

The Dynamics *of* Language

PLENARY AND FOCUS LECTURES FROM
THE 20TH INTERNATIONAL CONGRESS
OF LINGUISTS

Edited by

Rajend MESTHRIE
and
David BRADLEY

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PLENARY AND FOCUS LECTURES FROM THE
20TH INTERNATIONAL CONGRESS OF LINGUISTS
Cape Town, July 2018

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The Editors.



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Chapter 1

The dynamics of language: Contemporary views

Rajend Mesthrie (University of Cape Town) and David Bradley (La Trobe University)

In this opening chapter we provide an overview and motivation for this volume, and an introduction to the chapters and groupings of chapters contained herein. This work gives a multi-faceted view of how specialists view language and the development of their field today. The approaches surveyed here range from the historical to the structural, generative, psychological, sociological and applied. They involve varying degrees of emphasis on form, content, use and social and socio-political hierarchies. While these views are global, Africa and the Global South are not underemphasised.

Linguistics is a major discipline concerned with all facets of language study. Language is the gift and resource that makes us human. No human activity can take place without it. Our basic thinking, knowledge of history, our enquiries into all aspects of our universe (physical, ecological, spiritual), our cultural record, business transactions, health communication, psychological sense of individuality as well as our social sense of community and sense of difference from others rest on language first and foremost. Linguistics — the scientific study of language and languages — is thus an indispensable foundation for all forms of knowledge. The Comité International Permanent des Linguistes (Permanent International Committee of Linguists, CIPL) was founded in 1928 during the first International Congress of Linguists, which took place in The Hague. This was the first time that Linguistics was presented as an autonomous area of study internationally. CIPL included leading linguists of the times including Charles Bally, Franz Boas, Otto Jespersen, Daniel Jones and Antoine Meillet. CIPL has been under the auspices of UNESCO since UNESCO's establishment. The Congress is held every five years; the last two have been in Geneva (2013) and Seoul (2008). The main organisational partners for the 20th meeting of CIPL are the Linguistics Society of Southern Africa and the University of Cape Town's Linguistics Section. We have the full support of the major language societies of the country as well as the three universities in the Cape Town metropole. These are the Southern African Applied Linguistics Association (SAALA), the African Languages Association (ALASA), the Association for Lexicography in Africa (AFRILEX) as well as the Universities of the Western Cape and Stellenbosch.

The theme for 2018, *The Dynamics of Language*, connects with the major ways of studying the phenomenon of language while being responsive to the diversity of the contexts of its use in the early 21st century. In 2018 the Congress meets in Africa for the first time, with Rajend Mesthrie of UCT as President of the Congress and David Bradley as Chair of the Scientific Committee. As a major conference with up to nine plenary speakers (addressing an expected 600 delegates) and another 10 focus speakers who introduce the specific sessions of the conference, the Congress policy is to produce a book of these papers in time for presentation to each delegate.

The book thus represents current thinking in the major branches of language study as represented by specially chosen internationally known scholars. At a time when university resources are shrinking, small language departments tend to be most affected. The Congress is, therefore, meant to affirm the value of the languages of Africa, of languages and linguistics in general, as well as to inspire and equip younger scholars to undertake advanced research into language in its many facets.

The African continent is blessed with hundreds of languages which act as local repositories of culture and interaction. South Africa has 11 official languages, plus South African Sign Language (which has a presence on national television and other platforms), many heritage languages, and new languages of global movements and African migration. Part of the linguist's business is to document, record and affirm languages and diversity. Applied linguists use their training to understand and enhance the role of language in education and upliftment, and grasp the opportunities and challenges of new technologies of communication. The book will provide an up-to-date specialist overview of the main fields of linguistics. The papers herein broadly address the following aspects of linguistic enquiry: history of languages, structure, acquisition, diversity and use. At the same time due regard will be paid to the African continent in several of the papers in connection with its linguistic diversity, multilingualism, and educational and societal concerns. In summarising the work for the Cape Town Congress we acknowledge the role of the Scientific Committee, made up of Raymond Hickey (Duisburg-Essen), Edrinnie Kayambazinthu (Chancellor College, Malawi), Sonal Kulkarni-Joshi (Deccan College, Pune), Lutz Marten (SOAS), Fritz Newmeyer (Washington), Erik Thomas (North Carolina), Kai von Stechow (MIT) and the two editors of this volume.

The volume begins with seven of the plenary presentations, followed by 10 focus presentations on subdisciplines within linguistics, and a concluding overview chapter on the practice of linguistics in a changing South Africa. For the references cited below, please consult the references at the end of the relevant chapter.

In his plenary, Chapter 2, Nicholas Evans of the Australian National University discusses **The dynamics of language diversity**. While linguistics knows an increasing amount about the nature of linguistic diversity, there is still no more than a basic understanding of its causes. Why are there such radical differences, across the globe, in the distribution of linguistic diversity — whether measured in numbers of languages, of language families, or of typological variability? While a partial explanation can be found in the homogenising effects of historically long-term state formation in some parts of the world (e.g. Europe, Korea, Japan) and not in others (e.g. New Guinea), this still leaves unexplained the striking contrasts in diversity found if we compare regions where colonisation is historically recent, e.g. New Guinea vs Australia or Vanuatu vs Samoa. And while various extralinguistic causes have been proposed with some statistical validity (e.g. growing season, ecological risk), at best they furnish distal causes which must logically be mediated by sociocultural differences then played out in different linguistic practices and ideologies.

In other words, to understand the origins of linguistic diversity (macro-variation) and its very different distributions across the world, ultimately we need to investigate differences across speech communities in micro-variation — the way small-scale individual differences arise, diffuse, and are semiotically mobilised, across different

types of small-scale speech community. In this talk, the methods and unfolding findings of a large-scale comparative project which sets out to do just that are outlined, focusing on case studies from three high-diversity regions: northern Australia, southern New Guinea and Vanuatu. Studies of these regions conducted by the author and his colleagues are particularly concerned to examine the role that egalitarian multilingualism and the resultant metalinguistic awareness of linguistic difference play in the ongoing fostering of linguistic diversification at various levels, and with reconciling the need to balance variation that is locally salient (e.g. the variable [ng], relevant in English but not, say, Xhosa) with the need for cross-linguistic commensurability in levels of typological diversity, e.g. through the typological variables in WALS or Grambank. If — as their emerging findings suggest — egalitarian multilingualism plays a central role in driving diversification, this makes the documentarian task for the world community of linguists even more urgent than that of studying static structures, since many traditional types of multilingualism are even more fragile than individual languages themselves.

In his plenary **Language contact and evolutionary linguistics: An African(ist)'s and creolist's perspective**, Chapter 3, Salikoko Mufwene of the University of Chicago shows how an important contribution of genetic creolistics to genetic linguistics is the light it sheds on the role of language contact in the speciation of the languages, viz. those that prevail, while often also driving their competitors to extinction. This is evident not only in the emergence of creoles and the Romance languages, concurrent with the demise of numerous Celtic languages, but also in the dispersal of Proto-Bantu and its speciation into so many Bantu languages, at the expense of Pygmy and San and Khoekhoe languages. However, there is much more than meets the eye in these diachronic developments. At the population level, language contact presupposes population movement and depends largely on the ensuing population structure. Africa has quite a story to tell regarding the causes of such movements and how they have proceeded, starting with the exodus out of Africa, and variation in the ensuing population structures involving layers of internal or external colonisation (i.e. relocation to and domestication of new territories, with or without domination of another population). The causes include natural ecological changes, degrading economies, and political conflicts. In this paper, the contribution that African linguistics has made and can still make to evolutionary linguistics from the study of language contact at the population level and from an ecological perspective is articulated.

Morphology-phonology interface and tone realisation in some Bantu languages: Residual problems, Chapter 4, is the plenary presentation by Al Mtenje of Chancellor College, Malawi. The question of how much morphology can account for surface phonological alternations, including tone, has been a subject of debate in the linguistics literature for a long time (cf. Nurse 2008; Odden to appear). In some Bantu languages, especially in tensed constructions, a wide range of tonal patterns appears to be associated with specific tenses. A number of theoretical approaches have been advanced to account for this phenomenon, ranging from those which attribute these alternations to phonological factors to those that recognise the role of morphology as a determining element of the phonological variations (cf. Kanerva 1990; Hyman & Mtenje 1999; Mtenje 1986; Odden to appear; Odden & Bickmore

2014). This paper considers tonal realisations from the Bantu languages Chichewa, Ciyawo and the dialect cluster of Cisukwa, Cindali and Cilambya (referred to as SuNdaLa by Mtenje 2016), which appear to be influenced by specific morphological environments. It is argued that a purely phonological account does not provide a coherent account of the phenomena. It is proposed, instead, that reference to morphological categorisation is the most appropriate alternative.

Jane Stuart-Smith of Glasgow University presents the results of a long-term in-depth study of variation in Glasgow English in her plenary **Sound perspectives: Speech and speaker dynamics over a century of Scottish English**, Chapter 5. As in many disciplines, in linguistics too, perspective matters. Structured variability in language occurs at all linguistic levels and is governed by a large range of diverse factors. Viewed through a synchronic lens, such variation informs our understanding of linguistic and social-cognitive constraints on language at particular points in time; a diachronic lens expands the focus across time. And as Weinreich et al. (1968) pointed out, structured variability is integral to linguistic description and explanation as a whole, by being at once both the stuff of the present, the reflexes of the past, and the potential for changes in the future. There is a further dimension which is often not explicit, the role of analytical perspective on linguistic phenomena. In this chapter, Stuart-Smith focuses on a particular problem within linguistics, how to account for sound change, and specifically the extent to which this is affected by two key aspects of analytical perspective: (1) how the analyst's observational lenses on phonetic and phonological variation itself can shape, inform and guide interpretation; and (2) how relative depth in terms of time and place can influence our interpretation. The basis and examples for the discussion are drawn from a series of empirical phonetic and phonological studies which chart variation and change across the 20th century in the social diversity of Scotland's largest city, Glasgow. The observational lenses on sound variation include methods from auditory phonetics, articulatory phonetics (ultrasound tongue imaging), and acoustic phonetics. The chronological scope on sound change covers the recorded history of Glasgow vernacular, especially through the Sounds of the City project. Its social scope is expanded from macro- to micro-social and ethnographic studies encompassing the social diversities of the city.

The plenary of Jef Verschueren of Antwerp University is **Adaptability and meaning potential**, Chapter 6. This paper focuses explicitly on the dynamics of language, more specifically on the role of adaptability in meaning-generating processes in actual language use. From that perspective, the argument is made that the question 'What does x mean?' not only requires the extension '... in context y' (as is commonly accepted in pragmatics and even in certain forms of semantics), but necessitates a reformulation in terms of *meaning potential*. It is shown that such a reformulation (1) is in line with a number of recent developments in semantics/pragmatics (as represented by contributions from fields as diverse as relevance theory, conversation analysis, and anthropological linguistics), and (2) enables us to get a better understanding of the dynamic interplay between explicit and implicit aspects of meaning in language use. Its usefulness is further demonstrated on the basis of contrastive data, with implications for translation and aspects of international communication.

The plenary of Loraine Obler of City University of New York, Chapter 7, is **Bilinguals' brain plasticity can be subtractive too: Is less more?** Brain plasticity

has been called upon to account for the critical period in second-language (L2) acquisition and for related sensitive periods for different linguistic aspects of it. At the same time it can be employed to account for individual differences in L2 learning and acquisition at older ages. It has also been considered to underlie the apparent cognitive advantages of bilingualism for children and older adults who presumably practice cognitive control more often than monolinguals, and even for bilinguals' and multilinguals' later diagnoses of dementia. Such plasticity may be considered 'additive'; that is, by practising a set of skills, bilinguals' and multilinguals' inter-neuronal connectivity is enhanced. Plasticity, however, also entails a second set of phenomena that requires pruning of connections and defacilitation of neuronal connections. Such physiological phenomena, the author argues, underlie language attrition (the over-riding of one language by another that has become more dominant) and syntactic and lexical influence of a later language on an earlier one. Concurrent additive and subtractive plasticity effects can explain mutual-interference effects of Voice Onset Time adjustment in early bilinguals.

In her plenary, Chapter 8, Rebecca Grollemund of the University of Missouri, along with Jean-Marie Hombert of CNRS and Simon Branford of the University of Birmingham provide **A phylogenetic study of North-Western Bantu and South Bantoid languages**. Starting from the 21st century, new methods called phylogenetic methods, borrowed from the field of genetic biology, have been employed in order to classify languages. Indeed, the numerous analogies established between biological evolution and language evolution have allowed for demonstrating that the phylogenetic tools (allowing the reconstruction of the evolutionary history of species) can also be applied to languages. The presentation introduces these phylogenetic methods and discusses the results obtained for Bantu and Niger-Congo languages spoken in Africa. The method used for the Bantu languages, 'relaxed clock dating method', has allowed the authors to obtain the first dated phylogenetic classification of the Bantu languages (Grollemund et al. 2015). The analysis of the phylogeny has shown that the Bantu language expansion was triggered by climatic changes that occurred in the Bantu language area during the past 5 000 years. The presentation also presents a phylogenetic tree for the Niger-Congo family, which was developed using a different technique. Niger-Congo constitutes the largest African language family in terms of geographical area (the Niger-Congo languages cover the greater part of sub-Saharan Africa), the number of speakers (more than 300 million speakers) and the number of distinct languages (approximately 1 400 languages spoken). The first results indicate that the Niger-Congo family forms a genetic unity.

In her focus presentation on historical linguistics, Chapter 9, Anvita Abbi of Simon Fraser University presents **The sixth language family of India: Great Andamanese, its historical status and salient present-day features**. Traditional scholarship up to fairly recent times recognised four different language families in India: Austro-Asiatic, Dravidian, Indo-Aryan and Tibeto-Burman. A fifth family, Tai-Kadai, is now also accepted. The results reported in the present paper are based on first-hand language data collected in the Andaman Islands by the author during 2005–2009. The Great Andamanese language family is represented by 10 languages, which can be grouped into three subgroups: Southern, Central and Northern. The present form of Great Andamanese (PGA for short) is a koiné or mixed language and

derives its lexical resources from four northern languages, Khora, Sare, Bo and Jeru. The grammar of the language is largely based on Jeru. Except for Jeru and Sare (previously known as Aka-Cari), all Great Andamanese languages are now extinct. There are only five speakers of PGA left in a community of 56, although the results presented in the talk are based on a study conducted at a time when there were 10 speakers. Two different but inter-related methodologies drawing from historical linguistics and linguistic typology have been used to demonstrate that PGA is an independent language family of India. This brings the total number of recognised language families in India up to six.

Pieter Muysken of Radboud University has prepared the focus presentation on language contact, with the title **Language contact research: Three challenges and opportunities**, Chapter 10. Language contact research now has a history of over 60 years, starting with the seminal publications by Weinreich and Haugen in the 1950s, and its trajectory has been extremely successful in academic terms. It has diversified into a large number of subfields, ranging from neuro-imaging research of the multilingual brain to political discourse analysis in minority-dominant language competitions, via creole studies, code-switching, and linguistic area studies. Its very success also poses at least three challenges, however. The first challenge is unification. There is no need, of course, for all language contact specialists to talk to each other all the time, but extreme fragmentation makes people lose sight of common research questions and results that go beyond a sub-discipline. The second challenge is that of external boundaries. Since the notion of a language has become more and more multiplex and variable, it is hard to see, sometimes, where language contact studies begin and ‘non-contact’ developmental linguistic studies end. The third challenge comes from the fact that, as the language sciences are discovering both the complexities of and the regularities underlying multilingual practices, in many social and political constellations all over the world monolingual models of language behaviour are taken as the norm, with old nationalisms blending with new mono-ethnic conceptions of the human space.

The focus talk **Variation and change in a changing world: New perspectives on classic questions**, Chapter 11, by Devyani Sharma of Queen Mary College, University of London, offers an overview of recent developments in the study of language variation and change in sociolinguistics. The first half reviews major developments in the past decade. This will include methodological changes such as the advent of big data, corresponding advances in comparative sociolinguistics, improved models of language perception and technological advances in socio-phonetics. Theoretical developments reviewed include new understandings of relationships among social, linguistic and cognitive constraints, and the challenge of fundamental changes in social dynamics, such as the scale and pervasiveness of human mobility in a globalised world and the changing role of technology and social media in language change. In the second half, the author pulls together some of these developments to discuss recent insights into a classic problem: the relative role of structure and agency in language variation and change.

