数排除式和包括式等问题受到的热烈讨论相比, 反身强调代词的研究并未受到近代汉语学界的重视, 表现之一就是: 除了“自”、“自家”、“自己”外, 其他反身强调代词形式的来源并未厘清。据《汉语方言地图集》对 930 个方言点的检查, 现代汉语方言中至少存在 31 种类同“自己”的形式。这当中, 使用地点最多的形式是“自家”(约有 353 处方言点使用); 其次是“自己”(约有 235 处方言点使用); 第三是“自个儿”(约有 84 处方言点使用)。“自家”来源于“自”(吕叔湘

1985)， “自己”来源于“自”和“己”的复合（程工 1999、董秀芳 2002、朱冠明 2007）， 这两个反身强调代词形式的来源已经非常清楚， 那么， 目前在北方地区使用频率极高的“自个儿”来源于什么？

前人文献中， 只有太田辰夫（1958）和吕叔湘（1985）提出过对这个问题的看法。二位先生的看法基本一致， 那就是“自个儿”来源于、甚至相当于“自家”， 但都只是推测， 并没有论证。

本文所做的工作是：

首先， 我们在清末的北京官话课本中找到了最早的“自个儿”， 依据（一）学界对北方音系见晓精系字顎化时间的考证、（二）北方官话中“自家”从元代起的演变趋势和消失时间、（三）“自个儿”在北方官话中出现后的使用频率、类似形式、使用地域等与“自家”截然相反的表现， 证明“自个儿”并非来源于“自家”。

其次， 我们依据清代北京官话文献， 发现了在“自家”尚未消失、“自个儿”尚未出现的这一时期， 北京官话中新出现了一种反身强调代词形式“自己个儿”， 并依据语言事实提出“自个儿”来源于“自己”的假设：

自己>自己+一个儿>自己个儿>自个儿

这一假设， （一）符合构词法的普遍过程， 可以视作词汇化中的“截搭（blending）”； （二）得到明清北京官话文献的支持； （三）受到北京话“减音”现象的内部驱动。

第三， 北方方言中还有“各个儿（个个儿）”、“独自个儿”、“独个儿”、“一个儿”、“个儿”等 30 多种反身强调代词， 它们可以被统称为“A 个儿”代词。从田野调查中发现，“自己>自己+一个儿>自己个儿>自个儿”这一代词的演变模式， 并不仅仅存在于北京官话内部， 还可能还是其他“A 个儿”代词的演变路径， 这一路径可以概括为：

AB+个儿>AB 个儿>A 个儿

详见下表：

方言点	AB+个儿>AB 个儿>A 个儿
北京、东北等地	各自>各自+一个儿>各自个儿>各个儿 (即：个个儿)
河北唐山、承德、石家庄、邯郸、张家口、保定，天津，河南禹州等地	独自>独自+一个儿>独自个儿>独个儿
内蒙鄂尔多斯、临河，陕西神木、宝鸡，河北围场、丰宁、平谷、黄骅，甘肃环县、山西临县等地	$\emptyset\emptyset>\emptyset\emptyset$ +一个儿> $\emptyset\emptyset$ 个儿> \emptyset 个儿（ \emptyset 为零形式）

可见，“A 个儿”中的“个儿”是从表示“一个人”意义的数量短语“一个（儿化即‘一个儿’）”演变而来的。与其他“A 个儿”代词一样，“自个儿”来源于反身强调代词+数量短语“自己一个（儿）”，出现初期表示“自己一个人”的意义。

Tuesday 5:15-5:30 PM Woodburn Hall Room 101

汉语东南方言和壮侗语状语后置构式的比较研究

李桂兰，广西民族大学

汉语东南方言和壮侗语普遍存在状语后置构式，在表义上有很多相同点：增添义和先行后续义等时间状语后置构式都广泛分布于此二语言中。但是状语后置构式在各语言中分布不平衡，语义分布也不平衡。壮侗语中表频率、程度和情态方式否定等义的构式形式在汉语东南方言中较少见，而汉语东南方言中部分语言中的表重新义的构式形式在壮侗语中可与增添义后置构式混用。总体而言，壮侗语中此构式的分布更广泛，后置词数量更多，表义更丰富更灵活，但汉语东南方言部分构式也有所发展。语义上，数量程度范围义状语后置构式分布最为普遍，时间频率义状语后置构式次之但频率义的此构式在汉语东南方言中少见，汉语东南方言零星使用情态方式范围状语后置构式。本文尝试用构式、类型学等认知语言学理论和语义特征、语言接触等理论解释其缘由。我们认为由于语义的可及性和表情达意的要求，使得各语义构式分布不平衡，可及性越高则分布越普遍，而由于语言底层和接触引发的语法化导致各语义构式的分布不平衡，该底层可能是壮侗语和汉语东南方言的祖语或某种共同语言机制，也可能是壮侗语，但从类型学和认知的角度来看，我们更倾向于是共有语言现象分化后独立发展并因语言接触导致的结果。

Wednesday 4:15-4:30 PM Woodburn Hall Room 101

On the construcionalization of [NP₁+Vi+le (了)+NP₂] in Mandarin Chinese

LI Yanzhi, Zhejiang University

In Mandarin Chinese, there exists a type of non-canonical constructions in the configuration of [NP₁ + Vi + NP₂], where the verbs are usually used intransitively, such as 来(*lái* 'come'), 跑(*pǎo* 'run'), 走(*zǒu* 'walk'), 死(*sǐ* 'die'), etc. Consider the examples below:

(1 刚 吃了 一 舅父 来了 客人。
) 半,

Gān *chī-le* *yībàn* *jiùfù* *lái-le* *kèrén*
g
Just eat-ASP one uncl come- guest
half e ASP

‘Just in the middle of dinner, my uncle has a guest/guests coming.’

(2 有的人 走了 一身 汗。
)

Yǒux *rén* *zǒu-le* *yīshēn* *hàn*
iē
som people walk- one sweat
e ASP body

‘Some people sweated all over their bodies because of walking.’

(3 他 从小 死了 父
) 亲。

Tā *cóngxiǎo* *sǐ-le* *fùqīn*
He since die- fath
small ASP er

‘His father died when he was young.’

(4 监狱 跑了 几个 死刑犯。
)

jiāny *pǎo-le* *jǐgè* *sǐxíngfàn*
ù
priso *run-ASP* *several* *prisoners under sentence of death*
n

‘Several prisoners under sentence of death escaped from the prison.’

Take (1) and (3) for example. Interpretively, (1) could be construed as “my uncle’s guest is coming” and (3) means “his father died”. In these cases, 客人 (*kèrén* ‘guest’) and 父亲 (*fùqin* ‘father’), the agents of the actions expressed by the respective verb, are realized as the syntactic argument of the whole construction, namely the object of the construction, but not the verb. Additionally, this kind of configuration express a distinctively inferred meaning. For instance, (1)-(2) have the sense of ‘obtain/acquire something’, whereas (3)-(4) have the sense of ‘lose someone or something’. That is to say, the [NP₁+ Vi + NP₂] construction manifests a high degree of hidden complexity in the sense that its formation is possibly driven by the principle of economy (Zipf 1949) and its interpretation would involve pragmatic inferences (Bisang 2009, 2014, 2015).

In this paper, we will diachronically investigate the token frequency and type frequency of these constructions at issue from the perspective of construction grammar and constructionalization, with a particular focus on three crucial factors, namely schematicity, productivity and compositionality (cf. Goldberg 1995, 2006; Traugott & Trousdale 2013). Based on our statistics, the construction illustrated above has been found to be highly productive in Mandarin Chinese, and there are various synchronic semantic changes of preverbal and postverbal NPs in the usages as well (cf. Zuo 2007).

Based on our study, it has thus been proposed that (1) from the constructional perspective, the [NP₁+Vi+ NP₂] expressions are characterized by high productivity, high schematicity and low compositionality; (2) From an interpretive perspective, the [NP₁+Vi+ NP₂] construction manifests a high degree of hidden complexity; (3) from a diachronic evolutionary perspective, the non-canonical structure have gone through the process of grammatical constructionalization.

Keywords: intransitive verbs; inheritance; productivity; constructionalization; hidden complexity

References

- Bergs, A. & G. Diewald. 2008. *Constructions and Language Change*. Berlin: Mouton de Gruyter.
- Bisang, W. 2009. On the evolution of complexity—Sometimes less is more in East and mainland Southeast Asia. In G. Sampson, D. Gil & P. Trudgill (eds.). *Language Complexity as an Evolving Variable*, 34–49. Oxford: Oxford University Press.
- Bisang, Walter. 2014. Overt and hidden complexity—Two types of complexity and their implications. *Poznan Studies in Contemporary Linguistics* 50 (2):127–143.
- Goldberg, A. E. 2006. *Constructions at Work*. Oxford: Oxford University Press.
- Traugott, E. C. & G. Trousdale. 2013. *Constructionalization and Constructional Changes*. Oxford: Oxford University Press.
- Trousdale, G. 2013. Multiple inheritance and constructional change. *Studies in Language* 37(3):491-514.
- Zuo, Shuangju. 2007. An Investigation of the object commanding ability of Lai (来) and Qu (去). *Chinese Linguistics* 4: 71-78.
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Tuesday 3:00-3:15 PM Woodburn Hall Room 101

最佳关联交际理论的神经认知学理据剖析

LI Zhen

作为认知语用学的一个重要理论，关联理论的提出对于语言交际具有强大解释力。寻找最佳关联原则是支配交际顺利进行的根本原则。交际过程中，人们倾向于以最小的投入获得最佳的语境效果。

关联理论的代表人物 Sperber 和 Wilson (1986/1995) 认为，交际是涉及信息意图和交际意图的一个明示---推理过程 (ostensive---inferential process)。明示与推理是交际过程中的两个方面，从说话

人的角度来说，交际是一种明示过程，即把信息意图明白地展现出来；而从听话人的角度来说，交际又是一个推理过程，推理就是根据说话人的明示行为（比如话语），结合语境假设，求得语境效果，获知说话人的交际意图。

那么，大脑进行内在化处理知识的过程又是怎样的呢？兰姆的神经认知语言学认为，这实际是大脑中信息加工的过程，是外部信息（比如话语）激活大脑信息系统中有关路径，并且激活和调节这些路径中神经元的过程。大脑信息系统中的信息（即知识）就是信息记忆，就是贮存在各个神经元的连通关系中的信息。因此，认知语境应该来自于信息记忆通过大脑进行内在化处理的结果。大脑的记忆系统决定了认知语境，进而决定了关联性和交际的顺利进行。

心理学认为记忆是对过去经验的识记、保持以及再认或回忆。而根据生物学的观点，记忆最终是以生物学为基础的加工，药物、激素、神经递质和点刺激都会影响记忆的操作或者改变与记忆形成、储存和提取有关的生理结构。信息加工论认为记忆是对输入刺激的信息编码、储存和提取。虽然各学科对记忆的定义不同，但都强调了记忆的重要性：即它使人的心理活动得以保留和延续，使知识经验得以积累和发展，使心理发展成为可能。我们对日常事物的感知、所进行的思维和所从事的活动都来自记忆这个源头，它把我们生存的无数现象连成一个整体，从而使一个人的心理发展、知识积累乃至个性形成等得以实现（刘绍龙，2007，134-135）。记忆系统是一个有生命的神经网络生物体，当接受作为外部语言信息寄载形式的声音和文字刺激时，就会激活网络中的若干路径，使之发生生化改变，并促使记忆系统进行加工处理（程琪龙，2001，52）。因此，从神经认知语言学的观点出发，交际双方在明示--推理的互动中遵守最佳关联原则实际就是说话人努力使得在明示中的语言信息最佳程度地符合听话人的大脑记忆系统，听话人接受语言刺激，在记忆系统中相应选择、推理并产生话语的过程。

Wednesday 4:30-4:45 PM Woodburn Hall Room 100

How can the developments in linguistics benefit neurolinguistics? An Instrumentalist approach

Chia-Hua LIN, *University of South Carolina*

There is an ongoing interdisciplinary debate over the question of combining linguistics and neuroscience for the purpose of understanding the biological basis of the human faculty of language. On the one hand, a case that supports such an interdisciplinary marriage can be made for the sake of practical efficiency. On the other hand, it has been argued that the effort to locate the linguistic units of study in the brain, such as ‘the syntax,’ is leading towards hasty or even false conclusions. In this paper, coming from the philosophy of science perspective, I argue that it is not the application of linguistic units in neuroscientific investigations that leads to unwarranted conclusions. The culprit is, rather, *the way* in which they are applied. Using the example of Hauser et al.’s proposed research schema, which they base on the developments in the minimalist program in linguistics, I discuss how a linguistic model may be used as an essential tool to advance neurolinguistics.

The faculty of language, or ‘FL’, is originally hypothesized to account for the human ability of acquiring and using languages. Traditional research questions regarding such a faculty concern the nature, the neural substrate, and the evolution of the faculty. For instance, what makes up the FL? How does the brain implement the FL? How has the FL evolved in the species? These three questions are closely related. A proper understanding of what constitutes the FL is necessary for a productive investigation of its neurophysiological underpinnings. And a proper understanding of what underlies the FL is, in turn, vital to a suitable evaluation of its phylogenetic history.

However, because of the joint breadth of these three topics, it may appear unrealistic for an individual discipline, say, linguistics, biology, or neuroscience to tackle all three of the inquiries independently. In fact, interdisciplinary collaboration appears to be desirable in the name of efficiency. Linguists have generated a body of literature on the nature of the FL, neuroscientists have gained a wealth of knowledge on how the brain works in giving rise to other cognitive faculties, and finally, biologists have accumulated a great deal of insights on how a mechanism may have evolved. It would be reinventing the wheel for, say, neuroscientists or biologists to start their research by defining what language is. Arguments along these lines can be found in Hauser, Chomsky, and Fitch (2002)¹ and Fitch (2010)². Their suggestion is to adapt core ideas of the minimalist program in linguistics (such as generative grammar, discrete infinity, and recursion) to the broader research areas of language including not only neuroscience and evolutionary biology but also psychology and anthropology.

Although not directly challenging the use of the minimalist program, some prominent linguists and neurolinguists' work is in conflict with Hauser et al.'s view. For example, Poeppel and Embick³ point out that the fundamental elements in theories of linguistics, such as morphemes, syllables, and noun-phrases, are defined for the purpose of analyzing and formalizing structures in specific languages. In contrast, the fundamental elements in neurobiology, such as dendrites, neurons, and cortical columns, are defined based on their anatomical features. They argue that such linguistic and neurobiological elements are incommensurable. Moreover, there has been no empirical evidence for a direct mapping between linguistic and neurobiological elements, but only some suggestive correlations. Hence, they conclude, "there is significant danger of (long-term) interdisciplinary cross-sterilization rather than cross-fertilization between linguistics and neurobiology, or, for that matter, linguistics and other empirical disciplines."⁴ Moving forward, Poeppel and Embick call for "a substantive alternative research program, by which neuroscientists can explore how brain mechanisms form the basis for linguistic computation.

In this paper, I extend Poeppel and Embick's discussion on the comparability of the elements across the disciplines to the minimalist program of Hauser et al. I argue that the incomparability of elements across disciplines becomes a problem when one attempts to create a directly map between the linguistic and neurobiological elements. However, such a direct mapping reductionism is required neither for the minimalist program nor for Hauser et al.'s proposed research schema. More importantly, reductionism is not necessarily based on such 'maps.' Therefore, what is hindering progress in neurolinguistics is not the linguistic model per se but how it is used.

To demonstrate how the elements in linguistics may be essential to investigations in empirical sciences, I first show that the Hauser et al.'s proposed research schema provides a conceptual tool or a so-called 'what-description' which specifies *what* is constitutively necessary—in terms of functional elements and structures among these elements—for a linguistic capacity to be realized. The alternative called for by Poeppel and Embick, in contrast, would be a 'how-description' which specifies *how* the linguistic capacity in question is implemented—in terms of neurobiological elements. Under this distinction, I argue that Hauser et al.'s schema and the alternative suggested by Poeppel and Embick are compatible. Then, I point out that due to the variety of neuroimaging techniques, current research is producing many interesting, but not necessarily showing a clearly converging picture. Thus, I argue, a conceptual tool such as Hauser et al.'s proposed research schema is essential to neuroscientific investigation, as it provides a framework that helps one to see convergence where it may not have been visible before. Indeed, to evaluate and compare discoveries from multiple disciplines, a what-description, such as Hauser et al.'s schema, is indispensable because it provides a common reference to compare variety of how-descriptions side-by-side. Thus, I will conclude that what is needed may not be a neurolinguistic alternative to the linguistic models but an alternative, non-reductionist way of using them.

¹Hauser, Marc D., Noam Chomsky, and W. Tecumseh Fitch. 2002. "The Faculty of Language: What Is It, Who Has It, and How Did It Evolve?" *Science (New York, N.Y.)* 298 (2002): 1569–79.

²Fitch, W. Tecumseh. 2010. *The Evolution of Language*. Cambridge University Press.

³Poeppel, David, and David Embick. "Defining the relation between linguistics and neuroscience." *Twenty-first century psycholinguistics: Four Cornerstones*(2005): 103-118.

⁴Ibid., 15.

Tuesday 4:45-5:00 PM Woodburn Hall Room 101

中国英语学习者的语音数据分析：基于语音语料库的建设 [An Analysis of Chinese English Learners' Speech Data: Based on the Construction of the Speech Corpus]

Zhu Lin, Beijing International Studies University

超音段音位的学习对中国英语学习者来说是一个难点。为了得到中国英语学习者的语音数据，建设对比本族发音人和中国发音人的语音语料库成为了重要的研究项目。语音语料库的建设过包括以下几个步骤：制定研究目标、与发音人签订法律文书、发音语料的确定、录制过程、以及语音标注等。该语音语料库重点是用于语音识别和研究中国人说英语的节奏模式。通过对该语音语料库的数据提取，得出中国发音人的英语节奏模式不是以重音为支点的节奏模式，而是以音节等时长的节奏模式。

[English Phonetics is a difficult problem for Chinese, but also reflected on the suprasegmental phonemes. In order to study the data of the Chinese learners, there is need to build a corpus with native speakers (including American speakers and British speakers) and Chinese speakers in English. There are some processes of English speech corpus, such as the establishment of a research target, recording, the people who need legal documents signed, determining the materials for corpus, and labeling ect. The speech corpus is mainly used for speech synthesis and research the

rhythm of Chinese English. The corpus points out that the rhythm pattern of Chinese English is syllable timed rather than stress timed pattern like native speakers.]

Wednesday 10:50-11:20 AM Woodburn Hall Room 100

Typological and processing origins of aesthetic prescriptivism in language

Charles Chien-Jer Lin, Indiana University

Nominalization has long been at the center of criticism by aesthetic prescriptivists and language stylists. Recent ideological discourse about linguistic authenticity has re-associated the surge of nominalized expressions in contemporary Taiwan Mandarin with “linguistic incompetency”, “abnormality”, and “malicious and dangerous western influence” (Yu, 2015). The present study takes on such a linguistic ideology by analyzing the typological and cognitive consequences of nominalization in Chinese and English. I propose that the *head-driven constituent complexity hypothesis* (Lin, 2011)—that linguistic structures where the head appears late induce greater parsing uncertainty and greater processing cost—accounts for why Chinese and English noun phrases appear different. Comparing complex noun phrases in authentic Chinese texts and in English-to-Chinese translated texts suggests that Chinese relative clauses are shorter and less complex in authentic texts than in translated texts. Nominalization (more specifically, relativization) has therefore been identified as a distinctive feature of translated text and further as a signifier of “western influence”. We further address how the *intended* pragmatic functions of these nominalized expressions differ from the perceived functions of these expressions from the interpreter’ point of view. Such mismatches have engendered the overall negative stylistic impression towards nominalized expressions by native speakers of Mandarin.

Wednesday 4:00-4:15 PM Woodburn Hall Room 101

拉祜语四音格词中的汉语借词 [Chinese loanwords in Lahu four-syllable words]

刘劲荣 [Liu Jinrong] 张琪 [Qi Zhang]

摘要 拉祜语属汉藏语系藏缅语族彝语支的一种独立语言，其四音格词在汉藏语研究中具有重要价值。语言接触是拉祜语四音格词形成和发展的重要原因，由于拉祜语和汉语接触较为广泛，加之两种语言所具有的亲缘关系，处在一个共同的区域内，使拉祜语和汉语的四音格词不可避免地产生接触，形成亲缘关系的影响和地区类型学特征。本文通过对5200个拉祜语四音格词汇的分析研究，共统计出含有汉语借词的四音格词316个，并对其借入方式、构词形式进行了探讨。

关键词 拉祜语 四音格词 汉语借词

[Lahu Language is an independent language belonging to Yi Language branch of Tibeto-Burman Group under Sino-Tibetan Languagefamily. Its four-syllabic words has important value in Sino-Tibetan Languages researches. Language contact plays a critical role in the formation and development of Lahu four-syllabic words. Being used in same geographical area makes contacts between four-syllabic words in Chinese Language and Lahu Language inevitable. The extensive and broad contacts between two languages establish the influence of genetic relationships and area typological characteristic. Through studying and analysing 5200 Lahu four-syllabic words, this paper sums up 316 four-syllabic words that contain chinese loanwords, and makes further study on its borrowing mode and word formation.]

子尾词在山东淄博方言中的内部变化试析

刘娟, 林珈亦, 山东大学中文系

子尾是汉语中“子”音节的意义虚化后作为后缀的一种构词方法。这种构词方法在汉语各方言中的使用并不一致，这种不一致既表现在子尾词的数量上，更表现在其语音形式的复杂和多样性上。比如，相当于汉语普通话子缀功能的词，在豫北和晋南的大片地区，也即所谓的晋语区是以子变韵的形式存在，有的学者认为尚不能确定这种变韵就是子音节演化的结果，所以也有称为Z变韵的。无论是子变韵还是Z变韵，这一现象很久以来引起方言学者的极大兴趣和关注，方言报告多有所见，其中对这一现象概括性的分析论述可见于王洪君（1999）、王福堂

（1999）。王福堂（1999）把子变韵区分为三种不同类型：拼合型，融合型和长音型。其中长音型即子后缀的声韵调都消失，只有音长融入前音节，长音型的下一个发展阶段就是融合型。陈宁（2006）报告子变韵在山东博山方言中也大量存在，其语音形式表现为长音型，同时伴有变调，博山方言的子变韵与晋南豫北的子变韵历史上是同源的。

本文选取包括博山在内的淄博所辖四区，其他三区是临淄、张店和淄川为考察对象，以《中国语言资料有声数据库》所收的词汇为材料范围，分别在四个方言点的老城区选取相同年龄段的男性居民为发音人，对四个方言的子尾词进行了声学分析对比。结果显示，虽然四个方言点在地理上相互毗邻，彼此间距仅有二三十公里，并且在音系上表现出高度的一致性，但四个方言的子尾词的语音形式却表现出很大的差异。从声学表现上看，临淄的子尾是声韵调全备的完整音节；张店的子尾已弱化为轻声，声母或丢失或变为浊擦音色彩。淄川、博山已经没有独立的子音节存在，所谓的子尾词变为拖音（当地人语感）。深入对比博山、淄川的子尾词与子尾词前音节的单音节形式的声学表现，我们发现博山和淄川的子尾词还是一个双音节形式的存在，只是子尾更进一步弱化，变为央元音色彩的零声母音节，这一点既可以从子尾词和对应前行单音节时

长的对比找到证据，也可以从博山子尾词和其他非子尾的轻声词发生同样的变调得到佐证。这也验证了钱曾怡（1993）对博山子尾词都做央[ə]的听辨记录。进一步，对博山前音节为不同韵母的子尾词前行对比分析也显示，不同的韵尾对子尾的共振峰走势会产生一定影响，但还没有引起本质上的改变；而将子尾词与其前行音节的单音节形式进行声学的对比观察也显示，子尾词的前音节无论是主要元音还是介音的共振峰相比单音节的情形都没有显著的改变。这说明现阶段博山的子尾词并没有显示向融和型或拼合型演变的趋势。总之，声学的对比分析使我们我们可以清楚看到淄博方言内部子尾的语音形式呈现渐次弱化的趋势，而所谓的博山子变韵与晋南豫北的子变韵有本质的区别，博山还只是子尾的弱化，既不是长音型的变韵，也没有向融合型演化的趋势。

Tuesday 9:00-10:00 AM Woodburn Hall Room 100

A preliminary study on the evolution of vocal tract

KONG Jiangping

Tuesday 4:15-4:30 PM Woodburn Hall Room 101

通过临海方言“以^ˊ”看 t_ɕ-类近指词在吴语区的分布与演变

卢笑予, 南开大学

临海古城方言单纯指示语素有“以^ˊ”、“葛^ˊ”和“筒^ˊ”三类，其中“以^ˊ”表示更近指或“零距离近指”，句法功能以及语义、语用都与常用近指形式“葛^ˊ”有别。大量如“以^ˊ”这样的零声母指示词形式，主要与近指中 t_ɕ-组（章母）和 k-组（见母）这两类声母脱落有关。其中近指 t_ɕ-组主要分布于处衢片以及台州片靠近处衢片的仙居，有学者

认为它由近代汉语章母字“者”发展而来。章母和见母两组脱落产生的条件有一些差异：第一种可能是两者都受到特殊发声机制的影响，即声母实际上为内爆音（章母变为内爆音可能是语音类推的结果），我们为它们构建的音变链如下：①章母： $*ʔd_ɹ/d_ɹ \rightarrow ʔf/f \rightarrow ʔj \rightarrow \emptyset$ ；②见母： $*ʔg/g \rightarrow$ ^{细音加后低元音} $ʔf/f \rightarrow ʔj \rightarrow \emptyset$ ，两条音变链最终合流。另外，见母也可以直接脱落，不需经过内爆音这一环节。

通过跨方言比较、声韵调对应以及它表现出的特殊句法功能，我们排除临海方言“以^ˉ”是k-组见母脱落的结果（直接脱落或先演变为内爆音），认为它与处衢片 $t_ɕ$ -组形式应该是同源的。“以^ˉ”作为更近指指示语素在临海发方言中使用频率低，存古性强，较早时完成了从带有紧喉特征的内爆音发展到腭内爆音 f ，再逐渐变为 j 并与细音相拼，成为零声母字这一系列音变。从声调上看，处衢片近指词大多为入声，但虚词促化在吴语中是相当普遍的现象，临海方言“以^ˉ”与“者”声调相合。

由于和k-组指示词并存， $t_ɕ$ -组近指词在吴语区存在多种状态。根据句法功能的差异，我们概括出处衢型、仙居型、临海型（路桥型）、温岭型以及以柯桥、崇明、上海等为代表的北部吴语型等5中类型。它们的分布自西南向东北，自内陆向沿海，反映 $t_ɕ$ -组近指词功能逐渐被k-组侵占，而包括仙居、临海、温岭在内的吴语台州片方言点正处在这个演变的过渡阶段，是观察此类近指形式演变的一个直观窗口。此外，k-组和 $t_ɕ$ -组的竞争关系使得临海方言指示词形成了超过两分的局面，同时它也反映出汉语方言指示词距离义区分的基本格局，即绝大部分距离指示三分（含多分）并非是原生的，大都因不同指示词系统叠加而形成。叠加之后距离指示义覆盖面的强弱，语音形式是否产生了分化等，造成了或层次、或包含的格局。

Where is tomorrow? How high is a year? Space-time metaphors emerge from individual biases, social interaction, and cultural transmission

Tyler MARGHETIS

Humans spatialize time. This occurs in artifacts like timelines, in spontaneous gestures, and in conventional language ("think back to last summer"; Núñez and Cooperrider, 2013). These links between space and time, moreover, exist both as associations in individual minds (Winter, Marghetis, and Matlock, 2015) and as shared cultural systems—such as regular polysemy—that transcend individuals (Haspelmath, 1997; Lakoff and Johnson, 1980).