For his focus presentation on phonology, Andries Coetzee of the University of Michigan discusses **Individual and community level variation in phonetics and phonology**, Chapter 12. The phonetics/phonology research tradition of the past five or six decades tended to treat languages as mostly invariant systems that can be

subjected to description and analysis (e.g. the syllable structure of Language X, the acoustics of sibilants in Language Y, etc.). The past decade, however, has seen an increased move towards recognising the variation between individual speakers, even within the same speech community. In this paper, Coetzee reviews the shift in focus from languages as invariant systems to their individual speakers, and interrogates the relationship between individuals and the languages that they speak. The paper considers questions such as the limits of individual variation within a speech community, the sources of individual variation (cognitive, biological or social), and the agency of individuals in the use of that variation. The paper argues that any adequate formal model of the linguistic competence of speakers has to allow for the complex interplay between the individual agency of speakers and the linguistic communities in which they participate.

The focus presentation on phonetics by Paul Warren of Victoria University of Wellington is **Dynamic perspectives in language processing**, Chapter 13. In keeping with the congress theme on *The Dynamics of Language*, this contribution considers recent trends in psycholinguistics that remind us that language and language users are fundamentally evolving and adaptive systems. In particular, it focuses on research that demonstrates that both life-long learning and recent experience shape how we process language. Since social indexicality is an important aspect of this experience, it has been increasingly recognised that our processing systems have to be sensitive to socially stratified variation. As a consequence, we have witnessed greater collaboration between psycho- and sociolinguists in the area of variation and language processing. An example of research in this area is the author's work on the production and perception of a particular socially-stratified form of intonation, the high-rising terminal or 'uptalk' found in New Zealand English and other varieties. This research demonstrates, amongst other things, listeners' sensitivity in their interpretation of intonational form to social characteristics conveyed by the speaker.

In his syntax focus presentation, Chapter 14, Jochen Zeller of the University of KwaZulu-Natal examines **Derivations or constraints? Core aspects of syntax and morphology in competing grammatical frameworks**. This paper focuses on a number of key syntactic phenomena (structure building operations, nonlocal dependencies, the realisation of argument structure, and linearisation) and shows how these phenomena are analysed in competing syntactic theories (the Minimalist Program MP vs constraint-based grammars such as HPSG, Construction Grammar and Simpler Syntax). It also discusses the two morphological frameworks that are most closely associated with the MP and Construction Grammar, namely Distributed Morphology and Construction Morphology, and compares the analyses of various morphological phenomena that have been proposed by proponents of these theories.

In his focus overview for lexicography, **A dynamic lexicographic practice for diverse users and changing technologies**, Chapter 15, Rufus Gouws of Stellenbosch University shows how dictionaries need to reflect actual language use and should be planned and compiled for a variety of target user groups with different linguistic needs, different reference skills and different approaches to the challenges and possibilities of the prevailing media. This paper takes a critical look at the interactive relation between the development of the lexicographic practice and lexicographic theory and the ways in which this development has responded to the

dynamics of language and the changing needs, reference and technical skills of diverse user groups. While some dictionaries still have to maintain their status as traditional containers of knowledge, the emergence of online reference sources compels lexicographers to new ways of data distribution and presentation. Metalexigraphy needs to provide models for the lexicographic practice that can successfully negotiate the interplay of contents, structures and functions. The paper shows that the dynamics of lexicography should help to ensure proper ways of accommodating and reflecting the dynamics of language in dictionaries that adhere to a user-driven approach.

Chapter 16 is a focus presentation by Jan Blommaert, along with Jelke Brandehof and Monika Nemcova, all of Tilburg University, on **New modes of interaction, new modes of integration: A sociolinguistic perspective on a sociological keyword**. It has been the ambition of sociolinguists, ever since the inception of the discipline, to make fundamental statements on the nature and structure of society grounded in empirical insights into social patterns of language usage. Yet, very few have effectively attempted this form of theory building. Based on a project called ‘Durkheim and the Internet’, this presentation provides a survey of fundamental social-theoretical insights gained from sociolinguistic research into contemporary online and offline interaction modes and patterns. It focuses in particular on how such insights offer a different take on the old sociological (and political) problem of social integration, with particular reference to immigrant experiences in Belgium and the United States and ongoing links to countries of origin, as well as the mainstream political discourse concerning integration.

In her psycholinguistics focus presentation, **Multilingualism across the lifespan: The family as a space for language learning, and practices and policies**, Chapter 17, Elizabeth Lanza of the University of Oslo shows how recent approaches to the study of multilingualism address different stages of the lifespan: children, youth, adults and the elderly, and also issues that are relevant across the lifespan such as acquisition, attrition, linguistic practices, and language transmission and socialisation. Psycholinguistic and more cognitively oriented approaches to the study of multilingualism have specifically addressed the lifespan perspective by studying language competence across various age groups, although a societal perspective often is generally missing. Sociolinguistic and anthropologically oriented approaches to multilingualism, on the other hand, generally do *not* deal with linguistic practices across the lifespan, although time scales have received more attention in sociolinguistic research. This paper addresses multilingualism across the lifespan, focusing on the multilingual individual, social interaction and social practices in multilingual contexts, as well as the management of multilingualism, taking into account the various stages of the lifespan. The main focus is on recent developments concerning language acquisition, and language transmission and socialisation. There is a brief overview of each field, addressing developments in the respective fields from a lifespan perspective which highlight how both psycholinguistic and sociolinguistic approaches can contribute to a better understanding of multilingualism.

The focus presentation in Chapter 18 on **Language policy in African higher education: Between dependency and decolonisation** by Alamin Mazrui (of Rutgers University) and Kimani Njogu (formerly of Kenyatta University) explores some of

the dialectics of the interplay between language, education and political economy in Africa within the wider context of global inequalities and imbalances of power. In theory, it departs from the premise that language policies in education do not develop, nor do they exist, in isolation from the politico-economic forces at play in the societies in which they are pursued. Although African nations demonstrate a range of divergent policies and practices that have been shaped by different conjunctures of local realities, most have tended to manifest common patterns of dependency that have continued to influence both the direction and socio-economic consequences of education, due in part to processes of a global nature — from Francophonie to World Bank conditionalities, from neoliberal competition to the new dynamics of nationalist politics in the world. Drawing on a wide range of language instructional experiences and orientations in the African classroom, the presentation will seek to provide an analysis of language policy as a politico-economic construct in historical space, and an outline of potential alternative strategies for the linguistic ‘dehegemonisation’ of African education.

Continuing in a similar vein, Chapter 19, **Language studies in times of transformation: Multiple perspectives**, summarises aspects of the current state of linguistics in South Africa: this is in four parts, by Rajend Mesthrie and Mantoa Motinyane (of the University of Cape Town), as well as Mark de Vos and Sally Hunt (of Rhodes University). The opening section by Mesthrie has a focus on the complex sociolinguistic issues confronting modern South Africa in its current phase of transformation. De Vos discusses the current state of theoretical linguistics in South Africa amidst this transforming sociopolitical context and urgently calls for more work on indigenous languages by theoretical linguists, particularly so that practical work in education and other areas can progress. Hunt discusses issues confronting applied linguistics in South Africa, and outlines the need for greater investigation of patterns of communication in the country, with a focus on the potential of Critical Discourse Analysis to improve mutual understanding. Motinyane gives an overview of the antecedents of African language studies and focuses on newly emerging work of a developmental psycholinguistic nature.

The volume was originally intended to include a plenary presentation on syntax by David Pesetsky of MIT, but unfortunately this is not yet available. His presentation **Generative linguistics today: Some debatable questions about syntax** will discuss whether terms like ‘generative linguistics’ are actually meaningful or helpful for the field. He believes that the answer is no. Putting the fraught history of the term aside, what characterises actual work that goes under the flag of ‘generativist’ is a commitment to the idea that human language is a system with non-obvious properties that can be discovered by normal scientific means — plus the opinion that a certain body of results has been established that other work can and should build on. This ‘plus’, of course, is the problem: it could be wrong. One way to see if a body of claimed results is strong enough to build on is, of course, to build on it and see what happens. Prof Pesetsky will take up several interconnected issues in the theory of syntax that belong to the hotly contested ‘plus’, specifically associated with the label ‘generative’, and argue that work building on some of the ‘plus’ assumptions has in fact led to new discoveries of intrinsic interest — and that in so doing, this work provides new support for the assumptions themselves. Issues to be addressed include

the independence of the syntactic system from the lexicon — where the syntax of music (Katz & Pesetsky 2011) provides a key argument, as does recent work of his own on the notion ‘finiteness’ — and the degree to which it varies across languages (Halpert 2015 on case in isiZulu, a language thought to lack it; Bayırlı 2017 on the typology of adjectival concord, including languages thought to have no concord).

A further plenary on **Raciolinguistic and sociolinguistic variation in US schools, courts and society** will be given by the renowned creolist John Rickford of Stanford University; unfortunately this decision was finalised at too late a stage to allow a full text to be reproduced in this volume. We therefore present details based on his extended abstract here. Rickford’s presentation will draw on more than a half century of sociolinguistic research to address theoretical understandings of the roles of race and class in such variation, and applied efforts to curtail the discrimination and injustice experienced by African American and other vernacular speakers in schools, police interactions, courtrooms, job hunts and other aspects of social life.

On the theoretical and descriptive side, although social class/socioeconomic status was at the heart of the genesis of quantitative sociolinguistics in the 1960s, it has rarely been pursued since then, and indeed, many students voice the opinion that the kinds of ‘large-scale social processes’ it reflects are irrelevant with the emergence of small-scale, ethnographic studies. However, class does remain very relevant to sociolinguistic variation, and recent models of social class variation in sociology offer new strategies for pursuing it, as the work of Flores-Bayer (2017) demonstrates. Other theoretical issues that have never been adequately explored are the nature of ethnicity as a sociolinguistic boundary and the question of why and how race came to triumph over class as the basis of sociopolitical action and speech alignment in the US. Blake’s (1997) dissertation addresses this to some extent, contrasting the ways in which poor whites and rich whites came to be sociopolitically aligned in the US as 18th- and 19th-century planters armed poor whites to suppress black slave rebellions. The greater salience of race in the US is also shown by a recent film on Dolores Huerta, in which white Teamsters Union members were brought in to break up a strike by Mexican American members of the United Farm Workers Union in California in the 1960s. They fought against and voiced racist insults about the farm workers, instead of seeing the commonalities between them in terms of class and union interests.

On the applied side, new work concentrates on documentation of the extent to which speakers of African American Vernacular English (AAVE) are discriminated against in US courtrooms because of jurors’ unfamiliarity with and prejudice against their dialect. Rickford and King (2016) demonstrate, for instance, that the vital courtroom testimony of Rachel Jeantel in the 2013 Florida trial of George Zimmerman for the murder of Trayvon Martin was neither understood nor believed — and ultimately disregarded by jurors — mainly because it was delivered in AAVE. Jones et al. (2018) provide other compelling evidence that US court reporters simply do not understand AAVE speakers well enough. Other cases from the US, UK and the Caribbean suggest that this is part of a more general problem, exacerbated when the speaker is a person of colour (i.e. when their language is ‘raced’), but also if/when they are poor or rural. Voigt et al. (2017) demonstrate that race is the salient basis of the relative respect shown (through language) to motorists stopped by Oakland police

officers, regardless of whether the police officers are themselves black or white. Finally, there is recent evidence (e.g. Hannah-Jones 2014) that re-segregation is increasing in the US since court-ordered efforts against it have been relaxed, with dire consequences for literacy, education and unjust incarceration among black and brown populations. How linguists can best respond to these situations is a challenge to be debated, decided and acted upon.

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Chapter 2

The dynamics of language diversity

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For [Hermann] Paul the theory of language (*Prinzipienwissenschaft*) was, at least officially, coterminous with the theory of language change. (Weinreich et al. 1968: 126)

1. Introduction¹

Why do we have such an uneven patterning of linguistic diversity across the globe? This remains an unsolved puzzle, whether we measure diversity by sheer numbers of languages (*language diversity*), numbers of linguistic lineages like Niger-Congo vs Nilo-Saharan (*lineage diversity*) or amount of typological divergence (*linguistic disparity*)?² Given the theme of this conference, *The Dynamics of Language*, we can rephrase the question in dynamic terms: what processes produce this uneven patterning of linguistic diversity? How far might these asymmetries reflect differences in the dynamics of language diversification and change across societies, polities, environments, cultures or populations? This *diversification problem*, to which the field of linguistics still has no satisfying set of answers, is the theme of this talk.

For Alexander von Humboldt, the diversity of the world's languages resulted from the perpetual interplay between *energeia*, the process or activity of speech, and *ergon*, the product or completed work of language. The professional dynamics of our field has made some progress with mapping linguistic diversity in the *ergon* space, though

1 My ideas on the emergence of linguistic diversity have been profoundly shaped by my teachers and friends in Western Arnhem Land, Australia, and in the Morehead District, Western Province, New Guinea: I thank the many people there who have so generously welcomed me into their lives, in particular Charlie Wardaga, David Karlbuma, Maggie Tukumba, Tim Mamitba, Doreen Minung and Jimmy Nébni. For their useful discussion of the ideas elaborated here, I thank our Wellsprings project group (Marie-France Duhamel, Mark Ellison, Murray Garde, Simon Greenhill, Eri Kashima, Alex Marley, Miriam Meyerhoff, Dineke Schokkin, Ruth Singer, Hedvig Skirgard and Catherine Travis) as well as Forum Presenters at that group (Pattie Epps, Shana Poplack, James Stanford and Peter Trudgill). I also thank Lindell Bromham, Alex François, Russell Gray, Ian Keen, Steve Levinson, Pat McConvell, Seán Roberts, Kim Sterelny and Peter Sutton for relevant discussions, and Susan Ford for her careful editing job. Further thanks are due to David Bradley, Raj Mesthrie and two anonymous referees for comments on an earlier version of this manuscript. For financial support of this work, I thank the Australian National University, the Universität zu Köln, the Alexander von Humboldt Foundation (whose award of an Anneliese Maier Forschungspreis partly supported my time working on this) and the Australian Research Council (projects: The Wellsprings of Linguistic Diversity, ARC Centre of Excellence for the Dynamics of Language).

2 I adopt the useful term 'disparity' from evolutionary biology (e.g. Colombo et al. 2015), as more compact than the term 'typological diversity'.

documentation, description and typological systematisation has now given linguists a reasonably detailed cataloguing of the world's languages, grouped into families, and organised in ways that allow us to examine the diversity and distribution of linguistic structures (e.g. through WALS, Glottobank, etc.). But when it comes to the *diversity of linguistic dynamics* — a matter of Humboldt's *energeia* — we are a long way behind, and this is what hampers our ability to answer the three questions I posed above.

The International Congress of Linguists is a fitting place to contemplate how the exuberant diversity of languages that we study across the globe might have come about. It is well-known that many of our 7 000 or so languages are imperilled (Nettle & Romaine 2000; Brenzinger 2007; Harrison 2007; Evans 2010), particularly in those parts of the world where settler cultures have deliberately or unwittingly bulldozed the indigenous language ecology. The 'Rapid Response Car' operating from CALDi (Centre for African Language Diversity) here in Cape Town reminds us of a crisis that is replicated in many parts of the world, and of the huge loss of human knowledge we stand to face — both the 'we' of speaker communities, and the 'we' of humans with a shared and diverse heritage — if our field does not do its utmost to record the wealth of the world's tongues in all their clamouring variety, sonic dazzle, and epistemic originality. This is a huge task for the world's field linguists, descriptivists, typologists, language documentarians and others to undertake, and much progress has been made. But there are still thousands of languages about which we know very little and for many of them we only have a few years left to work with their last speakers, to produce a Boasian trilogy of grammar, dictionary, and texts, or its modern equivalent.³

However, there are dangers in focusing just on the documentation and description of 'languages' as discrete, static structures. Such an emphasis can obscure the fact that languages have been lost, and newly born, throughout human history (cf. Mufwene 2017). It can impose an artificial cookie-cutting of colonially-stipulated groupings (as arguably happened in parts of the Congo, for example, in such surveys as Van Overbergh 1913) or it can undermine efforts by minority groups seeking to reawaken their languages against the odds by setting up 'classical' standards of an earlier-documented variety against which a revived variety is held to be a distortion.

But it is on yet another problem of this view that I focus here: that an exclusive focus on language diversity as something manifested by discrete, internally coherent entities can remove the very types of evidence we need to tackle the *diversification problem*. As biologists have understood since Darwin,⁴ higher-level variability

3 By modern equivalent, I mean that texts are increasingly conceived as multimedia rather than simple sound files or transcriptions, and that there is an increasing move away from simply monologic texts to the inclusion of dialogue and conversation — language in its natural environment of talk between people.

4 cf. Darwin (1975): 'If it can be shown, even partially, that species differ from each other in a similar manner & apparently according to similar laws, as do varieties, it strengthens our view, that species are only strongly marked varieties with the intermediate gradations lost' (Darwin 1975: 280). Darwin was also frank about the puzzling discrepancies in individual variability both in domesticated varieties and in species in nature: 'We can assign no sort of reason why one organism varies greatly under domestication, & why another varies hardly at all: why in a state of Nature, most, but not all the species of certain whole groups are excessively variable; & we do not even know whether this latter sort of protean variation is the same as ordinary variation' (Darwin 1975: 279).

(species and beyond) emerges from the crucible of lower-level variability (right down to the individual level). Similarly, in linguistics, the forerunners of diversification into languages, lineages, or different typological options (say, VO rather than OV) are to be found by looking at variability in speech communities themselves — the patterned options that have been studied by dialectology, sociolinguistics and anthropological linguistics.

As Weinreich, Labov & Herzog (1968: 101) put it: ‘The key to a rational conception of language change — indeed of language itself — is the possibility of describing orderly differentiation in a language serving a community.’ It is here that the seeds of diversification can be found and the actual processes of diversification studied as they unfold. If this is the case, the best place to look for answers to the diversification problem, as it pertains to languages, lineages and the distribution of typological features across regions and families, is at the micro-level of the speech communities themselves — be they monolingual, as traditionally assumed, or multilingual, a more realistic move in many realms of space and time.

We can now put our orienting question in a more focused way: is there something special about the patterning of variation in some speech communities, which engenders increased rates of linguistic diversification and *disparification*, i.e. the evolution of disparity/typological diversification? Can we find the seeds of macro-variation (across languages, typological features, etc.) in differential patterns of micro-variation (inside the varieties of a given language)? The tension generated by this neglect of small-scale societies is encapsulated in two contradictory quotes from Labov. On the one hand, there is a ‘uniformitarian principle’ (Labov 1972), which implies that ‘the mechanisms of linguistic change that operate around us today are the precisely the same as those which operated even in the remote past’ (Trudgill 2011). On the other, we must be ‘wary of extrapolating backward in time to neolithic preurban societies’ (Labov 1994).

The urgency of work on this question cannot be overstated. The endangerment of traditional linguistic ecologies typically precedes the endangerment of the languages themselves by a couple of generations (cf. Stanford & Preston 2009). For example, in countries such as Vanuatu, Papua New Guinea and many others bilingualism between a national lingua franca and a single local language is replacing the egalitarian multilingualism (Haudricourt 1961; François 2012) which is likely to have played a key role in linguistic diversification — in which people from small speech communities have no lingua franca, but normal adults have multilingual portfolios including the languages of their neighbours. So in many places, even where traditional languages are healthy (which is the case in most of Vanuatu), the traditional ecology of egalitarian multilingualism may be disappearing. (I would like to stress, though, that globalising statements can be highly misleading here and it has been argued by scholars such as Vigouroux & Mufwene [2008] and Lüpke & Storch [2013] that egalitarian multilingualism is alive and well in much of Africa, for example; the same may be true in many parts of India and it is true in some parts of southern New Guinea and northern Australia).

This paper is structured as follows. In section 2, I briefly glance at the uneven patterning of linguistic diversity, in the three senses mentioned above. In section 3, I survey some key ways in which the dynamics of social signalling through language

is different in the small-scale, multilingual speech communities that have shaped our languages, for most peoples, and for almost all of our human history. In section 4, I show the need to distinguish distal, medial and proximal causalities if we are to give a fully coherent account. In section 5, I set out the methods we are employing to examine the proximal causes behind the diversity problem, and finally, I offer some concluding remarks.

Before proceeding, a note on the relationship between this precirculated paper and the talk itself. Personally I think that talks should be electrified with the suspense that comes from the presentation of new results. Precirculating the exact talk to be presented on the day undermines this. On the other hand, it is useful to build up common ground beforehand so as to be able to proceed more directly to the problem. So I ask the reader to see this precirculated paper as a kind of background briefing to the issues and findings to be presented at the ICL conference, rather than a written replica of what I will say on the day.

2. The uneven patterning of linguistic diversity

If world culture is the anthropological laboratory, comparison its experimental method, then the crucial instances are surely those which are empirically the least probable. For, just as in physical science, these tend to have the greatest information content. (Tuzin 1976: xxi)

Let us return to our opening question in a bit more detail now:

- a) *Why do some parts of the world (e.g. New Guinea, the Amazon, many parts of Africa) possess so much linguistic diversity and others (e.g. Korea) so little?* These discrepancies are found at every level, from the continental down to the regional. For example, both Vanuatu and Samoa have been inhabited by humans for about 3 000 years, and their populations are broadly comparable (around a quarter of a million people each), but Vanuatu has over 135 languages while Samoa just has one.⁵ Within Australia, Arnhem Land is highly diverse while the Western Desert region, covering a sixth of the continent, is essentially a single mesh of dialects. Likewise in North America the complex mosaic of California (at least, to the west of the Sierra Nevada) contrasts with the linguistic homogeneity of the Great Basin.
- b) *Why are the manifestations of diversity so out of step with one another?* In other words, even where some measures of diversity appear comparable (say, number of languages, in absolute or relative terms), why do other measures (say

⁵ One possible explanation comes from the recent finding that, while the initial settlement of Vanuatu was by people of Austronesian stock, this was followed by ongoing contact with the New Guinea mainland leading to a steady ‘Papuanisation’ of the population to the point where, today, the genetic profile is largely Papuan (Posth et al. 2018). Although the claims made for Papuan linguistic input as a possible explanation for Vanuatu’s linguistic diversity are not convincing (at least in their current version), what appears more likely is that the gradual reinforcement of Papuan cultural elements (in particular the predilection for using language differentiation as a marker of small clan-based groups) could have created the conditions for language diversification in Vanuatu.

typological diversity or number of lineages) give such different results? For example, both New Guinea and Australia have been occupied for around the same time (c. 60 000 years, mostly as part of a single land mass), both were until recently free of any state-level polities that might impose some linguistic uniformity, and both are highly diverse in terms of numbers of languages by area or by population. But New Guinea is way more diverse than Australia in terms of deep genealogies (more than 40 families and isolates, whereas all Australian languages are ultimately relatable) and in terms of disparity. Compare the Democratic Republic of Congo (DRC) and Tanzania: the DRC has more *language diversity* (158 to Tanzania's 108, on one measure) but Tanzania is far ahead on *lineage diversity* (Tanzania five maximal clades to two maximal clades in Congo): all the DRC's languages are from either the Niger-Congo or Nilo-Saharan families, whereas Tanzania includes representatives of Niger-Congo, Nilo-Saharan, Afro-Asiatic (Cushitic) and the two isolates Sandawe and Hadza.

As an extreme example of concentrated disparity consider New Guinea, whose approximately 1 000 languages are spoken across an area comprising less than 2 per cent of the world's land surface, by less than 0.1 per cent of the global population. This is already an indicator of great linguistic diversity. But to demonstrate that the diversity extends out to typological disparity—in other words, that we are not simply dealing with hundreds of variations on the same structural themes—consider the following representation of how Papuan languages are distributed across a sample of languages from around the world. Figure 2.1, adapted from Comrie and Cysouw (2012), is a neighbour-net illustrating the distribution of a sample of around 100 languages through 'WALS space'—the design space given by examining how close they are on the typological features surveyed in WALS.

What is remarkable about this diagram is how the Papuan languages, between them, cover the vast majority of the design space shown here (with some small gaps around 3:30, 7:00, and 10:00, if we see the neighbour-net as a clock face). In other words, the disparity manifested across the Papuan languages is not too much less than that manifested by the world's languages as a whole. New Guinea, then, manifests extreme diversity on all three of our indicators: sheer number of languages, lineage diversity, and disparity.

- c) *Do the processes of linguistic diversification and disparification work differently in different niches?*⁶ In other words, is there a diversity of linguistic dynamics such that the different contexts in which languages are spoken (sociocultural, political, geographic, epidemiological, genetic) impact upon the ways that language diversification and disparification takes place through time? If so, can such niche-based explanations be used to account for the puzzles in (1) and (2).

Many examples from around the world show that these three measures of diversity need to be considered separately. For example, Vanuatu scores high on

⁶ I adapt the term *niche* from Lupyan and Dale (2015) to mean any specific configuration of selectional settings operating on a particular set of language users. These could be environmental, demographic, political, sociocultural, epidemiological or genetic—more on this later.

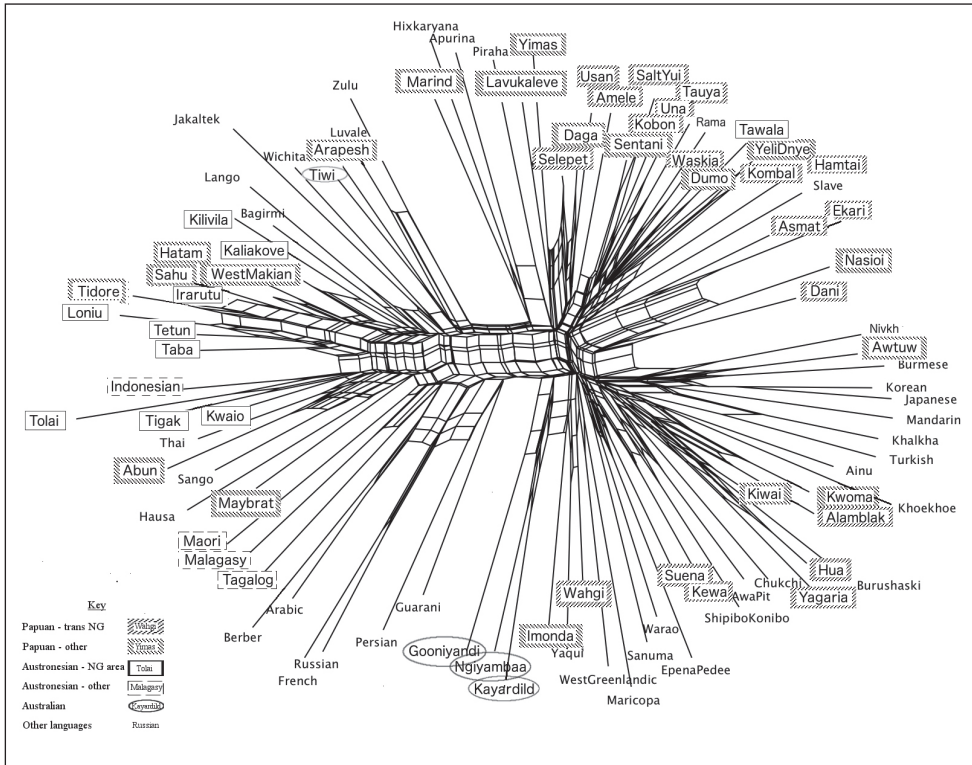


Figure 2.1: Distribution of Papuan and Australian languages across the typological space of a sample of languages from around the world, with languages from Sahul picked out by shading.

Source: Comrie & Cysouw 2012

language diversity (135 languages for 260 000 people, making it the world’s most linguistically diverse country on a per capita basis) but low on lineage diversity (all belong to a sub-sub-sub-sub branch of Austronesian) and low on typological diversity. Mainland Southeast Asia (Enfield 2005; 2011) scores high on language diversity (>400 languages) and pretty high on lineage diversity (five maximal lineages: Austroasiatic, Austronesian, Hmong-Mien, Sino-Tibetan, Tai-Kadai) but much lower on typological diversity. There, spectacular typological convergence⁷ has resulted in many pairs of languages from unrelated

7 Consider the fate of an Austroasiatic language like Vietnamese: through contact with Sino-Tibetan, Hmong-Mien and Thai-Kadai languages it has developed tone, transformed from a multisyllabic to a monosyllabic structure, and shed its relatively complex inherited morphology, particularly the patterns of infixation still evident in their Aslian and Munda cousins which remained outside the Mainland Southeast Asian vortex, respectively in the Malay Peninsula and on the Indian subcontinent. We are still far from understanding what it is about the nature of contact in Mainland Southeast Asia that produces such typological convergence — Enfield (2011: 71) suggests ‘this may have come from a historical context in which adults widely learn and use the languages of neighbouring groups, yet while keeping sufficient distance from those groups such that children are not heavily embedded in multilingual learning settings’ — but examples like this show that it can occur and how radical its effects can be.

lineages, such as Thai-Vietnamese or Thai-Khmer, being as similar on the criteria of Dahl (2008) as pairs of closely related languages like German-English or Russian-Polish.⁸ The South American cone scores relatively low on language diversity but high on lineage diversity: mainland Chile (i.e. excluding Rapanui) has just six languages but nearly all of them belong to distinct lineages: Araucanian (Mapudungun and Huilliche); Quechua; Aymara; Kawesquar (isolate) and Yamana (isolate).

The differences in diversity patterns on these different measures suggest we may need different types of explanation for each type. We return to this point below.

3. Is variation different in small-scale speech communities?

Linguistic differentiation in Amazonia is underpinned by broadly comparable views relating language and identity, and thus, paradoxically, has had more to do with the contact that has pertained among groups than with their isolation. (Epps forthcoming)

Since Labov's pioneering of variationist sociolinguistics we have come to understand a great deal about how change emerges from patterned variation. But the vast majority of this work has focused on large languages, typically in urban settings. Only recently (e.g. Stanford & Preston 2009; Childs et al. 2014) have detailed studies begun to appear on the dynamics of change and diversification in the small community settings that characterise the majority of the world's languages (although now only a tiny fraction of its absolute population). It behooves us to remember that such small speech communities have been the dominant mode of social existence through human history.

Many special features of how variability works in these small communities are beginning to emerge. Here are three that are particularly important.

- a) Many **SPECIAL TYPES OF SOCIAL SIGNALLING** appear unique to small speech communities, such as clan lects in societies as different as the Sui in southern China (Stanford 2009) and a number of north Australian groups (Smith & Johnson 1986; Garde 2008).

Another type of linguistically signalled social category is found in the Yolngu languages of north-eastern Arnhem Land (Morphy 1977; Wilkinson 1991). Here a substantial part of the variation is factored across two orthogonal dimensions — a geographical one, running broadly west–east and shown by the optional loss of initial *ŋa-* from pronouns in the western area, and a social one based on the

8 Dahl's measure of typological distance counts numbers of different scores in the WALS database and ranges from 75 for the maximally distant languages in the database (Jul'hoan vs Yup'ik) to 10 for the most similar (English-Dutch), with a mean of 42. Among Mainland Southeast Asian pairs, Thai (Tai-Kadai) vs Vietnamese (Austroasiatic) scores 11.4 and Thai (Tai-Kadai) vs Khmer (Austroasiatic) scores 12.3, both lower than Russian-Polish (12.8). While the most convergent forms are in national, literary languages, convergence is also found between many languages that have not been shaped by national literary traditions, e.g. Hmong (Hmong-Mien) vs Khmu (Austroasiatic) scores 22.5, comparable to German-English (21.1).

assignment of every clan and language variety to one of two patrilineally transmitted moieties (clans of the two moieties are discontinuous and their territories alternative across north-eastern Arnhem Land like black and white squares on a chessboard). Languages spoken by clans of the Yirritja moiety have vowel-final phonologies whereas those of the Dhuwa moiety have dropped most final vowels giving a more staccato phonology. The intersection of these two factors (see Table 2.1) creates a four-way matrix in which most stretches of speech in a number of languages in this region can be rapidly located in social and geographical space — attesting to semiotic rules shared across a multilingual region that transcends the boundaries of the single languages (like Djapu or Djamparrpuynu) which form the normal units for linguistic description.

Table 2.1: Geographic and social patterning of a pronoun form in some Yolngu dialects.