Understanding the origins of this "tangle of space and time" (Núñez and Cooperrider, 2013) will require analyses at multiple levels, from initial individual biases, to local

cultural norms, to cultural evolution. Where do these space-time links come from, and how do individual biases interact with cultural norms? Here we present two laboratory experiments using methods from the field of Language Evolution to simulate the social and cultural emergence of space-time mappings.

In Study 1, dyads communicated about temporal concepts using only a novel, spatial signaling device: a vertical bar on a touch screen (Fig. 1b). Participants sat in separate rooms and communicated via brief 'spatial signals' consisting entirely of vertical movements on the touch screen. On

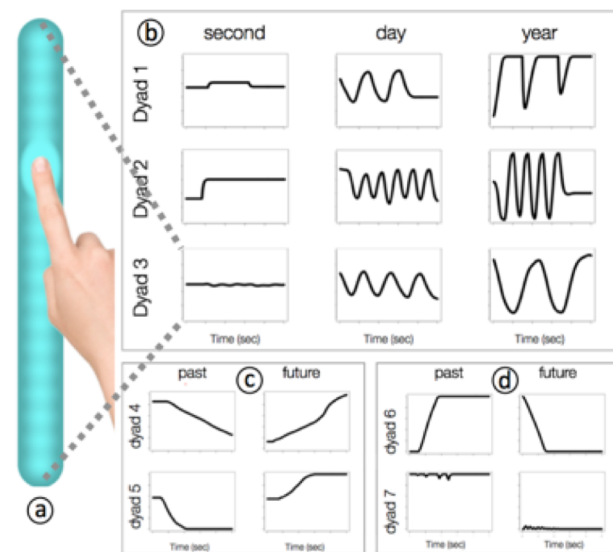


Figure 1: (a) Signaling device, (b) Consistent use of spatial length to communicate relative duration, (c) and (d) Contrasting mappings for past/future.

each trial, the “sender” attempted to communicate a temporal concept ($n = 18$; e.g., “tomorrow,” “day after,” “future”) by sending a signal; the “receiver” had to guess the intended meaning. Dyads then received feedback and reversed their roles for the next trial. Based on past studies showing the importance for language evolution of social coordination and alignment (Fay et al., 2013; Garrod et al., 2007; Healey et al., 2007; Theissen et al., 2010), we expected participants to improve their communicative success by negotiating a set of conventional signals, but also to build on shared intuitions of how temporal concepts should be represented spatially. This design thus allow us to tease apart contributions of initial biases and social interaction.

Indeed, participants ($n = 16$) rapidly established communication systems that utilized vertical space to represent time. Strong, shared cognitive biases were revealed by the rapid creation of systems that exhibited a number of similarities. For instance, spatial length was used by all dyads to indicate temporal duration, with *larger* regions of vertical space used to indicate *longer* durations (Fig. 1b). Social interaction, however, elaborated these early biases to establish idiosyncratic conventions. For instance, while location (up/down) was reliably used to indicate deictic time (past/future), different dyads established varied conventions for how they mapped vertical locations to temporal concepts (Fig. 1c, d). Thus, individual biases and social interaction interacted during the emergence of abstract communication systems.

While these communication systems began to capture the structure of the meaning space, no fully systematized language emerged. Dyads continued to confuse some of the more similar meanings (e.g. “tomorrow” vs. “day after”), since no conventions emerged for making these subtle distinctions. This is in line with the results of past experimental work, which has suggested that increasing regularization and the emergence of compositionality requires imperfect transmission over generations (e.g. Kirby et al., 2008). As systems are transmitted across generations, they

adapt to become more learnable and predictable. We thus hypothesized that the structured but imperfect systems that emerged in Experiment 1 would evolve into more regular and stable systems if transmitted across multiple generations of interacting users. In brief, in addition to individual cognitive biases and social interaction, the emergence of fully systematized space-time mappings might require cultural transmission.

To simulate the pressures of cultural transmission, Study 2 used an *iterated communication paradigm* (Tamariz et al, 2012; Verhoef et al., 2015). In this paradigm, the final signals produced by one dyad are used to train the next dyad, who receive a brief training on the signals before they start interacting; the final signals of this dyad are passed on to the next dyad, creating transmission chains with multiple “generations” of language users. This approach simulates the dynamics of multi-generational cultural transmission within the controlled milieu of the lab.

We investigated the impact of cultural transmission across five chains of eight generations ($n = 80$). Initial results show that cultural transmission can produce communication systems that allow for perfect communication, despite the complexity and abstractness of the meaning space. This striking communicative performance reflected the gradual emergence of a systematized, compositional system in which space was used conventionally to mark nuanced distinctions between temporal concepts.

In sum, two studies focused on the interaction of mechanisms that contribute to the emergence of space-time mappings. By isolating mechanisms that operate on disparate timescales, these laboratory experiments shed light on the commonalities and variety found in space-time mappings in languages around the world.

References

Fay, N., Arbib, M. A., & Garrod, S. (2013). How to Bootstrap a Human Communication System. *Cognitive Science*, 37, 1356–1367.

- Garrod, S., Fay, N., Lee, J., Oberlander, J., & MacLeod, T. (2007). Foundations of representation: Where might graphical symbol systems come from? *Cognitive Science*, 31, 961–987.
- Haspelmath, M. (1997). *From space to time*. Munich & Newcastle: Lincom Europa.
- Healey, P. G. T., Swoboda N., Umata I., & King J. (2007). Graphical language games. *Cognitive Science*, 31, 285–309.
- Kirby, S., Cornish, H. & Smith, K. (2008) Cumulative cultural evolution in the laboratory. *PNAS*, 105, 10681-10686
- Lakoff, G., & Johnson, M. (1980). *Metaphors we live by*. Chicago, IL: University of Chicago Press.
- Núñez, R. & Cooperrider, K. (2013). The Tangle of Space and Time in Human Cognition. *Trends in Cognitive Sciences*, 17, 220-229.
- Tamariz, M., Cornish, H., Roberts, S. & Kirby, S. (2012) The effect of generation turnover and interlocutor negotiation on linguistic structure. In *Proceedings of EVOLANG9*. World Scientific (pp. 555-556).
- Theisen C. A., Oberlander J., & Kirby S. (2010). Systematicity and arbitrariness in novel communication systems. *Interaction Studies*, 11, 14–32
- Verhoef, T., Roberts, S. G., Dingemanse, M. (2015) Emergence of systematic iconicity: Transmission, interaction and analogy. *37th Annual CogSci Conference* (pp. 2481-2486) Austin, TX: Cognitive Science Society.
- Winter, B., Marghetis, T., & Matlock, T. (2015). Of magnitudes and metaphors. *Cortex*, 64, 209-224.

Monday 2:30-3:30 PM Woodburn Hall Room 100

The Co-Evolution of Speech and Pragmatics

Salikoko S. MUFWENE, *University of Chicago*

Phylogenetically, languages appear to have evolved incrementally from nothing to modern complex systems over a long period of time. Thus one may expect the role of pragmatics to have decreased, conversely, as claimed by some students of language evolution (e.g., Ljiljana Progovac 2015, *Evolutionary syntax*; and Tom Scott-Phillips 2014, *Speaking our minds*). The logic behind this expectation is that languages as technologies capable of communicating rich loads of information explicitly and systematically have evolved from poor, primitive tools that depend heavily on context to increasingly richer, more nuanced, and complex systems that depend less on context for the interpretation of utterances. In other words, modern languages would make us less reliant on our natural mind-reading capacity, contrary to embryonic languages of, say, 200,000 years ago. However, reality shows that pragmatics itself has actually evolved to play a more complex role now than it ever did at the time when embryonic forms of modern languages emerged. According to some, such as Deidre Wilson & Dan Sperber (1992ff), we still rely heavily on the mind-reading capacity to interpret utterances in modern languages.

An important reason for this increased reliance on pragmatics is that there was less information to convey at the protolinguistic stage, in part because the hominine mental capacity was not yet as generative as it is today and human interactions were simpler. If the earliest stages of the evolution of spoken languages from animal-like vocalizations involved just naming, which drove the expansion of phonetic systems, communication may have started with child-like holophrases (Mufwene 2013). These do not require nuancing and finessing the expression of the meanings intended by the speaker. Few systematic pragmatic principles are involved.

In the earliest, primitive stages of the phylogenetic emergence of languages, there would have been no pressure to sometimes speak indirectly; nor may it have been necessary to choose between polite and impolite expressions, or between deferential, humbling, and neutral forms of address, as in languages such as Japanese and Korean. On the other hand, it is also useful to encode in modern languages special perspectives relative to the addressee in saying either *I was coming to see you* or *I was going to see you* (as made evident by Fillmore 1975). In addition, the context of communication bears on the interpretation of such seemingly simple constructions as *I'm about to come* in ways that do not apply to its counterpart *I'm about to go*. Interlocutors must also deal with implicatures, where alternative expressions may appear related but do not express exactly the same meanings. For instance, *Jane is wearing a pink dress* does not have the same meaning as *Jane is wearing a pale red dress*, no more than *Peter killed his pet* in relation to *Peter caused his pet to die*, although the longer expressions can be used to explain their shorter alternatives (McCawley 1979). Adult linguistic competence is assessed based on how one distinguishes between such expressions.

It appears that the more complex the encoding of meanings into expressions has become, the more complex the pragmatics of language use has evolved. Why is the verb *sleep* interpreted only one way in *the baby slept with his mother* but not in *John slept with Mary* when both arguments refer to adults? Even *John slept with his mother* may arouse a shock in some contexts but not in others! Why doesn't the phrase *sleep around* lend itself to such ambiguities but not *stand around* or *sit around*? And why is it not appropriate in some cultures not to speak literally past a certain age? What's so special with non-literal or indirect speech?

I will discuss these issues and others, which underscore the relevance of pragmatics in modern languages, from an evolutionary perspective.

Tuesday 10:50-11:20 AM Woodburn Hall Room 100

The influence of speech variation on L2 tone learning

PENG Gang

Native speakers of a tone language (Mandarin) were trained to learning a more complex tone system (Cantonese), with one group receiving training tone tokens with larger variation and the other group with smaller variation. Performance before and after training was measured using closed response-set identification and pairwise discrimination tasks. Results show that the degree of speech variation doesn't affect the performance both identification and discrimination. Significant improvement was found in tone identification following training, but not in tone discrimination. Furthermore, segmental carriers show significant influence on the tone performance. In particular, if the base syllables (segmental carries without considering the tones) exist in Mandarin phonological system, the performance boost in tone identification is significantly better than the tone performance for those base syllables which do not exist in Mandarin phonological system. Results indicate that both listeners' native language experience and strategies in performing the tasks affect the perception and acquisition of non-native lexical tones.