	SOCIAL	(PATRIMOIETY)
GEOGRAPHICAL [initial ŋa-drop in Western varieties]	Yirritja moiety (‘Dhuwala varieties’) Final vowel retained	Dhuwa moiety (‘Dhuwal varieties’) Final vowel dropped
<i>Western</i>	Gupapuyngu: [ŋa]napuru	Djamparrpuynu: [ŋa]napur
<i>Eastern</i>	Gumatj: ŋanapuru	Djapu: ŋanapur

Source: after Wilkinson 1991: 187

Phenomena like clan lects or moiety lects show how linguistic variation can be used to signal membership of quite small social subgroupings within a larger society. The ‘orderly heterogeneity’ which Weinreich et al. (1968) saw as the key to understanding how variability turns into change can then be focused down to groups well below 100 in size, and there are languages, such as Gurrgone in Arnhem Land (Green 2004) whose population appears never to have exceeded 75. To give an idea of typical clan demographics in traditional Cape York (north-eastern Australia), the clan census by Sutton (1978: 104) across 26 clans comprising the Wik dialect mesh found a total population of 377, ranging from 0 (4 extinct clans) to a maximum of 62; even omitting the extinct clans from the figure this gives a mean of 17 people per clan, each of which (at least normatively) speaks its own distinct clan lect.

The most realistic social model for many parts of the world is the multidialectal or multilingual community of practice or *supralingual community*, as has been described for e.g. Arnhem Land (Singer & Harris 2016), southern New Guinea (Evans 2012; Evans et al. 2017), Vanuatu (François 2012), New Caledonia (Leenhardt 1946), the Vaupes Region of the Amazon (Jackson 1983; Gomez-Imbert 1999; Aikhenvald 2002), and the Sui

region of southern China (Stanford 2009a; 2009b).⁹ Such communities are bound together by shared social norms, regular bonds of kinship, marriage patterns, overarching social categories like moieties, religious ceremonies, and much else, all functioning to link a large number of clans or comparable small social units. These do not share a single language but converse across a multilingual fabric in which at least receptive competence in many languages of the overarching social group concurrently exposes individuals to many linguistic norm-sets, harnesses a large proportion of the semiotic space to social signalling, and gives access to a much wider range of ‘linguistic memes’ than would be found in a monolingual community.

There is another crucial aspect to this dynamic. As classic variationist models articulate, a crucial part of explaining how variation is converted to change is the *evaluation problem* — which includes the social evaluation of variants and their categorisation into various socially relevant signals (about class, gender, religion, sexuality, locale, etc.) based on shared norms in the speech community. The smaller the number of members in a sociolinguistically segmented grouping (say, a clan lect), the more *hyperpluricentric* are the norms — if I am in Clan A, I have a right to comment on what is appropriate to the norms of my clan lect, but not yours (Clan B). Both the evaluation process and the differential selection of variants it engenders thus become more fragmented, meaning that even as multilingualism or multidialectalism holds the larger speech community together in terms of mutual intelligibility, the directions of change within each socially-delimited set are dictated by a small subset of individuals in the relevant sub-community — typically respected senior individuals (see e.g. Sutton 1978 on the situation in Western Cape York). Studies of how clan lects are acquired, such as Stanford (2008), show how potently this patrilectal norm-enforcement can work: 3-year-old Sui children still exhibit tonal realisations that mix characteristics of their mother’s and father’s patrilects, as well as a mix of lexical items, but older children orient more to the norms of their father (and other patrilect members) and teenagers are almost fully patrilectal. The ideology of clan lect-based speech — enforced by a range of strategies from ridicule to exhortation — is thus a potent way of enforcing segmentary differences in speech through development, rather than horizontal convergence of peer groups.

- b) **EGALITARIAN MULTILINGUALISM** is ubiquitous in many parts of the world, e.g. northern Vanuatu (François 2012), New Caledonia (Leenhardt 1946), the Vaupes in Amazonia (Jackson 1983; Gomez-Imbert 1999), West Africa (Lüpke 2016), Southern New Guinea (Evans et al. 2017) and tropical Australia (Singer & Harris 2016), among others.

⁹ When investigating the Upper Vaupes in the Colombian Amazon, for example, Jackson (1983) describes how, having started with the goal of investigating a single language (Bará), she had to gradually push out her investigations to the whole multilingual region, which was tied together into a single system of shared norms including the symbolic possession of languages by clans as badges of identity, the enforcement of language exogamy, and the ensuing co-residence in longhouses of in-married wives speaking a wide range of languages.

Language contact is stereotypically associated with linguistic convergence, as in the famous Kupwar example cited by Gumperz & Wilson (1971), or the cases of ‘metatypy’ reshaping languages into parallel linguistic types cited by Ross (1996; 2007). But there is increasing evidence that multilingualism is also compatible with **CONTACT-INDUCED DIVERGENCE** rather than convergence.

First consider a static situation in which intimate multilingual contact sits with typological divergence at many levels. In our studies in Southern New Guinea (Evans 2012; Evans et al. 2017) we have found that Nen and Idi, two languages in intimate daily contact (through frequent intermarriage and bilingual conversations in linguistically mixed households) maintain quite different phonological and grammatical structures: Nen has an ergative/absolutive case system, including in pronouns, while Idi has a nominative/accusative system; Nen lacks clusivity (inclusive vs exclusive in the first person) while Idi has it; Nen conflates 2nd with 3rd person in its verb agreement while Idi generally conflates 1st and 3rd (and bear in mind that, since inflected verb forms can have well over a thousand different values, patterns of syncretism such as 2nd person = 3rd person or 1st person = 3rd person impact hundreds of cells in the paradigm). Phonologically, Nen lacks velar nasals but Idi has them; Idi has retroflex stops and a place-of-articulation distinction for laterals, neither found in Nen, whereas Nen has coarticulated labialvelars not found in Idi.

Lack of convergence should not be seen as a surprise, since several recent studies of bilingualism in larger-scale societies have found that the predicted mutual influences between two languages long in intimate contact have not been borne out by careful empirical analysis, e.g. Poplack and Levey (2010) for French–English bilingualism in Ottawa and Travis and Cacoulios (2015) for Spanish–English bilingualism in New Mexico. Convergence should thus be seen as one possible outcome of language contact but by no means the only one; see also Braunmüller et al. (2014) for further studies.

Cases like those just outlined do not in themselves prove that multilingualism can drive divergence — merely that pre-existing differences can be maintained. But there is increasing evidence that multilingualism can in fact drive divergence in a range of ways (surveyed in Evans forthcoming).

First, it may supply multilingual speakers with consciously exploitable sets of correspondences from which they can construct and extend analogical relations that drive divergence between varieties, along the lines of what Larsen (1917) called *naboopposition* (neighbour opposition), i.e. the analogical extension of historically derivable correspondences between two varieties into further form-pairs; see also the literature on ‘correspondence mimicry’ in Australian languages (Nash 1997; Alpher & Nash 1999).

Second, it may work unconsciously through processes like ‘doppel avoidance’ (Ellison & Miceli 2017) in which the monitoring process that maintains language choice runs better by weeding out lexically similar items: lexical diversification between the two languages makes it easier to monitor which language is being spoken.

Third, it may work through ‘cumulative complexification’ (Evans forthcoming) where bilingual choice is supported by maintaining all the semantic distinctions

needed by both languages. An example is the noun-class system of varieties from bilingual Bininj Gun-wok-Dalabon clans (Evans 2003a), which have summed together the five-class system of Kunwinjku (\emptyset -prefixed, masculine, feminine, vegetable and neuter) with the two-way opposition in Dalabon between obligatorily possessed nouns (e.g. body parts) and those whose possession is optional (e.g. humans, dogs) to give a seven-class system in which, for example, the vegetable class is split into non-possessed plants (e.g. species names) and possessed plant parts, with a comparable split in the neuter. The resultant complexified system has, as it were, diverged by convergence: it has converged with both neighbours in the sense of adopting the semantic distinctions of each, but diverged from them both in the sense that the resulting system is unique. Comparable cases, on a more dramatic scale, are found with mixed languages like Michif (Bakker 1997) or Gurindji Creole (McConvell & Meakins 2005), which result from language contact but yield new varieties that differ from both sources by loading up on additional structural features.

- c) **TYPologically 'UPHILL CHANGES'** (i.e. changes which push uphill against the gradient of typological markedness) appear to be commoner in many small communities. This may reflect the way greater common ground shared between people in small speech communities (say, with regard to kinship relations) lays the foundations for the grammaticalisation of cross-linguistically unusual categories such as kinship-sensitive pronouns (Evans 2003b). Or it may be an 'old growth' effect—speech communities lacking influential members who acquired the language later in life (as with English, Mandarin, Latin in Roman times) facilitate the evolution of structures which require a longer developmental period to learn (Trudgill 2011). Alternatively, it may result from 'esoterogeny effects' (Laycock 1982; Thurston 1987; 1989; 1992), in which hard-to-learn forms (e.g. irregular or suppletive paradigm cells) are selected for, so as to stymie the language-learning efforts of outsiders.

These facts about language in small-scale speech communities give a promising set of mechanisms for explaining how linguistic diversification can occur, which I endeavour to integrate in the next sections.

4. Levels of explanation

Broadly speaking, we can distinguish three levels of causation in terms of differential dynamics of linguistic diversification: distal, medial and proximal—according to the time-scale at which they operate, and the number of causal links interposed between the causal factor and the production of different speech (*parole*) and language (*langue*) systems.

At the **DISTAL LEVEL**, many studies have demonstrated statistical correlations between such factors as latitudinal gradient, rainfall, resource availability, and topography (see Greenhill 2015 for an overview). The basic argument is that favourable environmental conditions create niches which favour particular technological and social structures (e.g. small clans specialised in living off particular resources, which makes them masters of their domain). Here, then, we have environmental variables creating the conditions for medial factors—types of social

structure — in the chain of causality (see next para). Environmental variables are not the sole type of causal variable here, however. History — from decades to many millennia — also plays a powerful role. The same environment which once hosted a mosaic of different hunter-gatherer groups (say, coastal California) may now support just a single dominant settler language (perhaps with immigrant groups speaking others) following the colonial erasure of indigenous cultures. This in turn is linked to technology — technological innovations ranging from new plant crops to ploughs or rice-terracing to weapons can all favour the expansion of one group at the expense of others over time.

It is obviously not the case that these can directly produce linguistic diversification at different rates — rainfall, growing season or knowledge of iron-making do not directly affect the way people speak. Rather, these factors create the conditions within which certain types of societies and their attendant technologies can evolve, and with which biological characteristics of the human populations living there are favoured or disfavoured (height, colouring, resistance to particular diseases, etc.).

At the **MEDIAL LEVEL**, societies sculpted by external conditions — climatic, topographic, technological — develop different characteristics which ultimately cradle different sets of selectors for the cultivation, suppression or channelling of differentiated or homogenised linguistic sign-sets. A nice example is the argument by Haudricourt and Dibia (1987: 136–137) that societies based on root-cultivation are more ‘xenophilic’ while those based on grain-cultivation are more endogamous (because the cloning nature of tuber growth creates a need for varietal exchange, while with seed-based cultivators, varieties arise each generation). At the time tubers could not be stored for long periods, and so could not generate the surpluses that helped grain-based societies to build granaries and use surplus food as tribute and to support state formation. Likewise, hunter-gatherer-fishers living in richly-resourced environments may develop clear clan-based social structures where clans have direct and exclusive links to territories of land and water, with relatively little need to call on the hospitality of other groups, while their desert brethren, living amid unpredictable drought and rain cycles, may benefit from minimising the social boundaries with other groups, and lack clearly defined clan structures — in indigenous Australia this is, in broad outline, the difference between Arnhem Land and the desert regions of the Tanami and the Western Desert. Large-scale societies may be focused on a single centralised prestige group — say a powerful court, or educational elite — or dispersed across many castes (as in India) between whom intermarriage is not possible. These differences all set the scene for different valuations to be placed on signalling social distinctions — what the units are, how they are grouped or nested with respect to each other, how finely differentiated they should be, whether social change or cohort progressions through life favour age-based distinctions or whether the exigencies of signalling clan membership overpower the sort of peer-orientation that Western sociolinguists take for granted (Stanford 2008). They also create the scene for different degrees of differentiation between human populations.

This brings us to another aspect of medial-level causation that has begun to be explored in recent years, as interest has returned to the role of ‘external factors’ in favouring the evolution of linguistic diversity — see Ladd et al. (2015) for a summary. The general line of argument, aided by computer simulations in which tiny differences

in selector bias get amplified over hundreds of generations of iterated learning, is that very small differences in population genetics or environmental biases can, over time, favour the emergence of different linguistic structures, thus causing disparification across populations and environmental settings. Examples are the effects of genes governing pitch perception on the emergence of phonemic tone (Dediu & Ladd 2007) or of differences in the shape of the alveolar ridge on the ease of articulating clicks (Moisik & Dediu 2017). Likewise, environmental differences such as humidity and air pressure have been argued to correlate with the likelihood of languages possessing phonemic ejectives (Everett 2013).

At the **PROXIMAL LEVEL**, we finally reach a range of ‘smoking gun’ factors which can, in principle, be examined as they unfold in observable real time:

1. *Conversational praxis*, e.g. code choice, symmetrical vs asymmetrical language choice (i.e. do both participants have to speak the same language or can they each speak their own and expect to be understood), customs about what point in a conversation one should accommodate to the speech variety of the locale and when it is OK to speak one’s own variety. (For example, in many parts of Arnhem Land one should begin by using as much of the local language as one can manage, to acknowledge the identity of the country’s custodians, but once that has been accomplished it is acceptable to fall back on talking one’s own variety.)
2. *Language portfolios* of individual community members and how they impact on details of language use (e.g. transfer of features from one language to another).
3. *Language socialisation* and learning trajectories, for instance, how children’s repertoires develop and are shaped by social norms (e.g. children may stop speaking their mother’s patrillect as they approach adolescence and their patrillect identity becomes more salient).
4. *Language ideology* and how it plays out on evaluation of variants, e.g. statements like ‘X is the way people from Group Y/the Old People/women/immigrants of Group Z/(un)educated people/chiefs talk’, and beneath that general shaping ideologies such as ‘clans should each have their own distinct way of talking’; ‘the way educated literati from Paris/Beijing talk is the most beautiful and sophisticated’; ‘everything in the universe, including speech, is longer or slower if it is associated with moiety A rather than moiety B’; ‘you can give more trust to someone who speaks bluntly without fancy flourishes’. These statements may or may not be objectively true but they do shape the way variants are evaluated and may influence their development, adoption or rejection.
5. *Language internal-conditioning factors* of various sorts (e.g. phonological environments in which particular changes occur, discourse factors favouring OV vs VO word order).
6. *Individual differences* in actual linguistic choices in the unfolding conversation, at every level from the realisation of particular phonemes up through morphological or syntactic choices to semantic variants (e.g. the tangled history of the meaning contrast between *disinterested* and *uninterested* across English varieties through the last couple of centuries). I will employ the term ‘eme pool’ to refer generically to the set of variants (of linguistic signs or processes of any type or level) that are available in a speech community.

Getting a full picture of these proximal-level factors involves a range of methods, such as those used by sociolinguists, especially (5) and (6), linguistic anthropology (4), developmental psycholinguistics (3), the study of language contact and multilingualism (2) and ethnography of communication (1). Properly integrated, they allow us to examine how local diversification occurs.

For example, we may discover that a particular clan, through widespread linguistic exogamy, has a large number of children of Clan A who are bilingual in the languages of their father (Clan A) and their mother (Clan B) and an equally large number of children who are bilingual in the languages of Clan A and Clan C. In speaking the language of Clan A, variants from both Clan B and Clan C enter the ‘eme pool’ alongside the indigenous variants associated with Clan A. Now it happens that Clan A shares many of its emes with Clan B, and many others with Clan C, because of the common origins of all three languages. When individuals converse with those of other clans, their selection of variants will be influenced — at least stochastically — by beliefs about how cross-variety semiotics should be used in conversation. In ideological settings where it is considered important to always stand on one’s own distinct clan identity, speakers will tend to select the variant which is NOT shared with their interlocutor (e.g. a Clan A member, talking to a Clan B person, would avoid variants in common to A and B and draw on the variants that have entered his/her eme pool from Clan C). But in settings where showing solidarity is important, the reverse will happen — the speaker will opt for shared variants. On top of this ideologically driven variation, there may be variation at the level of individuals — one may, for their own reasons, prefer to diverge, while another converges; another may have their own reasons for emphasising the alliance between A and B at the expense of A and C, while another may emphasise the alliance between A and C. This hypothetical scenario is intended to show the sorts of factors that can produce measurably different linguistic behaviour in the actual context of conversation, and how this can be related back to a number of other factors including language portfolio, linguistic ideologies, and individual differences. Different assortments of factors will then produce different patterns of microvariation in different speech communities, which we can expect will ultimately scale up to larger differences (macro-variation) — see Evans (2016) and Meyerhoff (2017).