Wednesday 3:00-3:15 PM Woodburn Hall Room 101

【会议论文】词中的语素义类似字中的形旁—符号理据和价值的区别

PENG Zeyun

在网上讨论中，我说一个概念至少用一个词表达，所以概念大于或者等于词，于是出现一连串的反问：（1）语素，作为词的构成

单位，跟概念无关吗？（2）古代汉语的“习”是一个词表达一个概念，现代汉语的“习”是一个语素，不表达概念，是这样吗？

（3）“习字”是一个事件概念，是复合概念，由动作概念“习”和事物概念“字”复合的。现代汉语的“习字”的“习”，不是表达一个动作概念吗？（4）语素意义只是用来构成词的理据吗？（5）语素必须构成词吗？如果说“语素意义只是用来构成词的理据”，那么books中的s是什么呢？（6）“姓习”的“习”，不是一个概念吗？

（7）Word的构词法主要是附加，分析词根词缀；“词”的构词法主要是复合，分析主谓、述宾等，所以word和“词”不等值啊。

这些反问把我问得更加清醒了。我突然想到了汉字的字。字里面的形旁到底跟词义是什么关系？跟这里的问题不是很相似吗？对，一并解释。

一个词的构成必须有声音和意义。单语素的声音好理解，例如“家”。多语素的声音表达词义的时候，遇到语素意义的麻烦。语素的意义似乎是词义的基础，其实不是。例如“国家”，对应古代汉语词“国”，对应英语的country，跟现代汉语的“家”毫无词义关系。想象力丰富的人会说：“国家不包含家吗？”这跟词义本身的区别特征或者词的价值意义没有关系了。本来说“国”就可以了，在汉语词的双音化过程中，怎么让它增加一个音节变成双音词呢？理论上可以随便加一个音节，就想“阿哥，阿妹”一样加“阿”。事实上，这样的词多了，因为缺乏理据，会受到局限。是通过比喻“国家是像一个家庭一样的集体”找到了新增一个音节或者语素的理据。其实要是重来的话，也可以换其他理据。这样的理据，使符号形成有理符号，不是像按照顺序编号的数字那样的无理符号。这样不仅可以给新词的产生提供原料，而且可以提高词的记忆效率。“蜂窝煤”表达的概念，在南方就用了自己最熟悉，古代北方人一般不知道的理据“藕煤”，不一定要跟别人的理据相同。

字也是这样。一个字的构成只需要形体。为什么要字？因为要把本来属于视觉的词转换成可以看到的词，才方便视觉获取信息。字去记录语言的时候，才涉及词的声音和意义问题。

独体字好理解，例如“人，A”。复合字就麻烦了。只有总量26个字的英语文字也不怕麻烦，不需要复合字。26个字，不需要什么理据，死记硬背也很容易。麻烦的是总量数以万计的汉字中的字。要构造这么多视觉形体，必然需要大量的复合字。用来拼合的形体，叫做部件。部件也不能随意寻找，必须有理据，才方便记忆。到哪儿找形体的来源理据？既然创造字是用来记录语言的，那么就从语言单位词的声音和意义去找。这样就产生字的声旁和形旁两种部件。形旁和形旁复合，资源有限，记忆也相对麻烦。形旁和声旁复合，两条腿走路，道路宽广，所以在汉字中，形声字成为字的主流。在造字的当时，“桥”确实符合形旁“木”的理据，“闻”确实符合声旁“门”的理据。现在呢？它们的理据都失效了，但是“桥”记录的词的价值仍然有效，词义没有改变。然而“闻”从理据到价值都失效了，因为词音和词义因为感觉方式的偏移而离婚了，词音从听觉改嫁嗅觉上的词义，听觉上的词义“闻”又跟“听”的词音结婚了。这样看现代“闻”的造字理据已经完全颠覆，面目全非。可见，不管词义是否发生历史变化，形旁的意义跟词或者语素的意义没有必然关系，更加不是它们的结构要素。声旁的道理也是一样的。

因此，那些认为“水小就是‘浅’”的词义解释，即使碰巧重合，也纯粹是以偏概全，是用理据意义代替价值意义。价值意义是语言单位在语言系统传递的实际信息，不包含联想出来的次要信息。例如“高”和“矮”的词义对立价值是身体上下的空间距离，不包含头发长短不同等信息。

“习字”，不是“‘习’这个字”，本来就是一个复合词，不能按照古代汉语当做词组来理解。如果让“字”这个语素自由，变成词，用现代汉语说，应该是“练习（写）字”。这就证明“习”现代不自由，不能做词。books中的s，属于语法形态变化，是语法语素，叫做

词尾，跟表达概念意义的词中的词缀性质不同。所以，词典都不管 **books**，只有词条 **book**。

“姓习”的“习”，确实是词，但是这的事是专用词，不是通用词。但是其他“习”只是不成词语素意义，所以没有标注词性，因为词都不是，怎么会有词性，好比人都不是，怎么叫做“男人”？新版《现代汉语词典》已经区分得清清楚楚。

Word 的构词法主要是附加，分析词根词缀；“词”的构词法主要是复合，分析主谓、述宾等，只能说明个性，共性是 **word** 和“词”的主流构词方法都在对方使用了，整体特点才形成共性。我们不能因为外国人很多高鼻子，中国人很多矮鼻子，就认定他们不等值，其实他们都是人。

Monday 12:00-12:30 PM Woodburn Hall Room 100

Cochlear implants and hearing loss: A new look at the "Forbidden Experiment" in language development and the evolution of spoken language

David PISONI, Indiana University

Cochlear implants work and they work well in restoring hearing to a large number of profoundly deaf children and adults. For prelingually deaf infants and very young children, cochlear implantation is now the standard of care in the medical field for the treatment of profound deafness. Despite the efficacy of cochlear implantation, there still remain a number of significant unresolved issues related to the effectiveness of cochlear implants in infants, children and adults. In addition to the clinical issues related to the medical treatment of deafness, there are also a number of broader theoretical issues related to language acquisition, neural plasticity and brain development in prelingually deaf children. The enormous individual

differences routinely observed in speech and language outcomes following implantation is an important unresolved problem that has not been satisfactorily resolved. In this presentation, I discuss several broad issues related to the effects of early auditory deprivation on speech and language development within the context of recent work on cochlear implants. In many respects, current research on cochlear implants can be thought of as the modern equivalent of the "forbidden experiment" in the field of language development (where some children are deprived of access to language) but with an intervention that partially restores hearing to a damaged sensory system supporting the development of language and cognitive skills.

Monday 11:30 AM:12:00 PM Woodburn Hall Room 100

How confusing spoken language with written language undermines linguistic thought

Robert PORT, Linguistics and Cognitive Science, Indiana University

For over a hundred years, almost all scientific studies of language (i.e., in linguistics, speech and hearing science, experimental psychology of language, etc.) have assumed that every language is defined by a fixed set of *phonemes*, the discrete sound types used for spelling words in memory, plus a set of *words* (or morphemes), short chunks of speech with fairly distinct meanings, that are composed into *sentences*, which are themselves word sequences that supposedly represent a "complete thought" (and contain both a subject and a predicate). Chomsky took these traditional ideas about discrete symbol types nested within each other (*Phonemes within Words within Phrases within Sentences*), into patterns that closely resemble the conventional structure of the written form of most languages, and invented a formal mathematics of symbol strings called *generative grammar*. His contributions to formalizing this idea made him famous since

these ideas were directly applicable to the development of programming languages for computers. But all formal grammars (from binary machine code to Matlab and Word) are human artifacts (just like arithmetic, calculus and chess) and rely on idealizations like perfectly discrete symbols that are manipulated outside of real time by a discrete-time clock. But human speech lives in continuous time and consists of conventional motor and acoustic patterns that only in very rough terms resemble formal symbols. Without idealized symbols (all of which are apparently modelled historically on orthographic letters), formal grammars cannot be constructed. In fact, none of the basic unit types for spoken language (e.g., *phonemes* and *words*) have ever been given definitions that are empirically satisfactory. It has never been possible to specify exactly what the set of psychological phonemes is for any language (and thus what the phonological spelling is for any word) or what the list of words is (unless one takes the traditional conventions of orthography as decisive), nor why it is that most spontaneous speech fails to satisfy the constraints of sentence definitions offered by school teachers or linguists. The implication of all this for those who seek to understand early stages of the evolution of language is that much of what linguists have offered to address language evolution, in particular, the notion that human languages are, in fact, instances of *formal systems* of any kind cannot possibly be true. Of course, the use of formal systems to merely model human language is reasonable and may offer insights. However, human language cannot actually BE a formal system so the problem of when and how humans began to have formal systems built in to their brains simply does not arise. Formal systems, from chess to integer arithmetic to logic to computer programs to generative grammars are always, without exception, deliberate human artifacts. Therefore, ideas such as postulating an abrupt genetic change that creates neural mechanisms capable of processing formal symbol strings (e.g., Chomsky, Bickerton, etc.) can be safely ignored. But how could the idea that a language is a formal system be so persuasive that the basics of this idea have remained powerful for over a century despite many obvious forms of evidence that the assumption is false? I believe it is because the (edited) written orthography (of English, at least) very roughly approximates the

product of a formal system, e.g., it uses a discrete alphabet of fixed size, a relatively fixed inventory of conventional words and word sequences divided into units separated by a [period+space+capital letter]. Those of us with education began learning training for our language in terms of formal tokens like letters, words and sentences when we were extremely young. Breaking free of that terminology is extremely difficult despite the failure of formal models to account for human speech.

Wednesday 11:50 AM-12:20 PM Woodburn Hall Room 100

A Reconstruction of Early Human (and Neanderthal) Grammars

Ljiljana PROGOVAC, *Wayne State University*

In order to hypothesize about the evolutionary origins of grammar, it is essential to rely on a theory or model of human grammars. Interestingly, scholars engaged in theoretical study of syntax, particularly those working within the influential framework associated with linguist N. Chomsky, have been reluctant to consider a gradualist, selection-based approach to grammar/language (e.g. R. Berwick and N. Chomsky, 2016, *Why Only Us*, MIT Press; see L. Progovac for a review of this book, to appear in *Language*). Nonetheless, this theoretical framework has in fact been used to reconstruct the stages of the earliest grammars, and to even identify the constructions in present-day languages which resemble/approximate these early proto-grammars (L. Progovac, 2015, *Evolutionary Syntax*, Oxford University Press). These constructions can be considered “living fossils” of early grammars, in the sense of R. Jackendoff (2002, *Foundations of Language*, Oxford University Press). This reconstruction is at the right level of granularity to be able to exclude some hypotheses regarding the hominin timeline, and to support others, as well as to engage the fields of neuroscience and genetics.

According to the *Minimalist Program* (N. Chomsky, 1995, MIT Press), as well as the predecessors to this framework, modern sentences are analyzed as

hierarchical constructs, consisting of several layers of structure, as illustrated in (1):

(1) [TP [vP [SC/VP]]]

Here TP is a Tense Phrase layer (sentence), vP is a transitive (higher) verb Phrase, VP is the basic Verb Phrase, and SC is a Small Clause. Thus, to derive a sentence such as *Deer will eat fish*, one first assembles the inner layer, SC/VP (*eat fish*). The transitivity layer (*deer*) and the tense layer (*will*) are added only later on top of this SC foundation. In other words, while VP/SC can be constructed without any higher layers, vP or TP can only be constructed upon the foundation of VP/SC. Importantly, this type of hierarchy offers the following precise and straightforward method of reconstructing previous syntactic stages in evolution:

(2) Structure X is considered to be evolutionarily primary relative to Structure Y if X can be composed independently of Y, but Y can only be built upon the foundation of X.

The layer upon which the whole sentence rests is the inner, foundational (*eat fish*) layer (VP/SC), which I therefore reconstruct as the initial stage of grammar: a flat, tenseless, intransitive two-slot mold, in which transitivity, and with it the subject/object distinction, cannot be expressed grammatically. The unspecified role of the noun in this layer can be characterized as the absolutive role, as such roles are not directly sensitive to the subject/object distinction. Absolutive-like roles are found not only in languages classified as ergative-absolutive, but probably in all languages, in some guise or another. Human languages in fact differ profoundly in how they express transitivity, and this reconstructed absolutive-like basis, as will be shown, provides the common denominator, the foundation from which all the variation can arise. Given this approach, variation in the expression of transitivity can shed light on the hominin timeline, as well as the timing of the emergence of hierarchical stages of grammar.

To take just one example, absolutive-like fossils are found among verb-noun compounds, as in English: *cry-baby*, *kill-joy*, *tattle-tale*, *turn-coat*, *scatter-*

brain, tumble-dung (insect); Serbian *cepi-dlaka* (split-hair; hair-splitter), *ispi-čutura* (drink-up flask; drunkard), *vrti-guz* (spin-butt; fidget), *jebi-vetar* (screw-wind; charlatan); and Twi (spoken in Ghana) *kukru-bin* (roll-feces; beetle). Comparing compounds such as *turn-table* and *turn-coat*, we observe that the first describes a table that turns (table is subject-like), and the second describes somebody who turns his/her coat, metaphorically speaking (coat is object-like). But these two compounds are assembled by exactly the same grammar: the two-slot verb-noun mold, not marking any subject/object distinctions.¹ In addition to illustrating this basic grammar, such verb-noun compounds in various languages specialize for derogatory reference and insult, with many crude, obscene representatives, suggesting a possible role of sexual selection in the emergence of early grammars (L. Progovac and J. L. Locke, 2009, “The urge to merge,” *Biolinguistics*).

Interestingly, in their article “On the antiquity of language,” D. Dediu and S. Levinson (2013, *Frontiers in Psychology*) express their hope that some combinations of structural features will prove so conservative that they will allow deep reconstruction, which would shed light on the possible language abilities of e.g. Neanderthals. I propose that the earliest stages of syntax/grammar as reconstructed here provide just such a conservative platform, which could have been commanded also by our cousins and the common ancestor. I will also provide a sample of such flat proto-grammar, together with the concrete vocabulary that can be deduced from fossil structures.