Summarising this section, a full solution to the diversification problem will integrate causal accounts operating at all three levels. Take the example of explaining the differential distribution of ejective stops, argued by Everett (2013) to be correlated with high-altitude locations of speech communities. Everett phrases this in terms of direct causation: ‘that the geographic context in which a language is spoken may directly impact its phonological form’ (Everett 2013, abstract). But what is more likely is that there is first of all a movement of particular ethnic groups into a particular geographical niche (high altitude) with which they are associated, and do most of their talking (distal cause). Within that setting, ejective stops are more likely to arise in the spectrum of speech sounds because the lower air pressure at high altitudes lessens the physiological effort needed to compress the air in the pharyngeal cavity, which is needed to produce these sounds (medial cause). Ejective stops don’t come

out of thin air (so to speak!)—they emerge from other phonic material, most commonly sequences of stop + glottal stop (‘fusion’ in the terms of Fallon 2002). So we can assume that most situations where ejective phonemes emerge are preceded by a phase in which ejective stops are alternate variants of sequences of stop + glottal stop. The process by which the ejective phoneme emerges as dominant is then played out in the same type of sociolinguistic arena—with its semiotically driven eme selection operating against a background of various groups and individuals making socially loaded choices—as characterises other proximal explanations. (And there may be an overlay of medial upon proximal causes—e.g. highland clans may have a higher incidence of ejective variants than lowland clans, which is then socially invested with symbolism as a shibboleth signalling membership of a highland speech community.)

5. Methods for studying the emergence of diversity

It stands to reason that the transition problem cannot be solved unless intervening stages in the propagation of a change are studied. (Weinreich et al. 1968: 129)

Most studies attempting to tackle the diversification problem have been correlational studies whose variables are:

1. non-linguistic features of an ethnic population (population size, political structure, frequency of a particular gene) or its location (altitude, latitude, etc.);
2. linguistic features at the level of an idealised variety, typically a ‘language’ (e.g. typological features in WALS, or lexicon across a number of Oceanic languages).

Such studies, discussed in section 4 above, have yielded many interesting findings, but do not in themselves explain the mechanism by which linguistic diversification arises, since they operate at the level of distal or medial causality only.

To rise to the challenge of finding the wellsprings of macrodiversification, we need to get down to the level of proximal causation, examining the differences that speech communities around the world display in terms of the amount, type, social import and dynamics of variation. Our working hypotheses are that:

1. Speech communities will vary significantly in their degree of internal variation, and these differences in amount of microvariation correlate with differences between the regions we are examining in the amount of macrovariation (whether number of languages, lineages or the amount of disparity).
2. These differences can be related to a number of social factors that can be revealed by detailed demographic investigations and examinations of local linguistic ideologies, such as differences in the amount of linguistically mixed or multilingual households, and in the degree to which substantial differences in speech are held to be a necessary part of signalling one’s social identity. (For example, could it be the case that in some speech communities it is older individuals who drive innovation, giving them time to accumulate more variants in their linguistic portfolio, with younger speakers taking their cues from

substantially older speakers rather than those just older than them. This pattern may, in turn, reflect a delayed life point when speakers feel unconstrained enough to deviate from norms.)

3. Not only will we find differences in the diversity of production, but we also find significant differences in the variability of evaluation across individuals, with more divergent evaluation-norms in high-diversity communities (i.e. different individuals favour different norms) and more convergent evaluation norms in low-diversity communities (i.e. individuals agree on what the norms should be).

In this section, I sketch the rationale for the approach we have been adopting to this problem within our project, *The Wellsprings of Linguistic Diversity*, based at the Australian National University/CoEDL and generously supported by the Australian Research Council.¹⁰

The basic premise is to examine the amount and nature of variability across a number of speech communities, varying up and down the diversity scale in a number of regards. We adopt a holistic case-study approach in order to investigate the speech communities in detail from a number of angles, and employ both quantitative and qualitative methods to identify variability across naturalistic recorded material and participant observation, supplemented by speakers' volunteered metalinguistic observations. For the reasons outlined in section 3 above, wherever relevant we excerpt multilingual patches from polyglot regional fabrics, for example,

1. From western Arnhem Land we include a number of contiguous languages (Bininj Kunwok and Dalabon from the Gunwinyguan family and Mawng from the Iwaidjan family) linked by intermarriage and long traditions of ceremonial collaboration; and
2. From southern New Guinea, we focus on a threesome of languages with a long tradition of interaction, intermarriage and multilingual practice that are split across two unrelated language families (Nmbo and Nen from the Yam family and Idi from the Pahoturi River family).

Other case studies in our project are:

3. Two languages from the island of Pentecost in Vanuatu (Raga and Sa), of interest both because of the drastic differences in their internal diversity, despite broadly comparable populations (several thousand—Raga is internally homogenous whereas Sa is cloven into many distinct dialects, almost one per village) and because of the exuberant linguistic diversity of Vanuatu itself (most languages per capita on earth).

¹⁰ Researchers involved are, in addition to the present author (Bininj Kunwok, Dalabon, Nen), Murray Garde (Bininj Kunwok, Sa), Ruth Singer (Mawng), Alex Marley (Bininj Kunwok), Dineke Schokkin (Idi), Eri Kashima (Nmbo), Marie-France Duhamel (Raga) and Hedvig Skirgard (Samoan), as well as Mark Ellison (computational modelling), Miriam Meyerhoff and Catherine Travis (sociolinguistic methods), Andy Pawley (Polynesian languages) and Simon Greenhill (phylogenetic modelling).

4. Samoa, as a natural contrast to Vanuatu — comparable populations and settlement dates, and related languages, but one language in Samoa to 130-plus in Vanuatu.
5. English, as a large-language control, specifically one small Australian country town (Cootamundra in New South Wales), which allows us to examine a small community embedded in a primarily English-speaking country, itself embedded in a pluricentric worldwide community of speakers.
6. & 7. Two indigenous languages of South America, Shawi (Amazonian Peru) and Yurakare (lowland Bolivia), as mid-size indigenous communities without significant multilingualism with other indigenous communities (except, now, for the use of Spanish).

Turning now to our methods, for each speech community our goal is to record at least half an hour of naturalistic speech from 40-plus individuals, gathered by local interviewers, matched as closely as possible for genre, and supplemented by more targeted material (e.g. word lists illustrating phonemes of special interest). These individuals are chosen to represent as wide a cross-section of the community as practicable (age, sex, other social variables, such as clan, where relevant), and for each we gather a good deal of biographical information, including the clan membership and linguistic affiliation of both parents, marriage arrangements in their own and parents' generations, their own language repertoires, households, places of residence during their life, and role in the local community. We take particular care to record multilingual speakers in as many languages as they are comfortable speaking, since the mutual influence of multiple languages in speakers' repertoires is something we hypothesise to be of great importance in engendering variation. Through this procedure we obtain a broad sampling of naturalistic speech, paired with detailed information on speaker's social identities, biographies, and linguistic repertoires.

The next part of our method is to select a group of variables for comparison across the communities, on the basis of marked-up transcripts of our recorded material. It is vital that these be comparable — for example it would be misleading if variation in the realisation of a phoneme in one speech community were compared with variation in a particular grammatical structure in another (say OV vs VO order), and to variation in the exact semantic range of 'uncle' and 'aunt' terms in a third, since there are substantial differences both in the frequencies of the relevant variables, and their accessibility to conscious awareness and monitoring. For this reason, we examine a basket of variables in each language, with at least one drawn from each structural component of the language (phonetic, morphological, syntactic, semantic, lexical). Overall we aim at 10 variables per language from this basket.

Where possible we use variables that can be related to existing typological surveys (e.g. position of negator, OV vs VO order, method of introducing quoted speech) since this allows a more direct comparison of the microdiversification and macrodiversification processes. However, this needs to be weighed against the advantage of using variables that are socially salient in local terms. For example, the well-studied (ng) variable in English, as between *singing* and *singin'* is an excellent choice in terms of local salience and frequency of occurrence, but does not have exact equivalents in most other languages, so in such a case we seek the best available

analogues that display variable behaviour, e.g. the dropping of initial η in Bininj Kunwok (*ɲariwam* ~ *ariwam* for ‘we [exclusive] went’—Evans [2003a]), which correlates both with dialect and with age (Marley 2018) and of final η in Idi, which correlates with clan (Schokkin 2018).

With these measures in place, we can then obtain answers to some fundamental questions:

1. Are there differences in the degree of variability between individuals in communities of comparable size?
2. How does this correlate both with linguistic factors (e.g. phonological vs lexical vs grammatical) and with social features of the speakers (age, gender, clan, local vs immigrant status, traditionalist vs modernist orientation, language repertoire)?
3. Can we identify different patterns of convergence and/or divergence across the communities in our sample?
4. Are there differences in where the action is, in terms of social-semiotic signalling (e.g. fine-grained phonetics vs complex morphology)?
5. Are there differences in the sociolinguistic profile both of initial innovators, and those whose changes are propagated?
6. What are the patterns of innovation in different patterns of multilingual repertoire?
7. How far do the actually attested patterns of variability relate to what speakers are aware of metalinguistically?
8. How do the synchronically attested differences in micro-diversity, assuming we find them, relate to the higher level geographical patterning of diversity in its various guises. Specifically, do regions characterised by high levels of linguistic diversity or disparity also exhibit detectably higher levels of diversity at the micro level?

Conclusion

It would seem that the natural fragmentation of the country and the social conditions (partly brought about by geographical factors) would be much stronger determinants of linguistic diversity than substratum influence. But how the social conditions bring about linguistic changes, of this we know precious little in the New Guinea area. The sophisticated sociolinguistic research has just not yet been carried out. (Lang 1976: 77–78)

Our survey regarding the dynamics of linguistic diversification has identified some clear patterns but also some unsolved mysteries.

For a start, it is clear that egalitarian multilingualism is widespread and plays a crucial role in linguistic diversification.

First, it allows quite small groups to amplify what originate as dialect differences into levels of difference that clearly qualify as language difference, without leading to small, inward-looking, reproductively isolated societies because widespread multilingual portfolios allow the society to be a much larger, over-arching unit than that defined by any single language, with communication across it occurring freely

thanks to the widespread multilingualism of its individuals, who communicate with other groups not by using a lingua franca but by simply speaking (or else simply understanding) the languages of their neighbours and possibly beyond. The greater ‘eme pool’ found in multilingual communities can drive linguistic differentiation in a range of ways — whether by consciously supplying multilingual speakers with material from which they can construct and extend analogical relations that drive divergence between varieties (along the lines of ‘correspondence mimicry’ or ‘neighbour opposition’), by unconscious processes like Doppel avoidance in which the monitoring process that maintains language choice runs better by weeding out lexically similar items, or by elaborating ‘cumulative complexification’ where bilingual choice is supported by maintaining all the semantic distinctions needed by both languages.

Second, within the ‘supralinguistic culture’ found in regions of egalitarian multilingualism, the shared norms of cosmology, ceremony, land tenure and marriage may also apply to linguistic ideologies — such as a ‘one-clan one-language’ ideal found in regions as distinct as Western Cape York in Australia, the Banks Islands of Vanuatu, or the Vaupes in the Amazon, or a recognition of phonotactically defined ‘moiety-lects’ in north-eastern Arnhem Land that applies to multiple varieties in a way that cross-cuts geographical clines. As Alex François (2011) has argued, it is plausible that these egalitarian linguistic ideologies play a central role in driving linguistic diversification:

The reason why Melanesian communities could afford such linguistic diversity is precisely their constant willingness to learn the tongues of their neighbors. Within such a unified social network as the Torres and Banks archipelago, the indulgence towards language fragmentation is only sustainable as long as the social norm is to preserve egalitarian multilingualism. While linguistic diversity is arguably triggered by the desire for social emblematicity, it needs egalitarian multilingualism to be maintained over generations. (François 2011: 93)

In terms of our three types of linguistic diversification, considerations like those above impact primarily on language diversity rather than on typological diversity. The literature on contact-driven divergence focuses primarily on how it can lead to lexical and phonological diversification — arguably the two most effective ways of driving languages rapidly apart. So far we lack clear examples of contact-driven diversification in many areas of syntax (such as basic constituent order, or strategies for relative clause formation), and likewise, in most areas of semantics (such as where semantic boundaries are drawn, and whether particular patterns of polysemic semantic extension are allowed). The clearest examples of typological diversification under contact in the realms of syntax and semantics are due to cumulative complexification: summing the semantic distinctions of neighbours on both sides can create more complex sets of semantic distinctions (e.g. noun class systems based on both vegetable vs neuter contrasts and part vs absolute contrasts) and more complex sets of syntactic options (e.g. the so-called Saxon and Romance genitives in English, with the *mother’s village* type continuing the original Germanic structure and the *village of the mother* type introduced through Norman French contact). A key untested

assumption here, however, is that all language cultures are equally lacking in metalinguistic awareness of morphological structures or semantic categories. This runs against the growing evidence that many small multilingual speech communities sometimes possess sophisticated levels of metalinguistic awareness, despite being preliterate and outside the currents of explicit philosophical and linguistic analysis that have been well-studied for the world's major cultures. Indigenous Australian examples, such as the antonymy-driven initiation language Jiliwirri of the Warlpiri people (Hale 1971) or the incredible semantic abstraction and phonological transformativity of another initiation language, Demiin of the Lardil people (Hale 1998), show us just how wrong that assumption is. Questions of linguistic awareness and creativity, in other words, from special registers through languages to verbal art, may turn out to be key in understanding disparification.

The linguistic diversification problem, which I have turned over from various angles in this paper, lies at the meeting point of many of the deepest and most difficult questions in linguistic dynamics: the relative roles of conceptual encoding and social signalling, the integration of causal accounts at different temporal scales, the degree to which speech communities can integrate differing linguistic norms into overarching communicative systems containing internal variation, the nature of intergenerational transmission, the subtle weightings on variant-selection that are supplied by cultural, demographic, environmental and population factors, and — not to be neglected — the ‘mountainous and anonymous work of unconscious generation’ (Sapir 1921: 235) which has engendered each of the world's languages in all their kaleidoscopic variety. With so many factors at play, there are unlikely to be empirically satisfying simple explanations, but this should not prevent us from tackling it as one of the most central questions in the field.

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Chapter 3

Language contact and evolutionary linguistics: An African(ist)'s and creolist's perspective

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1. Introduction¹

I use the term *evolutionary linguistics* in this essay in the broad sense innovated by Minett and Wang (2005) and articulated by Croft (2008) and by Mufwene (2013a; 2013b). It encompasses the following: (1) the phylogenetic emergence of language (concerned with the protracted hominine trajectory from pre-linguistic to linguistic communication); (2) the subject matters of traditional diachronic linguistics, viz. structural changes undergone by a language (dealt with in historical linguistics) and language speciation (the concern of genetic linguistics); and (3) matters of language birth and death (e.g. the case of creoles, as explained in Mufwene (2008; 2016)).²

This use of *evolution* is consistent with the practice in studies of 'cultural evolution,' where the term is not at all limited to, and in fact less frequently used for, the phylogenetic emergence of human cultures. For me, *evolutionary linguistics* also conjures up the actuation of change as discussed in Weinreich et al. (1968), McMahon (1994), Labov (2001) and Mufwene (2001; 2008; 2014a). In the present paper, I focus especially on speciation and language vitality, which is also consistent with the way evolution is conceived of in evolutionary biology, on which the term is ultimately patterned. An important caveat in relation to evolutionary biology is that I conceive of languages as species by analogy to viruses, not to animals, because their fates depend on the communicative activities of their speakers/signers, their hosts and creators, who (re)shape them during their interactions (Mufwene 2001; 2008).

I assume that population movements and contacts are important actuators of change, as they affect, in the new contact or interaction ecologies, the population structures in which speakers of the relevant languages evolve and the linguistic feature pools emerging from their communicative interactions, especially in introducing or removing some formal or structural variants. Sometimes these changes just shift the

1 I am grateful to David Bradley and the Press's anonymous reviewers for their comments on earlier versions of this paper. I am alone responsible for the remaining shortcomings. I also thank the organisers, especially Raj Mesthrie, the host, for inviting me as a keynote speaker to this 20th International Congress of Linguists, especially because it is in my home continent.