Here I also briefly report on some specific findings of the fMRI experiment in which we tested the predictions of this proposal (Progovac, Crabtree, Rakhlin, Angell, Liddane, Tang, and Ofen, “Neural correlates of syntax and proto-syntax,” in submission). In contrast to their modern hierarchical counterparts, the flat (fossil) structures were hypothesized to show less focused activation in the networks specialized for syntax, in particular Broca’s-basal ganglia network, but more activation in the areas not narrowly specialized for abstract syntactic processing, expecting that such proto-syntactic structures can still recruit more general and more diffuse, ancestral patterns of brain activation. Importantly, comparable processing patterns

have also been reported for KE family members with a FOXP2 gene mutation, implicated in SLI (specific language impairment) (F. Liégeois et al., 2003, “Language fMRI abnormalities associated with FOXP2 gene mutation,” *Nature Neuroscience*). This approach thus reveals some intriguing new possibilities for testing and cross-fertilizing the specific hypotheses on the evolution of grammar/language with the findings in genetics, language disorders, and neuroscience.

¹What is more, this kind of two-slot grammar seems to be within reach to non-humans, revealing where continuity should be sought. To take one example, the bonobo Kanzi has reportedly mastered such grammar in his use of lexigrams and gestures (P. Greenfield and S. Savage-Rumbaugh, 1990, “Language and intelligence in monkeys and apes”).

Tuesday 3:00-3:15 PM Woodburn Hall Room 100

The value of praxis-based studies for understanding language evolution

Lana RUCK, *Indiana University, Bloomington*

Alternative functions of the left-hemisphere dominant Broca’s region have induced hypotheses regarding the evolutionary parallels between manual praxis and language in humans. Many recent studies on Bro-ca’s area reveal several assumptions about the cognitive mechanisms that underlie both functions, including: (1) an accurate, finely controlled body schema, (2) increasing syntactical abilities, particularly for goal-oriented actions, and (3) bilaterality and fronto-parietal connectivity. Although these characteristics are supported by experimental paradigms, many researchers have failed to acknowledge a major line of evidence for the evolutionary development of these traits: stone tools. The neuroscience of stone tool manufacture is a viable proxy for understanding evolutionary aspects of manual praxis and language, and may provide key information for evaluating competing hypotheses on the co-evolution of these cognitive domains in our species.

Wednesday 3:15-3:30 PM Woodburn Hall Room 100

Ambiguity and garden path sentences

Mohammad SALEHI

Numerous humorous witty expressions have long been used by people based on the concept of lexical and structural ambiguities. But ambiguity is not a simple phenomenon to be used just for entertaining the listeners. It favorably lends itself to cognitive psychology and psycholinguistics. Also, within the realm of cognitive psychology and psycholinguistics are garden path sentences. A garden path sentence is a sentence “that ends with an interpretation that differs from the interpretation that the reader or the listener initially expected” (Lee et al., 2012). The garden path phenomenon is identified by Bever (1970) and it happens when the processor encounters a temporarily ambiguous sentence that is eventually disambiguated “toward a less preferred interpretation” (Lee et al., 2012). Garden path sentences are used in psycholinguistics to illustrate the fact that when human beings read, they process language one word at a time. “Garden path” refers to the saying “to be led down the garden path”, meaning to be deceived, tricked, or seduced (Sanz, Laka, & Tanenhaus, 2013).

Reaction time (RT) is a measure of duration from stimulus to response that can be classified as either **simple** (press a button when stimulus appears), **recognition** (press a button when certain stimuli appear, while ignoring others), or **choice** (press corresponding button when specific stimulus appears).

To carry out the study, a special computer software was developed with the accuracy of micro seconds and also a set of 25 items were prepared with the acceptable levels of reliability and validity. Forty seven highly proficient subjects, all undergraduate students of Air Traffic Control, participated in this study.

In this study the reaction time of subjects to come to an understanding of five categories of items were compared. Those five categories include items with:

1. lexical ambiguity
2. grouping ambiguity
3. function ambiguity

as well as

4. garden path sentences, and
5. unambiguous sentences.

The results of the study revealed that there is no significant difference between the reaction times of items with grouping and function ambiguity. Hudson (1999) had already categorized them under the term of structural ambiguity and this study also approves of their go togetherness. All the other comparisons revealed significant differences. The greatest of those differences related to the pairs including garden path sentences. To put it in other words, garden path sentences significantly took more time to be processed than all other four categories.

Not only was a quantitative data analysis conducted, but also a number of interviews were conducted to access the underlying processes performed by the respondents. The interviews confirmed the repetitive parsing of garden path sentences to find the main verb (with a single individual exception) and the determinative role of comma placement in items with grouping ambiguity. The simplicity of unambiguous items compared with the other categories was also acknowledged by the interviewees. In case of items with function ambiguity the logical analysis of the mind was stated to be required.

The number of mistakes made by the respondents in answering the test items confirmed the higher complexity of garden path sentences in

comparison with ambiguous statements. While the language proficiency level proved to affect the number of mistakes made by the subjects, it did not affect the relative reaction times of different categories in terms of within-subject variation.

Tuesday 5:15-5:30 PM Woodburn Hall Room 100

The evolution of Broca's area

P. Thomas SCHOENEMANN

From an evolutionary perspective, anything as complex and adaptive as language would necessarily have evolved through exaptation: The modification of pre-existing anatomy and behavior. It is simply not credible to suggest that wholly new language-specific neural circuits would have evolved just for language. A full understanding of how language evolved therefore involves investigating homologous circuits in non-human animals that - in humans - subserve language, and to determine what these circuits are doing in these animals that led language to make use of – and ultimately fine-tune – these circuits during human evolution. One anatomical brain region that is known to be critical for language is Broca's area, located in the inferior frontal convexity. Though first identified by Paul Broca in the 19th century as language area, homologs have more recently been found in chimpanzees and at least one monkey species. What types of neural processing these homologs subserve in these species has not been extensively studied, though there are suggestions that it is involved in species-specific communication. Another way to probe its basic pre-human function(s) is to investigate non-language processing in Broca's area in humans, and then to look for possible homologous types of processing in other species. For example: Broca's area has been shown to be critical to learning *non-linguistic* sequential patterns in humans. This suggests a hypothesis: Broca's area circuits first evolved to pay attention to – and

ultimately learn – sequential pattern information (i.e., ‘rules’) from the organism’s environment. This talk will summarize the current state of research in my lab attempting test this hypothesis, both by assessing sequential pattern learning abilities in orang-utans at the Indianapolis Zoo (in collaboration with Robert Shumaker, Chris Martin, and colleagues), and through attempting to assess the overlap of processing of both non-linguistic sequential pattern learning vs. explicitly linguistic grammatical processing tasks. These studies hope to determine the extent to which Broca’s area has been modified over our evolutionary history to serve linguistic functions in modern humans: Did we evolve extensive new, highly language-specific circuitry in our Broca’s area, or do we use basically the same circuitry (perhaps enhanced to allow for more complex sequential patterns – of any kind) for both linguistic and non-linguistic functions? The long term goal of such studies is to help us better understand the role of behavior in driving biological evolution generally.

Wednesday 10:20-10:50 AM Woodburn Hall Room 100

Language Transmission, Language Acquisition, and Dialect Formation

Zhongwei SHEN, *University of Massachusetts Amherst*

The history of language is the history of language transmission. The successful transmission of language relies on two basic facts: the biologically determined language faculty of individuals and successful language acquisition by individuals. The former is genetically or vertically transmitted whereas the latter is culturally or horizontally transmitted. These two transmissions involve very different time depth and different mechanisms, so they must be separately studied in linguistics. While the study of formal linguistics focuses on linguistic ability, the study of language acquisition and the study of language history focus on how languages are passed down from individual to individual and from generation to generation.

Since the history of language is about language transmission, we have to understand how languages are transmitted or acquired by individuals in order to better our understanding of language history. It is necessary, therefore, that the basic facts we observe in the study of language acquisition must have their significance in the study of language history.

It is well understood that second language learning is imperfect. Interlanguage (imperfectly learned language) is a common, normal learning result. The imperfection is largely from the first language; this is exactly what we found in the Chinese dialects. Specific dialectal features are often similar to the features of their linguistic neighbors.

Our analyses of Chinese dialects suggest that different Chinese dialects are the results of imperfect learning of the Chinese language throughout history by various groups of non-Chinese speakers in different geographical regions. In retrospect it is inevitable that when the Chinese language spreads into the non-Han language-speaking areas due to political, cultural and linguistic pressures, non-Han people will drop their language and gradually shift to the Chinese language. In the process their first (non-Chinese) language features will inevitably be carried over to the Chinese language they learned. The imperfectly learned Chinese language then becomes a local variation, or a new Chinese dialect.

Based on the cross-language comparison and multidisciplinary approach we would like to propose a new hypothesis: the formation of Chinese dialects is through language shift. The Chinese dialects are mainly various forms of imperfect learning by non-Chinese language speakers historically. As the causes of the changes are external, the formation of Chinese dialects is the result of cultural transmission or, in other words, the result of “horizontal transmission”.

Wednesday 10:20-10:50 AM Woodburn Hall Room 101

关于汉语普通话语音的调查和实验的分析和思考

石锋, 南开大学/北京语言大学

我们通过对汉语普通话语音的调查和实验获取了三种数据：1）、对于北京人和天津人普通话异读词读音的 500 人问卷调查资料；2）、对于新北京人和老北京人的 50 人北京元音和声调的实验数据；3）、对于天津话向普通话靠拢的新变化的 200 人调查录音实验数据。

在对比分析基础上得出一些新的发现：1）、对于普通话异读词读音，天津人的选择结果跟北京人基本一致，甚至总体正确率还略高于北京。2）、新北京人内部具有随机差异；老北京人内部则表现为系统差异。3）、新北京人的声调和元音的数据总体来看都比老北京人更为集中。4）、在推广普通话的强大影响下，方言在向普通话靠拢的同时，也顽强地突显自己的特色。

以上都会有助于我们认识和理解现代都市语言的现状和发展。

Tuesday 10:20-10:50 AM Woodburn Hall Room 100

Vocal fold control beyond the species-specific repertoire in an orang-utan

Robert SHUMAKER, Indianapolis Zoo and Indiana University

Vocal fold control was critical to the evolution of spoken language, much as it today allows us to learn vowel systems. It has, however, never been demonstrated directly in a non-human primate, leading to the suggestion that it evolved in the human lineage after divergence from great apes. Here, we provide the first evidence for real-time, dynamic and interactive vocal fold control in a great ape during an imitation “do-as-I-do” game with a

human demonstrator. Notably, the orang-utan subject skillfully produced “wookies” – an idiosyncratic vocalization exhibiting a unique spectral profile among the orang-utan vocal repertoire. The subject instantaneously matched human-produced wookies as they were randomly modulated in pitch, adjusting his voice frequency up or down when the human demonstrator did so, readily generating distinct low vs. high frequency sub-variants. These sub-variants were significantly different from spontaneous ones (not produced in matching trials). Results indicate a latent capacity for vocal fold exercise in a great ape (i) in real-time, (ii) up and down the frequency spectrum, (iii) across a register range beyond the species-repertoire and, (iv) in a co-operative turntaking social setup. Such ancestral capacity likely provided the neuro-behavioural basis of the more fine-tuned vocal fold control that is a human hallmark.

Tuesday 4:30-4:45 PM Woodburn Hall Room 100

What it Takes to become a Pluricentric Language

Valentyňa SKYBINA

A number of theories aimed at describing and explaining variation of English have been developed (see, for example: Allerton, Skandera, Tschichold 2002; Clyne 1991; Hoffman & Siebers 2009; Kachru 1986; Loiter 1992; Skybina 2000; Wolf & Polzenhagen 2009), however, there is still no consensus as to the *mechanisms* of the English language transformation from a monocentric into a pluricentric entity.

The purpose of this study is to advance understanding of the dynamics of the English language under the conditions of dissemination and to characterize some mechanisms of its transformation into a pluricentric language. Special attention is paid to the role of natural and cultural environment in “pluricentrization”. Changes in attitudes of the language-

speaking community towards the new varieties and in their interpretation by researchers are discussed.

The study consists of two parts. In the first part, a theoretical model of the English language transformation into a pluricentric entity is developed. Theoretical positions are based on the results of the investigation of the conceptual and lexical systems transformations in native varieties. In the second part, socio-political aspects of “pluricentrization” are discussed.

The methods used are those of the Complex Adaptive Systems (CAS) (Beckner et al. 2009; Ellis & Larsen–Freeman 2009; Yin Shan & Ang Yang 2008), primarily the Method of System Potential (MSP) (Pushnoi & Bosner, 2008), of semantic analysis of lexemes’ meaning, and of the pertaining literature review.

The model developed suggests that “pluricentrization” is the result of mutual adaptation and co-evolution of at least three complex adaptive systems – language, language-speaking community, and habitat. The study implies that the adaptation mechanisms operate mostly in accordance with the internalized patterns, that is why new natural and cultural conditions cannot violate the language homeostasis but promote alteration of the variation type. Changes in the attitude towards national varieties of English from purism to the codification of regional standard characterize the socio-political aspect of “pluricentrization”.

Reference:

Allerton, D.J., Skandera, P., Tschichold, C (Eds). 2002. *Perspectives of English as a World Language*. Basel: Schwabe.

Beckner, C., Blythe, R., Bybee, J., Christiansen, M. H., Croft, W., Ellis, N. C., Holland, J., Ke, J., Larsen-Freeman, D., Schoenemann, T. 2009. Language is a Complex Adaptive System: Position Paper. In *Language as a complex adaptive system*, ed by Ellis, N. C. & Larsen-Freeman, D., 1-26. Chichester, Malden: Wiley-Blackwell.