2 This view is at variance with McMahon and McMahon (2012), who prefer to apply the term exclusively to the phylogenetic emergence of language and are of the opinion that the extension of the term *evolution* to diachronic linguistics can make sense only metaphorically.

balance of power between the variants, when these remain the same, for instance, after the migration of a population to an uninhabited colony (Mufwene 2008). Changes in the feature pool can occur both in the colonial population and in that left in the homeland, possibly producing speciation. This differential evolution partially explains, for example, differences between the English varieties spoken on the islands on Saint Helena and Tristan da Cunha, South Atlantic (Schreier 2003) and those spoken in the United Kingdom, although things are always more complex than they appear to be.

2. The significance of Africa in evolutionary linguistics

Of all the continents, Africa has the longest history of migrations, because it is the ultimate homeland of mankind, which our *Homo sapiens* ancestors left between 100 kya and 30 kya to settle the rest of the world. We have no clue how many languages were spoken then or how similar they were to each other typologically (assuming there were more than one language). Nor do we know how similar those languages were to (some of) those spoken today, especially because we have no evidence of a language that has survived from the time of the exodus of *Homo sapiens* out of Africa (henceforth the Exodus) to date. I conjecture, however, that since the migrants most likely did not all leave at the same time, those who left later, or their descendants who relocated afterwards, came in contact with the earlier migrants or, later, with each other. The contacts may have actuated changes in the structures of their respective languages. Depending on the case, they may have resulted in the convergence of the coexistent languages (such as when some southern Bantu languages borrowed clicks from the San and Khoekhoe languages) or in divergence among diasporic varieties languages or between these and those left in their most recent homelands (as in the broad speciation of the Bantu languages).

Outside Africa, this view can be illustrated with, for instance, the emergence of the Romance languages. In this case, one Indo-European (IE) population, that of Rome, colonised other IE populations, especially the Celts of Southwestern continental Europe. The contacts of their languages actuated the gradual reshaping and speciation of Vulgar Latin, the vernacular of the non-elite Romans and the lingua franca of the Roman legionaries and of merchants in the then emergent trade centres (the ancestors of the Roman-style urban centres), into the Romance languages. I assume that it is this kind of history, involving layers of colonial expansions, which resulted in the speciation of a small set of languages spoken in pre-Exodus Africa into the 7 000 or so languages spoken around the world today (Mufwene 2013a). We know that, indeed, some languages have died in the process, such as most Celtic and non-IE languages in the former Roman Empire, as well as the Pygmy and several San and Khoekhoe languages during the dispersal of the Bantu speakers; but we do not know how many. (See more on this below.)

I would not think there were as many languages spoken in Africa at the time of the Exodus as there are today. However, there is no reason to assume that the pre-Exodus migrants spoke only one language, given the large geographical spread of the parts of Africa where fossils of our human ancestors have been found. For instance, according to Compton (2016), *Homo sapiens* had lived all over the eastern half of Africa, from South Africa to the southern Mediterranean.

However, noting the ways in which, say, English and the Romance languages have emerged and Proto-Indo-European (Proto-IE) has speciated, originally at the expense of the more indigenous languages of Europe and of Central and South Asia, the 7 000 or so languages represent the balance of births and deaths (Mufwene 2016; 2017a). My uniformitarian interpretation of the history of human expansion, consisting of layers of (mutual) colonisation (Mufwene 2001; 2008), suggests that language contact has nonetheless not occurred uniformly all over the world. Where it has generated competition among the coexistent languages, the ratio of births must sometimes have been superior to that of deaths, contrary to the current dominant discourse on language endangerment and loss (LEL) according to which the world is evolving toward the survival of a handful of ‘killer languages’.

We may surmise that, at the time of the Exodus, different languages were spoken by small isolated populations. Their distribution must be comparable to that of small languages in, for instance, Papua New Guinea and rural Africa today. Thus, there is every reason to wonder whether the current trend of LEL is a decrease in the number of languages or represents a more complex evolutionary process of the territorial expansion of some languages, their contacts with other languages, the occasional extinction of some in particularly competitive ecologies, and concurrent speciation of those that have prevailed. This is one possible interpretation suggested by the spread of Proto-IE or Proto-Bantu, to which I return below.

Africa is special because it is also marked by return migrations, from the Middle East about 3 000 kya, which account for the identification of a particular family of languages as ‘Afro-Asiatic’. It is debatable whether we can speak of a ‘return’ of these modern languages back to the continent, because it is not evident that they already existed at the time of the Exodus or of the return of the ancestors of the Afro-Asiatic populations to Africa. They probably emerged in situ after their ancestor language(s) was/were brought back to Africa. A closer look at waves of colonial and imperial expansions outside Africa suggests that most of, if not all, the languages that we know today emerged recently, during the historical period, after the invention of agriculture about 12 kya. As a species, *Homo sapiens* returned to Africa but the languages that some of their descendants speak today did not. They emerged locally.

A convenient example comes from the better known history of IE languages. If the Indo-Europeans speaking Proto-IE started their dispersal about 6 kya (and the latest wave of their dispersal started only half a millennium ago, especially to the New World but also to sub-Saharan Africa and to Asia east of India), no modern IE language spoken today can be older than 6 000 years. The Romance languages are about 1 500 years old; and English, the most widely spoken language on earth today in both native and non-native forms, is only about 1 300 years old.³ History also suggests that Arabic, which is perhaps the most widespread Afro-Asiatic Semitic

3 These dates are rough estimates based on the times when language historians can determine for sure that new language varieties had speciated from their ancestors, Vulgar Latin and Anglian, respectively, from which they have evolved. The birth of new language varieties is comparable to the identification of new biological species, projected post-facto. No birth certificates can be issued for these processes of increasing divergence, which are naturally gradual, unlike for actual birth events, *aka* deliveries of organisms, including humans (Mufwene 2008).

language straddling North Africa and Western Asia, apparently dates only from the first century AD. Similar conclusions can be drawn about almost any language spoken today outside its homeland, unless no contact, even of its older dialects, can be invoked to account for its emergence.⁴

2.1. Language speciation and language vitality

The above observations lead me to address the question of what role African linguistics can play in developing the big picture of language speciation and language vitality from the point of view of population movements and language contact (Mufwene 2013b). We have to start with the question of what it means to identify a particular language or a cluster of related languages as Proto-L. From the point of view of migrations out of Africa, it is not clear that we can speak of dispersal of *Homo sapiens* and the diversification of their languages into, for instance, Proto-IE, Proto-Semitic, Proto-Sinitic and Proto-Bantu as single languages rather than as (small) clusters of languages sharing areal features. These families are retrospective analytical constructs that, according to Trubetzkoy (1939), need not apply necessarily to single languages. Linguists have also hypothesised Proto-Ls without saying how long they had existed before speciating into their modern offspring. If *Homo sapiens* was a single group, we have no clue when (i.e. at what particular stages of several stages of dispersals) the Proto-Ls had emerged. Could the Proto-Ls themselves reflect the convergence of the languages of populations that came to live on egalitarian terms with each other, though it is equally true that some languages displaced others and speciated concurrently?

Quite evident from the above discussion is the conclusion that a proto-language is a construct of convenience intended to show the older forms or structures that the modern languages appear to have evolved from. What the traditional approach has left unsaid is the role that language contacts, those of the Proto-L or intermediate varieties with those spoken by indigenous populations or other newcomers to the colonies, played in producing the modern languages. The history of Africa suggests a language-speciation evolution similar to that of Proto-IE. Taking an example from a family more familiar to me, the different Bantu languages emerged not in their putative homeland in the Nigeria-and-Cameroon border area but in different places in Central and Southern Africa, where they are now spoken. Proto-Bantu appears to have speciated because of its contacts with the languages spoken by the Pygmy, the San and the Khoekhoe populations, who preceded the Bantu in the region, or even out of contacts between some modern varieties that speciated earlier during the protracted dispersal. See, for instance, Newman's (1995) account of the peopling of Africa based on archaeological evidence.

The speciation of Proto-Bantu is, indeed, like that of Proto-IE, with some modern IE languages such as English and the Romance languages emerging out of the contacts of older IE languages, although in this case the proto-languages in question are not

4 David Bradley (p.c., February 2018) notes that my statement may be too strong. According to him, 'Andamanese languages and some other language families whose languages are spoken entirely by hunter-gatherers who continued as such, including all Australian languages' may be (much) older. However, note the observations I report below about the San and Khoekhoe languages, spoken in what has been characterised as the 'cradle of mankind'. Even nomadic populations may have been subject to the processes of fission and fusion in history.

even the ultimate Proto-IE. From this contact-based approach to the subject matter, the Romance and Germanic creoles represent another phase of speciation actuated by the contacts of particular modern IE languages with non-IE languages in territories colonised later by modern IE populations. We may have been mistaken in treating the emergence of creoles as anomalous (Joseph & Hock 1996).⁵ Perhaps to a lesser degree, speciation as a recursive process has also produced colonial non-creole varieties of the same IE languages in ecologies where the Europeans have become majority populations and the indigenous populations have been reduced to small minorities marginalised to the periphery of the new socioeconomic world orders (Mufwene 2016; 2017a). Thus, American and Australian Englishes, for example, are the outcomes of the same contact-induced speciation process, which perhaps owes more to the contact of English dialects than to contact with other languages (Trudgill 1986; 2004; Mufwene 2009).

The difference between creoles and the other colonial varieties boils down to the fact that in the case of creoles the relevant Western European languages have become the vernaculars of non-IE and non-indigenous populations, whereas the majority speakers of non-creole varieties are descendants of IE populations (Mufwene 2001).⁶ Thus, for instance, Gullah, spoken in coastal Georgia and South Carolina, USA, and the offshoots of French spoken by descendants of Africans in Louisiana and on St. Barths have been labelled *creoles*, whereas Amish English, also spoken in the USA, and the offshoots of French spoken by IE people in Louisiana and on St. Barths are considered as new *dialects* of their lexifiers. The case of Amish English is particularly significant because it too is the outcome of language shift and may not be structurally closer to white middle-class American English than African American English is. Curiously, Holm (2003), for instance, identifies only the latter as a ‘semi-creole’.

Indeed, all the above cases of the emergence of new varieties involve language shift by either the majority or a substantial proportion of the relevant colonial populations. They are comparable to those of the emergence of their ancestor languages in Europe, which are themselves (in)direct offspring of proto-IE. For all of them contact is an important actuator of change and speciation. Indigenised varieties that evolved from the same IE languages (in former European exploitation colonies of Africa and Asia) appear to add another dimension to the speciation process, viz. the new varieties need not be spoken as vernaculars. The traditional discourse on the subject matter appears to have been misled by the race of the vast majority of the speakers of the exploitation-colony varieties. It has overlooked the fact that the vernacular varieties of the European languages spoken in the former

5 This is the view proposed sensibly by, e.g. Posner (1985) and Trask (1996), who identify the Romance creoles as new Romance languages, thus as new IE languages. This is essentially the position I have assumed in Mufwene (2001 ff), though I leave it up to the natives to determine whether they speak a separate language or a dialect of its lexifier. I have been happier with the term *offspring* than *daughter language*, because I prefer to be neutral on the subject matter.

6 DeGraff (2003; 2005) elaborates on this under the label of *creole exceptionalism*, which he argues against because it is based on racial biases that have accumulated since the 19th century, when the scholarship on the emergence of creoles and pidgins started. The 19th century is indeed the period which fostered the social ideology of language purity, along with the uniparental model of language speciation, with creoles treated as aberrations.

settlement colonies have indigenised too, in the sense of being adapted to their new ecologies, which include different population mixes and new natural environments (Mufwene 2009). It should not matter either that speakers of the indigenised varieties have typically not given up their indigenous languages.

2.2. Periodising and relativising indigeneity

Africa has provided arenas to several waves and layers of population movements and contacts. A remarkable and swift one occurred in the 7th and 8th centuries, when Arabs from the Arabian Peninsula dispersed to and settled in North Africa (Ostler 2005), from which they developed long-lasting trade networks with populations in and around the Sahara Desert.⁷ A consequence of these population movements was the spread of Arabic as the dominant vernacular in North Africa, at the expense of the indigenous Berber languages, and as a religious language in places where the Arabs conducted trade. Some of the North African indigenous languages survive today in rural areas. The best known of the lost ones is Coptic, which became extinct around the 17th century. Interestingly the Arabs traded with the southerly populations in languages other than Arabic, contrary to Europeans, who traded with the African rulers on the coast in Portuguese (Ostler 2005). Thus, rare are the exogenous Arabic varieties that emerged in, for instance, West Africa and have been characterised as ‘pidgins’ or ‘creoles’ (Kaye 1990; Owens 1990; 2001), although the Arab trade bequeathed the relevant populations an Arabic-based script known as Ajami (Ngom 2017).

The speciation of Arabic into national vernaculars in North Africa is undoubtedly associated with substrate influence from the indigenous languages (especially varieties of Berber) that had preceded them, although all the languages in contact were Afro-Asiatic. The process can be characterised as a by-product of its indigenisation,⁸ which was facilitated or enhanced by the Arabisation of the indigenous peoples. The latter had the right of citizenship in the new socioeconomic world order as long as they converted to Islam and the new culture that came with it and shifted to Arabic. By contrast, this kind of cultural assimilation was precluded in South Africa during the British rule and the apartheid regime instituted by the Afrikaners (1948–1994), as the natives were generally denied the right to economic and political citizenship (McKenna 2011). On the other hand, the indigenous North Africans who did not Arabise were marginalised to the social and/or geographical periphery, thus the rural areas, although the cultural assimilation process is still underway. This marginalisation is similar to that of non-dominant populations relative to the economically and politically dominant colonising one in European settlement colonies of the New World (e.g. the Anglos in Anglophone North America and the Portuguese in Brazil), with the indigenous populations driven by the new socioeconomic pressures to assimilate rather late.

7 For practical reasons, I will ignore their colonisation, together with the Moors, of Iberia from the 7th to the 14th centuries, though it has left its marks on both Portuguese and Spanish, and undoubtedly on other Iberian Romance languages. I will also ignore the trade and sometimes settlement colonisation of the eastern coast of Africa (including islands such as Zanzibar and the Comoros) by the Arabs.

8 *Indigenisation* is defined in Mufwene (2009) as the adaptation of a language to the previous linguistic habits and current communicative needs of its new, non-heritage speakers. Interestingly it is also an alternative definition that Hall (1966) provided for *creolisation*, then defined as nativisation of a pidgin.

The subsequent colonisation of Africa by the Europeans from the 15th century, starting only with the Portuguese trade colonies, raises another interesting question, namely, should indigeneity be assumed only in reference to the earliest populations to have settled a territory before the arrival of the newcomers? By the 15th century, the Arabs in North Africa had Africanised and their language was already functioning as a vernacular among non-Arabs too. Arabic was the vernacular of the Moors, the then indigenous North Africans who had Arabised. Thus, as they had emerged locally, shouldn't North African Arabic varieties be considered indigenous relative to the European colonial languages in the same way as the Bantu languages that had superseded the Pygmy and most of the San and Khoekhoe languages in Central and Southern Africa?

In fact, would it not it make more sense to rank the languages by degrees of indigeneity (Mufwene 2001), relative to the time of their emergence/indigenisation in a territory? A good reason for treating Bantu languages as indigenous to where they are spoken is that, as explained above, they were born where they are spoken (ignoring some minor post-emergence movements outside the Bantu speakers' homeland). This is precisely also true of North African varieties of Arabic, as well as of Afrikaans, of Krio in Sierra Leone, of Cameroon and Nigerian Pidgin Englishes, and of creoles spoken on some of the islands/archipelagos surrounding continental Africa (e.g. Príncipe, Cape Verde, Réunion, Mauritius and the Seychelles). If languages are not associated with the race of their speakers, and if creoles have emerged in ways that are not different from, for example, the Romance languages (Schlieben-Lange 1977; Mufwene 2015), it can be argued that there are IE languages that are indigenous to Africa, although some languages are more indigenous than others when politics is taken into consideration.⁹

2.3. Race and the genetic classifications of languages

The facts presented above also raise the question of whether genetic linguists have classified languages really independent of the races of their heritage speakers. North African Arabic varieties are considered Semitic, because they are typically associated with Arabs as their heritage speakers, just as Afrikaans is considered a Germanic language (although some such as Valkhoff 1966 consider it as a creole!) because a large proportion of its vernacular speakers are of IE descent. On the other hand, creoles and pidgins appear to have been disenfranchised because their primary speakers are not of IE descent (Mufwene 2001; DeGraff 2003; 2005). There are no specific structure-changing speciation processes that can be characterised as *creolisation* or *pidginisation* (Mufwene 2000) or as typical of language contact, an ecological factor traditionally invoked against classifying them genetically with their lexifiers. This inconsistent invocation of language contact against grouping a language

⁹ Speakers of San and Khoekhoe languages in southern Africa may legitimately claim that their languages are indigenous compared to the Bantu languages, whose speakers migrated to the region later. However, this claim can become disputable, as some San and Khoekhoe populations may have migrated to the region about the same time the Bantu speakers did. Bradley (2007) appears to share my position about the African creoles and pidgins. He too identifies Macanese and Papia Kristang, spoken respectively in Macao and Malaysia, as Asian IE languages.

genetically with others that appear related to it is certainly an issue that genetic linguists should revisit. The uniparental Stammbaum represents the outcome of speciation, not how it occurred in terms of what the actuators of the changes were. One of these has typically been language contact (Mufwene 2008).

Given the particular populations associated with creoles (and pidgins), the traditional practice conjures up a 19th-century colonial ideology of language purity and a racist assumption (DeGraff 2003; 2005; Mufwene 2008) according to which non-Europeans were mentally inferior and incapable of learning faithfully the complexities and sophistications of European languages (Adam 1883; Baissac 1880; Gonzales 1922). The practice ignores studies in creolistics such as Chaudenson (2001; 2003) and Mufwene (2001; 2008) which show that creole vernaculars have speciated in the same ways as non-creole languages, with the contact of both languages and dialects being a critical actuator of change. These contacts have been produced by population movements that, while changing the population structure, can change the communicative functions and social statuses of the coexistent languages and the balance of power among variants within them. They introduce changes that can result in language speciation and sometimes the concurrent demise of some languages.

2.4. Language coexistence and language vitality

A convenient case to start with is the linguistic transformation that North Africa underwent during the Arab colonisation, which resulted in the lowering of the social status of Berber, Tuareg, and similar languages, and the loss of some of them. As noted in section 2.2, the colonisation caused not only the spread of Arabic but also its speciation.

This case of colonisation brings to mind the earlier contacts of North Africa's Mediterranean border with the Phoenicians, the Greeks and the Romans, in particular. The region was then part of the trade networks of the Phoenicians and successively part of both the Hellenic and Roman Empires. Punic was once a language spoken in Carthage, and Greek and Latin were once elite languages, especially in Egypt. It can be argued that Greek and Latin, which had occupied prestigious positions in the region and may have contributed to the demise of Punic (the language of the Phoenicians) in Carthage, were displaced by Classical Arabic, which dominated economically and intellectually during the Middle Ages (Tolan et al. 2013).

However, the history of Arabic in the region also illustrates how layers of colonisation can cyclically change the linguascapes of a territory. The European exploitation colonisation of North Africa since the 19th century demoted Arabic from its acrolectal position, though it did not displace it as a vernacular. Indeed, Greek and Latin as *lingua francas* did not displace the indigenous vernaculars of the time either. All the above cases underscore the need to distinguish between different styles of colonisation as generators of particular population structures and some correlation between them and language evolution not only from the point of view of structure but also from that of vitality (Mufwene 2001; 2008).

Homo sapiens' migrations out of their African cradle since about 100 kya was a protracted history of layers of colonisation cum relocation to, and domestication of, and/or indigenisation in a new territory. This history has often been marked by contacts between the migrants and raises the question of how layers of language births and deaths

balanced out in the process. We have a better idea of the languages that emerged during those colonial periods than of those that became extinct. We also learn from the above that the contacts of newcomers with the natives did not ineluctably lead to the extinction of indigenous languages. In some cases, the foreign languages just disappeared, as did indeed Greek and Latin, from North Africa. In some cases the foreign languages, which did not arrive at the same time, wound up competing with each other for higher status, as between Afrikaans and English in South Africa since the 18th century. Politics and the economic power associated with their respective speakers rolled the dice, with Afrikaans first becoming endangered and then rising to the top between 1948, when apartheid became the law of the land, and 1994, when this regime ended (Broeder et al. 2002; Giliomee 2003; McKenna 2011). However, for most indigenous languages, the legacy of colonisation has prevailed, despite the political elevation of nine of them to the status of co-official languages under the South African Constitution. They occupy the bottom layers of the socioeconomic stratification of the South African linguascape, like their counterparts in the rest of Africa (Mufwene 2017b).

Overall, while the Bantu languages have driven the more indigenous San and Khoekhoe languages to extinction or just endangered their vitality, the European languages have not endangered the indigenous languages in Africa. An important reason is the colonial socioeconomic structure, which was not intended to integrate the indigenous populations in the new European-style socioeconomic world order in any way other than in subaltern positions, in which they operated in their heritage languages. The only non-IE languages that have been driven to extinction are those spoken by enslaved and indentured Asians that were brought to Africa by the colonisers between the 17th and 19th centuries and may be considered the counterparts of enslaved and indentured Africans taken to the plantation settlement colonies of the Americas, the Caribbean, and islands around Africa. They all lost their languages in the exogenous colonies in which multilingualism among themselves and adaptation to communication in the new ecology forced them to shift to the colonial master's language. Thus, in South Africa, the Malays, who came earlier, when the Dutch East India Company controlled the colony, shifted to Dutch, which evolved into Afrikaans, whereas the Indians, who arrived in the middle of the 19th century, under the British rule, shifted to English.^{10,11,12}

10 Contrary to some claims, the Blacks in South Africa are thus comparable to Native Americans and Australian Aborigines, especially in losing their lands to the colonisers, being driven to reservations or 'homelands,' and being kept in the periphery of the new socioeconomic world order (McKenna 2011). It is undoubtedly also the fact that Black South Africans have remained the demographic majority and constitute large critical masses in their respective ethnic groups (e.g. isiXhosa, isiZulu, Setswana and isiNdebele) that has helped them maintain their languages.

11 At the time of writing this paper, I did not have enough information on the Chinese South Africans or the Asians from the Indian subcontinent, who immigrated to East Africa, to include them in this discussion.

12 It is unfortunate that, as noted above in section 2.1, the varieties of European languages appropriated with modifications by the enslaved Africans in the plantation settlement colonies of the New World and of some islands around continental Africa (and learned by the contract labourers who arrived later) have been characterised uncritically as creoles. For that matter, South African Indian English could be called a creole too (Mufwene 1994), just like the nonstandard English spoken by the Asian contract labourers who went to Hawaii, although Mesthrie (1992) chose wisely not to identify it with this disenfranchising label. What matters in this section is the phenomenon of language shift as it affects the vitality of languages.

This history bears on how we can talk about the recent wave of LEL in the Americas and Australia in particular. Has the world really been evolving towards fewer and fewer languages, as claimed in the dominant discourse on the subject matter? The perspective from Africa does not appear to support this claim, though the number of languages has indeed been decreasing in former settlement colonies (Mufwene 2016; 2017a). However, unlike these places, most of Africa has been colonised on the exploitation model, with a different, non-assimilationist population structure, which Mazrui and Mazrui (1998) aptly characterise as ‘exclusionary’.

The picture from Asia is also different, based on Moseley (2007). Asian indigenous languages do not appear to have been endangered by European languages, if we ignore the minority populations who Christianised, lived with the Portuguese or the Spaniard colonists, and shifted to the latter’s languages as their vernaculars.¹³ Otherwise, reading carefully the numerous cases reported, especially by George van Driem (2007) and by David Bradley (2018) in the volume, the rise of indigenous states and empires actuated population movements. These spread several Asian languages in ways that created new language diasporas, raised the languages of the expanding political powers to hegemonic and typically majority positions, and reduced some more indigenous languages to a substrate and often minority status. Several languages have died or are allegedly endangered. However, one should not base such prognostications on demographic size only; the relevant population structures in which the minorities have been inserted matter too. Isolated small languages can linger for a long time, as long as their speakers experience no pressure from the relevant political and/or socioeconomic regimes to shift to the language of the dominant population or of the dominant economy. Also noteworthy in these reports is the fact that languages that now straddle different polities have often evolved in non-uniform ways. They are often endangered in polities where they have become minority vernaculars, especially in the diaspora, or where their speakers have been colonised by those of the now dominant languages. On the other hand, they have survived healthily or are in fact thriving in their homelands or in places where their speakers have experienced no pressure to assimilate to the dominant culture.

From a more global perspective, we must ask whether in the case of, say, the Romance languages in Europe, the rate of births was inferior, superior, or equal to that of deaths. The issue is complicated by the survival of varieties such as Provençal and Occitan in France, or Catalan and Galician in Spain, next to their respective dominant counterpart varieties, viz. respectively, Parisian French and Castilian. Has the evolution of Vulgar Latin into the Romance languages really been that of unilinear speciation as presented in genetic linguistics? Or has it also involved competition among several emergent neo-Latin varieties themselves after they have displaced the more indigenous Celtic and other languages?

The above facts suggest that there were multiple parallel local or regional evolutions from the contact of Vulgar Latin with, especially, the Celtic languages. In the case of Francophone Europe (including parts of Belgium and Switzerland), it was

13 Given the race of the indigenous speakers, creolists have, by fiat, identified as creoles the new vernaculars that emerged from these colonial contacts.

not just (Parisian) French as the language of l'Isle de France that evolved from Latin, but also varieties such as Occitan, Provençal, Picard, Walloon and Jurassien (among a host of others) that emerged concurrently and are treated in France as *langues régionales*. These neo-Latin varieties subsequently competed with each other (in the sense of not being equally valued—Mufwene 2008), with the prevailing ones supported by particular political ideologies and institutions (such as schools and the Académie Française). It is this engagement of powerful institutions that helped the prevailing ones to displace the weaker/weakest competitors, which did not enjoy the same support, by the 20th century (Nadeau & Barlow 2011). In Spain, Catalan and Galician are among the few that withstood the spread of Castilian, with Catalan now sustained by a strong regional political ideology and socioeconomic structure, which explain why it is in fact thriving.

The evolution of the vitality of languages especially in sub-Saharan Africa resembles the above in that local ecological factors drive the process. In Romance Europe, the success of the Roman-style economic systems, urbanisation, and administration fostered the spread of some neo-Latin varieties at the expense of their competitors, including the more indigenous languages. In Africa, on the other hand, the stagnation of economic systems and colonial-style exclusionary population structures have inhibited the spread of European colonial languages as national vernaculars. Economic stagnation or degeneration has maintained the ethnic languages at the bottom of the socioeconomic ladder, on an egalitarian footing, while the indigenous *lingua francas*, which emerged and/or spread during the colonial period, have maintained their role as secondary languages, occasional *lingua francas*, in rural areas and as urban vernaculars for those born in the city (Mufwene 2017b).

I surmise that the language of a successful economic system is likely to prevail, simply by motivating the workforce to become fluent in it and to prepare their children to become competitive in it. Politics such as African States, which lack truly globally competitive economies at the national level and where the formal economies are predominantly in the blue-collar sector and function in indigenous languages, do not appear to provide motivation for mastering the European colonial languages, especially as vernaculars. The majority of the working age populations have little to do with them. In addition, when the majority or large proportions of the populations cannot function in the formal economy but survive on subsistence and/or informal economy, which operate in local languages (Vigouroux 2013), the latter experience no danger from either the colonial languages or the indigenous *lingua francas*. The Pygmy, San and Khoekhoe languages have been endangered or driven to extinction during the cultural assimilation of their speakers by the Bantu-speaking colonisers.

The lesson from Africa is that the vitality of languages has not proceeded in a uniform way around the world. We still have to sort things out. A small number of speakers of a language is not symptomatic of its endangerment if the population structure in which its speakers operate is not culturally assimilationist. While urbanisation (both in the sense of the emergence of urban centres and in that of rural areas increasingly resembling the urban centres) has contributed to the LEL of minority languages in Europe and its settlement colonies (Mufwene 2017a), this is not the trend in (sub-Saharan) Africa.

Here even the vast territorial expansion of urban centres amounts to what is identified in Mufwene (2010) as *mega-villages*. The expansions resemble in no way the North American suburbs or the French *banlieues*, as different as the latter are from each other.¹⁴ The reason lies in the fact that the expanding African cities lack utility services and (adequate) transportation and communication infrastructures that sustain urban life. This is especially true of the geographical peripheries of the cities, where the migrants from the rural areas live as in villages, if not in worse conditions, and the adults socialise according to their places of origins and in their ethnic languages. In them, children grow up either bilingual in the ethnic language and in the urban vernacular, or they are dominant in the latter, with passive competence in the former. Unless they move out of the neighbourhood, they may activate their competence in the ethnic language as adults and under pressure to express loyalty to their ethnic backgrounds. The world is evolving in a non-uniform way, despite the world-wide globalisation of the industrial economy, on the margins of which most African countries or most of their citizens remain.

2.5. Refugeeism as another form of migration

Postcolonial Africa has also been marked by refugeeism. Some areas are notorious for exchanging refugees, depending on where a conflict arises or is sustained, such as between South Sudan and the Democratic Republic of Congo (DRC), between the DRC and Rwanda, between the DRC and Burundi, and between Burundi and Rwanda. When the languages of the refugees and the host populations are not so similar, questions arise about whether the refugees can maintain their languages. A great deal depends on the kind of population structures into which they are inserted, for instance, whether they are kept in camps away from the host population, as in the case of the Somali refugees in Kenya, or are allowed to mix with the host population, as was the case with Angolan refugees in the DRC during the Angolan revolutionary war in the 1970s. In the latter case, assimilation to the local population often produced children that did not speak their parents' heritage languages.

We have no idea to what extent refugee exoduses have affected the vitality of some languages in the migrants' homelands, no more than we do of the extent to which the slave trade may have changed the linguascapes of some parts of Africa. Were there languages that died during the slave trade raids or the wars that generated slaves? The raids and conflicts must have caused some population movements whose linguistic consequences remain undocumented. Black Africa is probably not alone in having experienced this evolution in human history, which is worth investigating if we want to develop some theory of language vitality that is consistent with world history (Mufwene 2016; 2017a).

Conclusion

In this essay, I have focused on the role of population movements and language contact as actuators of language speciation and as ecological factors exerting differential influence on the vitality of languages. Speaking of population movements

¹⁴ The former is marked by affluence, whereas the latter sustains poverty and marginalisation.

entails identifying where particular populations came from, when they arrived in the new location, what kinds of population or socioeconomic structure their relocation generated, what language(s) they brought with them, what particular new language varieties may have emerged consequently, what languages died, etc. The dominant discourse on LEL has focused especially on the impact of colonisation (an aspect of population movements) on the vitality of languages, identifying those that have thrived but especially those that have been endangered or driven to extinction. My discussion has shown some contributions that knowledge of African history can make to the scholarship on LEL, which has not proceeded uniformly around the world.

Genetic linguistics has focused on hypothesising proto-languages and the ways in which speciation has proceeded, especially regarding the genetic connections among the daughter languages (determined by the extent of formal correspondences as suggested by the comparative method) and the probable times of their branchings. However, it has said little on the causes of the changes undergone by the proto-languages. I have shown in this paper that the scholarship remains incomplete if it is not complemented with information about population movements and language contacts. Although genetic linguistics has told us how old modern languages may be, it has told us nothing about how old the proto-languages may have been, where they came from, if they existed at all in the ways in which they are postulated, and when the migrations took place, let alone through which routes. This information, which may be gathered with the help of archaeologists (e.g. Diop 1967; Inskeep 1979 and Newman 1995, regarding Africa), can help connect the dots about the out-of-Africa hypothesis, regardless of whether or not monogenesis is assumed about the phylogenetic emergence of languages. Palaeontologists have provided some hypotheses about the dispersal routes of *Homo sapiens* but nothing that comes close to addressing the questions formulated in this paper.

Recent findings in palaeontology (e.g. Compton 2016) suggest that our *Homo sapiens* ancestors resided and dispersed from the eastern half of Africa, from its southern tip to the Mediterranean. It would be informative to know where, for example, the populations speaking proto-Bantu, proto-Nilo-Saharan, proto-Afro-Asiatic, proto-San and proto-Khoekhoe came from. Is there any reason why it has been claimed that the San and the Khoekhoe form the oldest human phyla in Africa today, other than they preceded the Bantu speakers where they are now? According to Güldemann (2008) and Sands and Güldemann (2009), they too migrated to southern Africa from East Africa, and some of them may have arrived in their new homeland at about the same time as the Bantu speakers did. So, since palaeontologists argue that the region has been inhabited since before the time of the Exodus, which *Homo sapiens* people preceded the San and the Khoekhoe in southern Africa?