Clyne, M. (Ed.) 1991. *Pluricentric Languages. Different Norms in Different Nations*. The Hague: Mouton de Gruyter.

Ellis N, C. & Larsen-Freeman, D. (Eds.). 2009. *Language as a complex adaptive system*. Chichester, West Sussex; Malden, Mass.: Wiley-Blackwell.

Hoffman, Th. & Siebers, L. (Eds.) 2009. *World Englishes – problems, properties and prospects*. Amsterdam/Philadelphia: John Benjamins.

Kachru, B. 1986. *The Alchemy of English: The spread, function and modals of non-native Englishes*. Oxford (Oxfordshire); New York: Pergamon Institute of English.

Loiter, G. 1992. English as a pluricentric language. In *Pluricentric languages: Different norms in different nation*, ed. by Clyne, M., 179-237. Berlin, New York: Mouton de Gruyter.

Pushnoi, G. S. & Bosner, G. L. 2008. Method of Systems Potential as "Top-Bottom" Technique of the Complex Adaptive Systems Modeling. In *Intelligent Complex Adaptive Systems*, ed. by Ang Yin & Yang Shan, 26-59. Hershey, PA: IGI.

Skybina, V. 2000. Pluricentric languages: Developmental mechanisms. In *New Philology*. #1 (9): 38 – 51.

Wolf, H-G & Polzenhagen, F. 2009. *World Englishes: a cognitive sociolinguistic approach*. Berlin; New York: Mouton de Gruyter.

Tuesday 2:00-3:00 PM Woodburn Hall Room 100

What can the socio-communicative behavior of chimpanzees and bonobos tell us about the origins of human spoken language?

Jared P. TAGLIALATELA, Kennesaw State University and Ape Cognition and Conservation Initiative

A fundamental characteristic of human language is multimodality. In other words, humans use multiple signaling channels concurrently when communicating with one another. For example, people frequently produce manual gestures while speaking, and the words a person perceives are impacted by visual information. However, humans also have the ability to rely exclusively on speech, allowing complex communication with individuals that are not in direct view or physical proximity. This level of vocal control and flexibility is unique among primates – and indeed exceedingly rare among mammals. It is unclear what selection pressures led to this phylogenetically unprecedented capacity for autonomous speech. Given that speech and the soft-tissue that supports it do not leave well-preserved marks in the fossil record, the study of variation in communicative behavior in extant nonhuman primates – particularly chimpanzees and bonobos - is critical for understanding the evolutionary origins of human sociality and communication.

Despite being closely related – diverging from a common ancestor only approximately 1 million years ago - bonobos and chimpanzees exhibit some notable behavioral differences. One of the most striking, but least studied, differences between these species are their vocal repertoires. We hypothesize that differences between the *Pan* species' feeding ecology may have favored bonobos to become increasingly reliant on vocalizations, as opposed to other modalities, to communicate with conspecifics and mediate social interactions. Consequently, subsequent selection for increased vocal control and flexibility occurred in bonobos as compared to chimpanzees – a situation that may have been similar to the selection pressures faced by early hominins.

For this talk, I will review species differences in the socio-communicative behaviors of chimpanzees and bonobos and discuss the neurobiological and genetic foundations for these complex social, cognitive, and communicative behaviors.

Tuesday 5:00-5:15 PM Woodburn Hall Room 100

Stone Tools and Cognition

Nicholas TOTH and Kathy SCHICK, The Stone Age Institute/Indiana University

This paper examines the relationships between the fossil hominin record and the Early Stone Age prehistoric archaeological record in Africa and Eurasia, considering cognitive, behavioral, and environmental factors. A model of hominin evolution is presented that includes consideration of the origins and evolution of flaked stone technologies, the emergence of the genus *Homo* (as well as the robust australopithecine lineages), the paleoneurological evidence, and the spread of hominins into Eurasia. This model is also informed through insights gleaned from experimental archaeological research, including teaching modern apes to make stone tools, and from primate studies in the wild. Ralph Holloway et al.'s major stages of hominin brain evolution, based on fossil cranial endocast studies, are incorporated into this model. Early hominin biological and cognitive evolution can be better understood in the larger context of adaptive and behavioral changes reflected in the archaeological record.

Tuesday 4:00-4:15 PM Woodburn Hall Room 101

西南官话仁富小片方言来源与形成研究

王浩, 四川理工学院人文学院

西南官话仁富小片位于四川盆地南部，岷江与沱江之间的丘陵地带，东接泸州、重庆，南界宜宾、云南，西邻乐山、雅安，北靠成都、眉山。其范围包括自贡市市辖区、富顺县、荣县、眉山市的仁寿县、乐山市的

井研县、内江市市辖区、隆昌县、威远县、凉山州的冕宁县、宜宾市的筠连县、宜宾县、珙县、泸州市的泸县、云南省的盐津县等十四个地区，除盐津县外，全部都在四川省境内。

根据黄雪贞《西南官话的分区（稿）》（1986）的划分，自贡、仁寿方言划为西南官话区灌赤片区仁富小片，李蓝将其划为西南官话区西蜀片江贡小片。但是两者所涉及方言区范围相同。其语音上的重要特点是：有舌面前鼻音声母 η ，有舌尖后音声母 $t\zeta$ 、 $t\zeta'$ 、 ζ 、 ζ ；韵母 an 、 ian 、 uan 、 yan 的鼻音韵尾发音着实；中古入声字归入去声；上声起点较高，上声音节后面的音节变高平调；儿化韵往往发生变调；部分上声字归入阴平；表复数的人称代词“我们”、“你们”、“他们”第二音节“们”的声母常常脱落。

学术界关于该地区方言的来源和形成，一直以来均没有形成定论。本文通过梳理明代以来的相关文献，在借鉴前人研究的基础上，根据历史语言学的基本研究方法，借鉴社会语言学的基本观点，提出了该地区方言的来源应该是移民方言，但是与清初随“湖广填四川”而进入四川的“湖广话”不同，仁富小片的来源应该是更早，在明初随军队进入四川的安徽话，或称（南京型官话）。

该方言由于明初政府实行的特殊军屯制度，曾经在四川一度占据统治地位。在明末清初的战乱中，该方言在很多地方被湖广话所替换，但由于仁富小片在四川所占的特殊经济地位，以及清初实行的特殊人口恢复政策，使得该方言在现有方言区内保留了下来，并且与后来涌入的湖广话、广东话、江西话等其他方言相融合，形成了今天的仁富小片方言面貌。

参考文献：

中国社会科学院语言研究所. 2011《方言调查字表（修订本）》. 商务印书馆

[法]梅耶. 2008《历史语言学中的比较方法》. 世界图书出版公司.

崔荣昌. 1986 四川境内的“老湖广话”，《方言》第 3 期

郝锡炯等. 1960 四川方言音系,《四川大学学报（哲社版）》，第 3 期

杨时逢.1984 《四川方言调查报告》，（台北）中央研究院历史语言研究所.

周及徐. 2011 从移民史和方言分布看四川方言的历史层次，

《语言历史论丛第五辑》，巴蜀书社

谭红. 2006 《巴蜀移民史》，巴蜀书社.

孙晓芬. 1997 《清代前期的移民填四川》，四川大学出版社.

陈世松等. 2009 《四川通史·卷五·元明》《四川通史·卷六·清》，四川人民出版社

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Monday 9:10-10:10 AM Woodburn Hall Room 100

Exaptation

William S.-Y. WANG

Exaptation, tinkering, recycling are terms introduced by biologists, but are also fertile concepts for language evolution. An obvious case is the exaptation of respiration and mastication for the production of speech, which Edward Sapir referred to as an 'overlaid' function. In addition to such peripheral processes, we should search for instances of exaptation of neuro-cognitive processes involved in the storage, organization, retrieval, and manipulation of words. It is also of great interest to compare language with music within an exaptation perspective, since they appear to share much in their cognitive structures.

Wednesday 4:15-4:30 PM Woodburn Hall Room 100

Synchrony-Diachrony Interaction of the Permissive, Causative and Passive *Rang* in Chinese

WENG Chuan-Hui

1. Introduction

The Chinese verb *rang* is known to appear in various distinct constructions and exhibit many different meanings. Among these different meanings, the permissive reading, the causative reading and the passive reading are the most frequently discussed, as shown in (1)-(3).

(1) Permissive *rang*

Zhangsan **rang** haizi chuqu wan

Zhangsan RANG child go out play

'Zhangsan gives the child permission to go out to play.'

(2) Causative *rang*

Zhangsan **rang** naopiqi-de yinger shuizho-**le**

Zhangsan RANG cranky baby fall asleep-Perf

'Zhangsan made the cranky baby fall asleep.'

(3) Passive *rang*

Zhangsan **rang** diren bangjia-**le**

Zhangsan RANG enemy kidnap-Perf

'Zhangsan was kidnapped by his enemy.'

(1)-(3) exhibit the same word order "NP₁ (*Zhangsan*) + *rang* + NP₂ + V," and appear to involve an identical structure; however, they exhibit distinct behaviors. For example, only (2) and (3) are compatible with the perfective aspect marker *le*. As is clear from the translations, the subject of *rang* is given a non-agentive thematic role in (3) contrary to those in (1) and (2). I will argue that each of (1)-(3) involves a distinct syntactic construction. I will also point out that this heterogeneous use of *rang* in modern Chinese reflects the diversification of *rang* made possible by the diachronic changes. It will also be pointed out that the historical changes in question can be characterized by gradual diversification of the selectional restrictions of *rang*'s.

2. Causative *Rang*

There are two types of causatives: *let*-causative can have an inanimate causer, and the *make*-causative mostly involves animate causer. (4a-b) describe the lexical properties (semantic denotation and selection) and the syntactic frames of both types of *rang*.

(4) a. *rang*₁: 'give permission' (Agent, **Theme [+animate]**, Event);

[_{VP} NP [_{VP} [_{V'} *rang*₁ NP_i] [_{VP} PRO_i V']]]

b. *rang*₂: 'cause' (**Causer**, Proposition);

[_{VP} NP [_{VP} *rang*₂ [_{AspP} [_{VP} NP [_{VP} V-**le** ...]]]]]

A more precise way to describe this diachronic change may be that *rang*₂ became available when *rang*₁ was split and extended into a verb denoting a more general notion of causation with a causative (*make*) interpretation added and its requirement of animacy on the causer and causee removed, as illustrated by the grammaticality of a causative sentence involving inanimate causer and causee in (5).

(5) *wennuam de tianqi rang shumu maochu-le*
 xinya
 warm DE weather RANG tree sprout-Perf new leaves

'The warm weather **let/made it happen that** the trees sprouted their new leaves.'

The crucial differences between the construction involving *rang*₁ and that involving *rang*₂ are, first, that the former involves a three-place relation while the latter involves only a two-place relation, and second, that *rang*₂ selects an aspectual phrase as its complement while *rang*₁ selects a verbal projection (VP or vP) in addition to an object NP. When the head-to-head raising of *rang* from V⁰ to Asp⁰ as well as the raising of its subject NP from Spec-VP to Spec-AspP is added, the derived *rang*₁ construction looks like (6).

(6) [_{AspP} Sbj-NP [_{Asp'} ***rang*** [_{VP} Sbj-NP [_{V'} rang [_{V'} Obj-NP_j [_{VP} PRO_j V']]]]]]]

When the lexical change from (4a) to (4b) took place and the requirement for the direct thematic relation between *rang*₁ and the object NP was removed, the redundant control structure and the extra verbal projections

(9) Zhangsan rang [_{IP} **OP**_i diren bangjia-le *t*_i]
 (= **Error! Reference source not found.**)
 |__ Predication __|↑__ A'-movement __|

In this analysis, what appears to be the subject of the passive sentence is regarded as a base-generated topic, which is claimed to be associated with an empty operator A'-moved from the object position. When combined with Huang's (1999) Null Operator analysis, this analysis will allow us to obtain the derived structure as in (10).

(10) [_{TopP} **Zhangsan**_j [_{Top'} **rang** [_{AspP} **Obj-OP**_j [_{Asp'} rang [_{VP} rang [_{AspP} diren_i [_{Asp'} bangjia-le
 [_{VP} diren_i [_{V'} bangjia-le Obj-OP_j]]]]]]]]]]]

The sentence in **Error! Reference source not found.**) yields the interpretation "Speaking of *Zhangsan*_j, he has become affected by enemy's kidnapping him_j." The advantages of this analysis is that it can naturally account for the following matters, which would otherwise remain puzzling: (i) the correlation of the *rang*-passive with the *rang*-causative, (ii) the switch from an agent/causer thematic role of the subject in the *rang*-causative to its non-agentive thematic role in the *rang*-passive, (iii) the obligatoriness of the aspectual marker *le* in the *rang*-passive, and (iv) the source of a thematic role assigned to the base-generated topic in Null Operator Analysis, which yields the so-called 'aboutness' relation in (9).

Selected References:

- Chang, Lili. The semantic Development from Causative to Passive in Chinese. *Language and Linguistics*, 7 (1), 139-174. 漢語使役句表被動的語義發展. 中國境內語言暨語言學 7 (1) 139-174. 中央研究院語言學研究所.
- Cheng, Lisa L.-S., C.-T. James Huang, Y.-H. Audrey Li, and C.-C Jane Tang. (1990). "Hoo, Hoo, Hoo: Syntax of The Causative, Dative, and Passive Constructions in Taiwanese." Taipei Academia Sinica.

- Huang, C.-T. James (1999) "Chinese Passive in Comparative Perspective," *The Tsing Hua Journal of Chinese Studies* 29 (4), 423-509. National Tsing Hua University.
- Jiang, Shaoyu (2011) 受事主語句的發展與使役句到被動句的演變. 《語言學論叢》第 26 輯
- Roberts, Ian. (2007). *Diachronic Syntax*. Oxford: Oxford University Press.
- Teng, Sze-Wing. (2008). 漢語被動句句法分析的重新思考 [Syntactic analysis of Chinese passives: revisited]. 《當代語言學》 [Contemporary Linguistics] Volume 10, Number 4, 308-319. Also reprinted in 《語言文字學》 [Linguistics and Philology] (中國人民大學書報資料中心 [Information Center for Social Sciences, RUC]), 2009, Vol. 1, 35-44002E
- Wei, Pei-Chuan. (1994) The development and mechanism of Chinese classical passive. *Language and Linguistics* (2) 293-317. 古漢語被動式的發展與演變機制, *中國境內語言暨語言學* (2) 293-317. 中央研究院語言學研究所.

Wednesday 9:00-10:00 AM Woodburn Hall Room 100

Constructionality and hidden complexity - The diachronic evolution of non-canonical [V+NP] expressions

WU Yicheng, Zhejiang University

In this paper, we investigate the evolutionary processes of two types of non-canonical [V + Non-patient NP] expressions in Mandarin Chinese (which exist in other languages as well), where the verb can be transitive and intransitive, and the NP can be any semantic type (agent, patient, location, time, instrument, material and so on). Within the framework of

Construction Grammar, we argue that (i) the two types of non-canonical VP expressions are essentially grammatical constructions, i.e. have the constructional features of (high) productivity, (high) schematicity and (low) compositionality; (ii) they have gone through a process of grammaticalization called “constructionalization” (Traugott & Trousdale 2013). From the typological perspective, we also argue that the [V+Non-patient NP] construction at issue manifests the type of hidden complexity (Bisang 2014, 2015), on the grounds that part of its (intended) meaning is not expressed morphosyntactically but pragmatically inferred, and hence needs pragmatic enrichment from context.

Monday 4:45-5:00 PM Woodburn Hall Room 100

Syntactic category of constituent components in the processing of compounds: evidence from noun compounds in Mandarin

Quansheng XIA^a, Wenxiao GONG^b, Yong LY^{b, a} Nankai Univeristy; ^b Tianjin Normal University

Introduction: The question of whether nouns and verbs are dissociable in the brain has been heavily investigated. The studies on Mandarin mainly focus on the comparison of disyllabic nouns and verbs. However, the effect of the syntactic category of the constituents on the compound processing has not received much attention. In Mandarin, the syntactic category of whole words is not always the same as that of their components. For example, noun compounds might be composed of noun and noun elements (e.g. 机场 *ji1 chang3*, airport), verb and noun elements (e.g. 飞鱼 *fei1 yu2*, flying fish), or noun and verb elements (e.g. 房租 *fang2 zu1*, house rent). Studies on aphasic patients (Bates et al., 1991; Chen & Bates 1998) and normal people (Hsu et al., 1998) revealed noun-verb dissociation at the sub-lexical level, in which the syntactic information of the constituents had an effect on the processing of the whole word.

However, in the previous studies, the factors of semantic transparency and internal structure information might have not been taken into consideration. In this study, we controlled these two variables. There were three types of noun compounds in the study: words with noun and noun constituents (NN), words with verb and noun constituents (VN), and words with noun and verb constituents (NV). These three types of words were semantically transparent words and were all in the attribute-head structure. We compared the processing of these three types of words to investigate whether the syntactic information at the sub-lexical level influences the lexical processing.

Furthermore, we also explored the roles of attribute and head in word processing. Bloomfield (1931) argued that the word class of compounds depends upon that of the head, which is known as *centering theory*. In contrast, the *information-stress principle* proposed by Duanmu (1999, 2007) claimed that attribute is more important than head in the word because attribute carries more information and thus should be stressed. In this study, if NN and VN are processed faster than NV, the *centering theory* will be supported; if NN and NV are processed faster than VN, the *information-stress principle* will be supported.

Subjects: Twenty-four native speakers of Mandarin were paid to participate in the experiment (12 male, 14 female; mean age=22). All the participants were right-handed, with normal or corrected-to normal vision and no reported history of neurological illness. None was majoring in linguistics, psychology or any other related discipline.

Materials: The stimuli consisted of three types of nouns. There were 26 NN, 26 VN, and 26 NV. The whole words and their N, V constituents were mostly unambiguous, and were chosen with the criterion that frequency of occurrence in the target word is at least ten times greater than its second most frequent usage (word frequency from Modern Chinese Balanced Corpus, Language Committee of China, 2012). Several variables, such as word frequency, number of strokes, semantic transparency, AoA, familiarity, neighborhood size, and imageability were matched among the

three types of compounds ($ps > 0.05$). The internal structure of all the word types was attribute structure, in which the head was always the second component of the words. Seventy-eight disyllabic words for both the adjective and adverb categories were included as fillers.

Design: Each trial started with a fixation presented in the screen center for 500ms. After the offset of the fixation, the target word was shown on the screen for 1500ms or less if a response was given sooner. The interval between trials was 1500ms and a five-minute break was given between blocks. There were two blocks in the experiment. The participants were instructed to judge whether or not the words were nouns by pressing different keys. The whole experiment lasted 20 mins.

Results and Discussion: The results are shown in Table 1. One way repeated-measures ANOVA of reaction time revealed a significant main effect of syntactic category of constituent ($F(2, 46)=27.725, p<0.001$). Post-hoc Bonferroni tests showed that NN is accessed faster than VN and NV ($ps<0.001$), and NV has a shorter response latency than VN ($p=0.05$). The same analysis on accuracy also indicated a significant main effect of syntactic category of constituent ($F(2, 46)=25.421, p<0.001$). Post-hoc Bonferroni tests showed that the accuracy of NN is higher than that of the other two compounds ($ps<0.001$), and the accuracy of NV is slightly higher than that of VN, but such difference did not reach significance ($p>0.05$).

Table 1 Reaction time (RT) and Accuracy (ACC.)

Condition	RT (ms)	ACC. (%)
NN	665±45	95.15±8.26
NV	729±68	84.68±16.95
VN	756±91	83.8±15.29

Note: The results were shown in the form of mean (stand deviation).

In this study, the reaction time suggested a largest facilitation effect for NN among all types of compounds, and a larger facilitation for VN than for NV. These findings, along with the previous studies, indicated that the syntactic category of constituents could influence the processing of compounds in Mandarin. Furthermore, neither the *centering theory* nor the *information-stress principle* is fully supported in this study. NN had the fastest reaction time and was erred on least, indicating that the syntactic information of both head and attribute is used in whole word processing. However, the effects of head and attribute on the word class processing of compounds might not be equal. The reaction time indicated a better performance of NV than VN. This suggests that attribute plays a more important role than head in whole word processing, at least in Mandarin. This study calls attention to the importance of the syntactic category of constituents and internal structure information in word processing in Mandarin.

Tuesday 4:30-4:45 PM Woodburn Hall Room 101

基于语料库的“在 N 的 V 下”历时研究

徐欣, 曲阜师范大学外国语学院

受语言接触等原因影响, 汉语中出现了一种新兴的介词结构——“在 N 的 V(之) 下”。作为一种重要的语法现象, 这类介词结构的突出特点在于, “在……下”出现的是一个以动词性成分做中心语的定中结构, 例如: “在区、乡干部的协助下”。本文即以“在 N 的 V(之) 下”为研究对象, 通过对历时语料的考察, 描述这一介词结构的历时演变过程, 研究其形成原因, 并进一步对其结构内部特点进行分析, 分析包括 N 与 V 的语义关系, V 的句法语义特征等。

“在 N 的 V (之) 下”准确的说应该是“在 NP 的 VP 下”。NP 主要是名词性的偏正结构和联合结构, VP 主要是动词性的偏正结构。“在 N 的 V (之) 下”中, N 与 V 之间“的”有时可以省略。当 N 与 V 没有

“的”时，N V 关系更加紧密。“在 N 的 V(之) 下”本身是封闭结构，容量有限。但受语言接触等因素影响，汉语不自觉复制英语的结构模式，多重修饰语塞入这种结构，使其结构容量扩展。通过对 N 与 V 的语义关系的分析，发现“在 N 的 V 下”描述的是和具体名物相关的空间概念，“在”是一种定位性的动词或介词，而“下”则可看作对被定位事物方位的再次切分，而这种切分和人们的主观想法有着密切联系，从而赋予了“在 N 的 V 下”这个结构具有被动含义的可能。本文继而将“在 N 的 V 下”句子同被子句进行比较，发现这两种句型虽然表现方式不同，但基本语义相似。作为一种封闭介词构式，“在 N 的 V(之) 下”还有许多问题值得深入研究，比如其与类似封闭介词结构的比较：“在 N 的 V(之) 上”，“在 N 的 V(之) 中”等以及这类结构在不同语体中的句法分布和呈现规律等。

Monday 4:30-4:45 PM Woodburn Hall Room 100

Learning to read in traditional and simplified Chinese scripts shape adult readers' perception of Chinese characters and visual attention

Ruoxiao Yang

This study investigates whether and how the long-term experience with simplified and traditional Chinese characters (i.e., the traditional-simplified Chinese script effect) shapes the readers' perception of Chinese characters which requires engaging their orthographic knowledge and their visual attention which do not directly require orthographic knowledge to be involved. A series of four behavioral experiments were conducted with the adult skilled Hong Kong (HKC) traditional Chinese readers and Mainland China (MLC) simplified Chinese readers, with the first three experiments (a categorical perception experiment paradigm, a lexical decision task and a composite matching task) examining the traditional-simplified Chinese script effect at the orthographic knowledge level and the last one experiment (a lateralized attention network task) checking the effect at the

visual ability level. Our investigations provide supportive empirical evidence showing the effect of long-term script experience with traditional and simplified Chinese characters on the adult HKC and MLC readers' character perception and visual perception patterns. In particular, the results suggest that the MLC simplified Chinese readers prefer a more analytic processing strategy to perceive Chinese characters, attending more easily and automatically to the local features of Chinese characters at the initial stage of character perception; by contrast, the HKC traditional Chinese readers tend to use a more holistic processing strategy to perceive Chinese characters at the initial stage of character perception, directing their visual attention more to the global configurations of Characters instead of local features. In addition, these different perception strategies shown in character perception by the two groups of Chinese readers seem to be kept in their other visual perception processes (e.g., visual attention) which do not require the direct involvement of orthographic knowledge of Chinese characters. The evidence that we find more holistic processing in perceiving characters and other pure visual objects by the HKC traditional character readers than the MLC simplified character readers corresponds with several recent studies which examined the effect of literacy on the cortical networks for language and vision at the neurobiological (Dehaene et al., 2010) and behavioral level (Ventura et al., 2013). Dehaene et al. (2010) conducted an fMRI study to compare illiterate with literate adults and reported that at the "visual word form area" (VWFA, i.e., the left fusiform gyrus), learning to read competes with other visual categories at the cortical level, especially inducing a significant reduced activation for faces. This study also showed that increasing literacy leads to a stronger right-hemispheric lateralization for faces. Dehaene et al. (2010) interpreted these results through a "neural recycling" theoretical position (Dehaene, 2009; Dehaene & Cohen, 2007; Dehaene et al., 2015), namely, reading is a too recent cultural invention to influence the human genome and therefore reading processes must "recycle" cortical areas devoted to evolutionary older functions. This "neural recycling" hypothesis is also in line with similar previous views from evolutionary linguistics (Wang, 1982) and general evolutionary theory (Anderson, 2010; Gould, 1991; Jacob, 1977). Ventura et

al. (2013) adopted composite face and house tasks to further examine whether learning to read has consequences on the processing of non-linguistic visual stimuli. They found positive evidence that illiterates were consistently more holistic than participants with reading experience in perceiving faces and houses, which suggested that the brain reorganization induced by learning to read may reduce the influence of automatic holistic processing of faces and houses by developing a more analytic and flexible processing strategy. Connecting together with some recent studies tackling the strengths and weaknesses of literacy development in the two Chinese scripts (as reviewed in McBride, 2015), although we have not tested face or related visual objects with HKC and MLC adult literates yet, our results already suggest different levels of holistic processing in readers with different learning experience of two writing systems for Chinese, the traditional and simplified characters respectively. Particularly, our results also further imply that the learning experience with different writing systems may induce different levels or patterns of the brain reorganization and therefore may lead to recycling different cortical areas, which merits future studies to evaluate and further explore.

Reference

- Anderson, M. L. (2010). Neural reuse: A fundamental organizational principle of the brain. *Behavioral and Brain Sciences*, 33(04), 245–266. doi: 10.1017/S0140525X10000853
- Dehaene, S. (2009). *Reading in the brain* (1 ed.). New York: Penguin Viking.
- Dehaene, S., & Cohen, L. (2007). Cultural recycling of cortical maps. *Neuron*, 56, 384–398. doi: <http://dx.doi.org/10.1016/j.neuron.2007.10.004>
- Dehaene, S., Cohen, L., Morais, J., & Kolinsky, R. (2015). Illiterate to literate: behavioural and cerebral changes induced by reading acquisition. *Nature Review Neuroscience*, 16(4), 234-244. doi: 10.1038/nrn3924
- Dehaene, S., Pegado, F., Braga, L. W., Ventura, P., Filho, G. N., Jobert, A., . . . Cohen, L. (2010). How Learning to Read Changes the Cortical Networks for

Vision and Language. *Science*, 330(6009), 1359–1364. doi: 10.1126/science.1194140

Gould, S. J. (1991). Exaptation: A crucial tool for an evolutionary psychology. *Journal of Social Issues*, 47(3), 43–65. doi: 10.1111/j.1540-4560.1991.tb01822.x

Jacob, F. (1977). Evolution and tinkering. *Science*, 196, 1161–1166. doi: 10.1126/science.860134

McBride, C. A. (2015). Is Chinese Special? Four Aspects of Chinese Literacy Acquisition that Might Distinguish Learning Chinese from Learning Alphabetic Orthographies. *Educational Psychology Review*, 1-27. doi: 10.1007/s10648-015-9318-2

Ventura, P., Fernandes, T., Cohen, L., Morais, J., Kolinsky, R., & Dehaene, S. (2013). Literacy acquisition reduces the influence of automatic holistic processing of faces and houses. *Neuroscience Letters*, 554, 105–109. doi: <http://dx.doi.org/10.1016/j.neulet.2013.08.068>

Wang, W. S.-Y. (1982). Explorations in language evolution. *Osmania Papers in Linguistics*, 8, 1–49.

Wednesday 3:15-3:30 PM Woodburn Hall Room 101

福建武平軍家話與江西金溪原鄉語言的微觀比

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武平縣自宋淳化五年(A.D.994)由場升縣後境域大抵無更動，人群作為語言的載體，明初武平守禦千戶所的建置，引入不同於周圍客語的贛方言群體，透過建城、軍屯得到人群的定著，從而產生了軍話方言島。

中山鎮軍話方言群體最早被郭啟熹(1985)所揭露，論述其屬於北方官話為基礎的軍家方言。林清書(1989)以聲調、詞彙來說明軍家話與贛語必有淵源關係。鍾德彪(1989)以史學的角度提出軍家方言不是以北方方言為主，而是以贛方言為主，通過幾百年的民族融合，吸收了其他地方的方言，特別是客家方言的許多營養，逐漸形成建立起來的。軍家話首先由梁志璋(1990)描寫完整的音系，惜並未論及語言歸屬問題，僅強調軍家話與本地客家話不同。林清書(2000、2004、2011)論及軍家話的面貌，是明朝贛東北方言和武平客家話長期磨合的結果。李泉祿

(2010)嚴實的調查中山鎮的客方言，提供豐富語料，惜未論及軍話部分。張學年(2014)透過地理語言學的調查方法，描繪武平縣的方言整體面貌，說明在武平境內軍話通行區的方言成份及認同意識朝向客家化。

在過去嚴修鴻(1995:211)的研究當中，指出這個方言群體承繼贛東北南城、弋陽方言，實則受限於李如龍、張雙慶(1992)《客贛方言調查報告》的贛語 17 處材料，以此判定軍家話於詞彙上，相對來說最接近這 17 個點中的南城、弋陽，因此即以南城、弋陽做為贛語基準，武平城關平川鎮做為客家話基準(嚴修鴻，1995:220)，來劃分軍家話中的 1.客贛同源詞、2.客家話詞、3.贛語詞、4.非客、非贛詞。此種處理方式僅考慮贛語材料取得的方便性，忽視了贛語乃至武平客家話內部的諸多差異；何況軍家主要來源為撫州府，尤其是金溪縣，獨佔三分之一強，而無南城、弋陽移民。

由王增能(1987)揭示軍籍姓氏有三十五個，其中江西省金溪縣占了十二個。我們透過《金溪縣志》(2007)梳理出這十二個姓氏中的六個姓氏原居地，透過田野調查所獲得的語料，進行現居地武平和原鄉金溪移民來源的村落及家族的精確對比分析，試圖說明武平軍話的變與不變。所選七個方言點為金溪縣對橋鎮圳上洪家、對橋鎮舒家、左坊鎮車家、澗灣鎮車家、琉璃鄉雙塘艾家、秀谷鎮東門蔡家(中山鎮丘錦郎家族來自金溪縣東門，蔡家為東門聚居大族)、左坊鎮許家。武平縣軍話我們採集中山鎮老城村洪家、新城村艾家、城中村舒家、陳家，城廂鎮長居村徐家 5 個點。

每個地點做 174 個條目，包含音韻及詞彙二方面。武平、金溪詢問項目都一樣，以消除變數。這些條目是在閱讀相關方言材料後篩選出來的。音韻上包含：1.來母逢細音塞音化讀 t-，2.章組合口唇齒化讀 f-，3.見組逢細音顎化，4.通攝讀展唇韻母，5.知章組讀如端組，此點為贛東北鷹弋片特色。6.韻母 -ai→-a→-o→-u 鏈動。以上主要是想觀察兩地音系承繼關係。詞彙上包含：1.親屬稱謂詞，2.林清書(2011)所摘選軍話中的特色詞語 48 條。依據前人研究中的音韻及詞彙特色，試圖分析和比較武平中山鎮、金溪縣各鄉鎮語料，確認軍家話的存古、取代與創新何在。所謂取代指的是軍家、客家語言隨著時間推移、人群交往，產生不對等的變換；亦即軍家話吸收客語成分愈多，而附近客家人至多只能聽懂軍家話而不會說。

我們透過實際的語言對比，說明徘徊在贛語、客家話之間的軍話，有著如何的變化與不變，甚至嚴修鴻(1995)所提 2%非客、非贛的語言成分應如何看待？本文將從現居地武平和原鄉金溪移民來源的村落及家族的微觀差異，對所謂非客、非贛詞做合理的討論並解釋。

關鍵詞：軍話；武平；客家話；贛語；金溪；語言微觀

參考書目

金溪縣志編纂委員編，2007，《金溪縣志》。陝西：三秦出版社。

武平縣志編纂委員編，1993，《武平縣志》，北京：中國大百科全書出版。

福建省地方志編纂委員會編，1998，《福建省志·方言志》。北京：方志出版社。

龍岩地區地方志編纂委員會編，1992，《龍岩地區志》。上海：上海人民出版社。

王增能，1987，〈武平所考〉。頁 81-91，《武平文史資料第 8 輯》。福建：福建省武平縣政協文史資料委員會編。

林清書，1989，〈閩西方言與閩西移民史〉。《龍岩師專學報》（社會科學版）7：3：頁 110-115。

林清書，2000，〈武平中山軍家話與贛方言〉。收錄於林立芳編，《第三屆客家方言研討會論文集》。廣東：韶關大學出版社。

林清書著，2004，《武平方言研究》。福建：海峽文藝出版社。

林清書，2011，〈再說武平中山軍家話與客贛方言的關係〉。《龍岩學院學報》29：4：頁 11-16。

李如龍、張雙慶(編)，李如龍、張雙慶、萬波、邵宜、練春招(著)，1992，《客贛方言調查報告》。廈門：廈門大學出版社。

李泉祿著，2010，《武平中山鎮客家話研究》。桃園：國立中央大學客家研究碩士在職專班碩士學位論文。

張學年著，2014，《福建省武平縣地理語言學研究》。高雄：國立高雄師範大學客家文化研究所碩士學位論文。

梁玉璋，1990，〈武平縣中山鎮的“軍家話”〉。《方言》3：頁 192-203。

郭啟熹，1985，〈閩西方言與民族遷徙的關係〉。《龍岩師專學報》（社會科學版）3：1：頁 58-62。

鍾德彪，1989，〈從史學角度談軍家方言的源流—兼與郭啟熹同志商榷〉。《龍岩師專學報》（社會科學版）7：1：頁 132-136。

嚴修鴻，1995，〈武平中山鎮的軍家話〉，李如龍、莊初升、嚴修鴻著，雙語雙方言書系（丙種），《福建雙方言研究》，漢學出版社。

Wednesday 4:00-4:15 PM Woodburn Hall Room 100

Sustained anterior positivity related to the complexity of argument structure: An ERP experiment on the comprehension of Chinese applied-object structures

ZHOU Changyin

Verb-argument relations are very important aspects of the syntax-semantics interaction in sentence processing. Previous ERP (event related potentials) studies in this field mainly concentrated on the relation between the verb and its core arguments. The present study aims to reveal the ERP pattern of Chinese applied object structures (AOSs), in which a peripheral argument is promoted to occupy the position of the patient object, as compared with the patient object structures (POSs). ERP data were collected when participants performed acceptability judgments of Chinese phrases. Our results show that, similar to previous studies of number-of-argument violations, Chinese AOSs show a bilaterally distributed N400 effect. Different from previous studies of verb-argument relations, however, Chinese AOSs demonstrate a sustained anterior positivity (SAP). This SAP, which relates to complexity of argument structure, reflects the difficulty of integrating the newly promoted arguments and the progressive nature of well-formedness checking in the of Chinese AOSs.

Tuesday 4:15-4:30 PM Woodburn Hall Room 100

Lexical Diffusion in Sound Changes in the Dialects of Immigrant Communities of Linyi City

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Hongqi, Dongfeng and Xiangyang immigrant villages in Linyi City, Shandong Province, China were formed in the 1960s as part of community relocation from Mengyin County of Shandong Province due to the building of Andi reservoir. Having identified the major differences between the immigrants' original dialects and their new surrounding dialects in syllable initials, finals and tones, this paper provides a comprehensive description of the sound changes in the Hongqi, Dongfeng and Xiangyang dialects. Drawing on the theory of lexical diffusion, the paper then explores the pattern of spreading of sound changes from the perspectives of word frequency, competing changes and residues. As a tentative conclusion, it is posited that the sound changes in Hongqi, Dongfeng and Xiangyan over a span of about 50 years are the results of the competition of the dual influence from their new surrounding dialects and Mandarin. The different cultural prestige and economic power represented by Mandarin and their new surrounding dialects have influenced the direction of sound changes in these three immigrant villages. The immigrants' language knowledge and attitude to Mandarin and their original and new surrounding dialects also play a role in the directions and rate of their sound changes. Lexical diffusion of the various types of sound changes is not only related to word frequency, but is also sensitive to word classes. The word frequency effects are significant only within word classes. It concludes that the sound changes in the immigrant villages in Linyi City have been developing through lexical diffusion and the Neogrammarian claim cannot stand in these cases. Lexical diffusion can explain not only the internal development of languages, but also developments caused by language contact.

Monday 4:15-4:30 PM Woodburn Hall Room 100

The role of language and music in dementia among the Chinese population

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Dementia is now an increasingly serious problem which is plaguing a large body of population around the world. While this problem has been set great store by the western academia, it is much less investigated in the Chinese populations. The aging population contributed by the Chinese population is estimated to be remarkably large, which makes such inadequacy more pressing than before.

The aims of the paper are three-fold: 1) to provide a meta-analysis of the dementia research targeting on the Chinese population and to compare the difference in dementia prevalence reported in various literatures, and explore the potential reasons why such difference exists; 2) to call attention to the culture bias in both the dementia screening instruments and diagnostic criteria, especially when they are adopted in the Chinese population. For the screening instruments, the research provides a thorough review of different culture biases in different versions of MMSE and MoCA and to make suggestion for a better reliability for them; 3) to make clear the role of language and music in the treatment of dementia and how speech and music therapy can benefit the Chinese population.

The potential significance of the paper is 1) to provide a thorough meta-analysis of all the existent dementia prevalence study targeting on the Chinese population in an exhaustive manner; 2) Provide probably the most thorough summary of the risk factors in dementia, with including bilingualism as the risk factors for the 1st time; 3) comparative studies have been made for the screening tools, but very little study does the same thing

for diagnostic criteria. The paper not only discuss the screening and diagnosis separately but also pay attention to the more culture-neutral tools such as RUDAS & CASI as well as criteria such as 10/66; 4) point out the “vicious circle” in the study of music therapies for the dementia patients: music is not treated with enough scientific seriousness. A general picture in this academic area is that so long as a certain piece of music in a certain genre works, no further examination into the music will be made. Unfortunately, it is not a all's-well-that-ends-well Shakespeare's play, many scientific questions should be made, such as: if it is the Jazz music works, why don't other genres of music (classical music, rock, Chinese guqin and etc.) work? Is it because the melodic or rhythmic structure in it? What specific type of melodic line or rhythmic structure should the music therapists design? Are there any rules for the therapist to follow? Questions like these are essential towards a better understanding the nature and the power of the music in dementia, however, very little literature has even touched upon them. 5) music therapies are abundant, however, little has been adopted for the specific benefit of people with dementia. The paper not only provides a comprehensive review for the neurologic music therapies for the elderly people, but also proposes the potential integration of MIT into the therapy for dementia. 6) So far, little literature, even for those review articles, focus simultaneously on dementia prevalence, risk factors in dementia, screening and diagnosis, treatment and therapies. The merit of integrating this line of research is that it does not only provide a general picture of dementia, but also makes a nice tracking of all the stages a dementia patient might experience.