I am sure any other continent could have inspired the questions discussed in this paper. I happen to be an African(ist) working in evolutionary linguistics, where Africa as the cradle of the human species stands out, from a phylogenetic perspective. This background, combined with my traditional work on language contact, explains the focus of this paper on the significance of population movements and language contact in accounts of language change, speciation, and vitality.

Space limitations have prevented me from discussing the emergence and spread of new contact varieties especially during the European exploitation colonisation of

Africa and the three-way stratification this introduced: (1) the European colonial and now (co-)official languages enjoying the most prestige and associated with the most economic benefits; (2) the indigenous *lingua francas* mentioned earlier, which function as languages of modern jobs in subaltern positions (the majority of those created since the colonial period!) and whose urban varieties are also associated with modernity; and (3) the ethnic languages still spoken primarily in rural areas, which can be associated with the maintenance of cultural diversity (Mufwene 2017b). The stratification is itself a topic that deserves attention from an evolutionary perspective, especially because, as noted above, the European languages have not exerted the same kind of impact on indigenous languages in Africa as in the Americas, the Caribbean, and Australia from the point of view of language vitality.

I could also have talked more than just in passing about the emergence of creoles on some islands around continental Africa. Independent of my position that they evolved in the same way as other languages have, which underlay my discussion of language speciation, space constraints forced me to omit these vernaculars. This is unfortunate because the relevant islands have the peculiarity of having been uninhabited before and because they were not all associated with sugarcane or rice cultivation as the principal economic activity. They bring up issues not only about the traditional accounts of the conditions under which creoles have emerged but also about language shift and language speciation in general. I discuss some of these issues in Mufwene (2008; 2014b; 2015).

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Chapter 4

Morphology-phonology interface and tone realisation in some Bantu languages: Residual problems

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1. Introduction¹

Over the years, studies on tone in Bantu languages have benefited considerably from a number of theoretical frameworks. The development of Generative Phonology in the late 1960s provided a derivational rule-based model for accounting for complex tonal alternations in Bantu. The advent of Autosegmental Phonology in the mid-1970s (Goldsmith 1976) and its further elaboration and extension in subsequent work like that on Under-specification and Feature Geometry, among others, provided more insights into how phenomena like tone stability, floating tones, the representation of contour tones and others, which were too problematic for Generative Phonology, could easily be accounted for. The emergence of later theoretical models, particularly, Optimality Theory (OT), (McCarthy & Prince 1993; Prince & Smolensky 1993) and further extensions of this framework, for instance, Optimal Domains Theory (ODT), (Cole & Kisseberth 1994; Cassimjee & Kisseberth 1998) and Span Theory (McCarthy 2004), provided a more radical alternative approach to the rule-based models of phonological representation and its relationship to surface (phonetic) forms in that they appealed directly to phonological universals instead of expressing them through underlying representations which were subsequently changed to surface forms through an array of intricately ordered rules and other theoretical machinery.

As is well known, the major proposition of Optimality Theory is that the phonological component of a language consists of a set of ranked universal constraints which require that phonological outputs have certain properties or that some structures should not be part of the outputs. The universal nature of constraints predicts that languages do not differ on account of variations in the inventory of constraints but, rather, due to differences in the ranking of those constraints. The ranking of constraints makes them violable since an output may violate a low ranking constraint in order to satisfy a higher ranking constraint.

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As Cassimjee and Kisseberth (1998) have observed, one of the major strengths of OT is its capacity to allow for several linguistic phenomena to ultimately reflect a single constraint (the notion of ‘phonological conspiracy’ in Generative Phonological terms) just like a single phenomenon may result from a variety of constraints whose interaction rules out all other candidates except the one optimised. In terms of universality of constraints, OT adopts the view that there are only universal constraints and not language-particular ones that depart from the universal set. One implication of this position is that constraints proposed for a given language are expected to be general (to the language as well) and account for the phenomena in the most comprehensive way possible rather than being stated in a morpheme-specific or grammatically particularised manner because this would be at variance with how universal constraints interact. Cassimjee and Kisseberth (1998: 2) express the same point succinctly when they say that ‘no matter how diverse the phenomena, the researcher must (like the language learner) seek an understanding of the phenomena in terms of how the universal constraints interact’.

While OT analyses of tonal facts have argued for the superiority of this approach to rule-based derivational alternatives (cf. Myers & Carleton 1996; Bickmore 1999) largely on account of their being able to account for a wide range of phenomena as following from ranked universal constraints, there are still pockets of areas in some Bantu languages where problems remain. In this chapter, we show that in Chichewa (Guthrie Zone N group 31) high tones in some verbal tenses (grammatical constructions) fail to obey universal constraints like the OCP and spread in a manner which cannot be generally predicted by non-rule-based approaches like OT. We advance the proposition that in such cases, the best alternative is to adopt a rule-based analysis which puts morpheme or tense-specific conditions stating in which grammatical contexts high tones can undergo processes like tone spreading (doubling) and also where the OCP is violated.

We also provide data from Cindali (Guthrie Zone M group 20) which shows that allomorphy plays a crucial role in the assignment of tones in this language and that while it is desirable, as in OT, to derive phonological properties of languages from universal constraints, this is not possible in the Cindali verbal tonology where high tones need to be described through allomorph-specific constraints.

The chapter is organised as follows: section 2 presents cases of tonal data from Chichewa and shows the difficulties in accounting for them through universal constraints. This is followed by a discussion of tonal patterns in some tensed constructions from Cindali, which are also shown to be problematic for an analysis that does not appeal to allomorph-specific conditions.

2. Chichewa verbal tone facts

Several studies on the tone system of Chichewa (cf. Mtenje 1986; Moto 1989; Kanerva 1990; Hyman & Mtenje 1999; Downing & Mtenje 2017, among others) have shown that the language has the following characteristics, which are also attested in many other Bantu languages:

- (i) There are basically two level tones (High and Low) and verbs are generally lexically categorised as either low- or high-toned and, in the majority of cases, high tone verbs have one underlying high tone. Low tones are not restricted.

- (ii) The placement of high tones in verbs may be triggered by morphological factors like the presence of tense, object and aspectual/mood and other markers, besides lexical tone.
- (iii) The operation of tone rules like deletion, merger, shifting and spreading sometimes masks the precise nature of the underlying tone system of a language.

2.1. Tone in tensed verbs

2.1.1. Affirmative tenses

Tone patterns, which are linked with grammatical categories, like tense, object and aspectual markers, are common phenomena in Bantu (cf. Odden 2016 for examples). In Chichewa, each verb tense introduces a tone pattern (melody) where, in the majority of cases, high tones are placed on predictable positions like the first syllable in the verbal construction, the syllable to the immediate right of the tense marker and the penultimate position. In these positions, they interact with lexically specified high tones and trigger the application of rules like shifting, deletion and spreading. Downing and Mtenje (2017) identified eight grammatical tone patterns for affirmative tenses in Chichewa and several others for negative tenses. We illustrate some of them below using a low-toned verb ‘pukut-a’ (note that the vowel length on the penultimate syllable is the result of a common rule which lengthens penultimate vowels in pre-pausal positions).

(1) H tone assigned to various positions by tense markers

Affirmative verb	Tense	Gloss
a) ti-ku-púkuut-a 1sp-prog-clean-fv	Present progressive	we cleaning
b) tí-ma-pukúut-a	Present habitual	we clean all the time
c) tí-dzá-púkuut-a 1sp pl-dis fut-clean-fv	Distant future	we will clean
d) si-ti-dza-pukúut-a 1sp pl-dis fut-clean-fv	Negative Distant future	we will not clean

In the forms above, we see that there are different tonal patterns depending on the tense. The main positions to which high tones are assigned by the tenses are on the first syllable of the verbal construction (1b, c), the penultimate syllable (1b, d) and the syllable to the immediate right of the tense marker (1a).

The occurrence of sequences of high tones in (1c) is due to a regular rule of tone spreading (doubling) which is also attested in many other Bantu languages, for instance Shona (Karanga dialect), Makua, Ciyao, Kikuria, Sotho-Tswana, Logoori, Luyia languages, Makonde and Kwanyama (cf. Odden 2016). In Chichewa, a high tone on a vowel spreads to the next vowel provided the latter is not in a phrase-final disyllabic foot as shown below (Mtenje 1986; Moto 1989; Kanerva 1990; Downing & Mtenje 2017).

(2) H tone doubles to next syllable in longer verbs

Verb	Tense	Gloss
a) ti-ku-púkút-iil-a 1sp-prog-clean-appl-fv	Present progressive	we are cleaning for
b) ti-ma- púkút-iil-a 1sp pl-ph-clean-appl-fv	Past habitual	we used to clean for

As can be seen, the addition of the applicative suffix in the forms above has created an additional syllable in the verb stem, hence a bisyllabic foot at the end of the verbs. This has enabled the H tone assigned by the tense marker on the vowel to its immediate right to spread one syllable further. In the Distant future tense form in (1c), there is an underlying H tone on -dza which doubles to the next syllable.

As Downing and Mtenje (2017) and others have observed, tone doubling is normally blocked across prosodic word boundaries, even when its conditions are satisfied, as seen in (3) below.

(3) H tone spreading fails to apply across word boundaries

a) mwaána cl1-child	a child
b) mwaná wa-thaw-a cl1-child-1sp-perf-escape-fv	a child has run escaped
c) muúví cl3-arrow	an arrow
d) muví wa-pit-a cl3-arrow-3sp-perf-go-fv	an arrow has gone

In (3b and 3d), the high tone on the noun does not spread across to the next word although there are more than two syllables following the H tone. The significance of the application of this rule in Chichewa and its implications for the universality of constraints will be the subject of further discussion later in this chapter.

2.1.2. High tone verbs in Chichewa

Let us now consider lexically high toned verbs in Chichewa and their interaction with grammatically assigned high tones. Here, we are only going to concentrate on tonal processes which are relevant to the issues that we will be considering in this chapter, particularly sequences of high tones and the strategies which are employed to reduce them. The interested reader is referred to Downing and Mtenje (2017), Moto (1989), Mtenje (1986) and Hyman and Mtenje (1999) for detailed discussions of high tone verbs and other related phenomena.

We start by illustrating high tone verbs in bare imperatives to appreciate the location of the high tone. As pointed out earlier, there is one lexical high tone for each high tone verb.

(4) H tone on the final vowel of high tone verbs

- | | | |
|----|-------------|--------------|
| a) | maán-á | be stingy |
| b) | thamaáng-á | run |
| c) | tambalaál-á | stretch legs |

As can be noted in the data above, there is a high tone on the final vowels of high tone verbs and a corresponding rising tone on the penult. The literature on Chichewa verbal tone has argued that, in these verbs, a lexical high tone appears on the final vowel and the rising tone on the penult is as a result of a separate rule of high tone retraction which spreads the high tone on the final vowel to the second mora of a long penultimate syllable before a phrase boundary (cf. Downing & Mtenje 2017 for details).

It is worth noting that the high tone on the final vowel of the verb stem in high tone verbs creates contexts in which one finds HH sequences with high tones which are grammatically assigned to penultimate vowels by some tenses and, as shown in section 2.1.3 below, object prefixes. There are also some suffixes which are underlyingly high toned and have H tones on their final syllables. These too, create HH sequences which attract the application of some rules which reduce them to a single H tone. The exact manner in which these rules apply and their contexts will be the subject of our discussion later in this chapter.

Let us now turn to a consideration of the tonal effects of object prefixes on verb stems.

2.1.3. *Object prefixes and tone assignment in Chichewa*

Object prefixes assign high tones to penultimate vowels in some tenses.

(5) Object prefix places H tone on the penult

Verb	Tense	Gloss
a) ku-mú-púkut-iil-a inf-op-clean-appl-fv	Infinitive	to clean for him/her
b) sí-tí-ku-wá-púkut-iil-a neg-1sp-prog-op-clean-appl-fv	Present progressive	we are not cleaning for them
c) ti-ma-wá-púkut-iil-a 1sp pl-ph-op-clean-appl-fv	Past habitual	we used to clean for them
d) tí-dzá-mú-púkut-iil-a 1sp pl-disfut-op-clean-fv	Distant future	we will clean for him/her
e) tí-ná-mú-pukuut-iil-a 1sp pl-smp-op-clean-fv	Simple past	we cleaned him/her

As noted above, the object prefix assigns H on the penult syllable in the tenses in (5a–5c) but not in (5d and 5e).

It is clear from the behaviour of the object prefixes in the data above that the question of whether they assign H to the penult syllable is tense-dependent and does not follow from a general rule. We will return later to the issue of how this can be formalised in an analysis which uses general constraints and the wider implications for that approach.

Let us now sum up what we have observed so far about grammatically assigned high tones in the verb system. The overall picture which emerges is one of a very complex system of tonal melodies which are largely tense-determined. Thus, depending on the tense, a high tone can be assigned to the first vowel in the verbal construction, to the immediate right of the tense prefix, the penultimate vowel or the final vowel. Rules like tone doubling and high tone retraction apply, where appropriate, to create a sequence of H tones (tone doubling) and a rising tone on a long penultimate syllable (retraction).

The literature on Optimality Theory is replete with analyses of tonal facts like these in many Bantu languages which use the sub-theory of alignment (cf. Mtenje 2006). The basic claim has been that, in languages like Chichewa, all the positions in which high tones are placed by the tense prefix share the common feature of being at the edge of prosodic constituents. For instance, the high tone which goes to the first syllable in the verbal construction forms the left edge of a prosodic word, while the H on the final vowel in the verb stem is at the right edge of the stem. The high tone which is placed on the vowel to the immediate right of the tense marker is on the left edge of a constituent commonly referred to by Bantuists as the Macrostem when the object prefix or some aspectual marker is available, otherwise it lands on the left edge of the verb stem when the verb root immediately follows the tense marker. The penultimate syllable in Bantu has been widely regarded as a prosodically prominent position equivalent to an accented syllable in accent languages. To this end, a left-headed branching foot can be constructed there and the head of the metrical structure attracts prominence (accent in accentual languages and a high tone in tone languages). Like in the other prosodic domains referred to above, the high tone which is placed on the penult vowel can be said to be on the left edge of the foot.

We now turn to a discussion of Optimality Theoretic analyses of grammatically assigned high tones.

3. Proposed OT analyses of verbal tonal patterns

There have been several analyses of tonal phenomena within the framework of OT which have utilised the universal nature of a constraints-based approach to account for a wide range of tonal facts (cf. Myers & Carleton 1996; Bickmore 1999). The main appeal of these analyses has been the ability to show that the effects of the alignment of tones with certain domains follows from the ranking of general alignment constraints. Several other alternative approaches utilising the conceptualisation of OT have also been proposed to refine the theory (cf. for example, Cole & Kisseberth 1994; Cassimjee 1998; Cassimjee & Kisseberth 1998; and others on Optimality Domains Theory). One thing that is clear from the various proposed analyses is the fact that there are still some areas of data description and analyses that remain a challenge and there is no consensus on the best single, encompassing OT approach that can handle them. Bickmore (2007) for instance, has pointed out that there is no consensus even on the notion of ‘spreading’ in OT. In the same spirit, Marlo (2007) stated in the introduction to his PhD dissertation on Lumarachi and Lunyala that ‘there are several fundamental issues in the treatment of tone that are unresolved in the OT literature, limiting the theory’s usefulness as a tool for the type of whole-language description attempted in the present study’. A further point made by Marlo,

which is crucially relevant to the present work, is what he has observed as the ubiquity of the opacity effects found in the tonal systems which he studied. As we will observe in the following sections, there are a number of opaque situations in Chichewa where general constraints cannot be easily invoked and where the best alternative is to appeal to morpheme-specific statements to account for them. We now proceed to a discussion of these cases.

3.1. High tone positions and alignment constraints

As we noted above, tense-assigned high tones in Chichewa appear on the penult, the final vowel, the initial vowel in the verbal unit and the vowel to the immediate right of the tense prefix and that all these positions have been associated with edges of grammatical or phonological constituents. In OT analyses of these phenomena, several alignment constraints have been proposed. In order to account for the placement of H tone on the final vowel of the verb stem and the penultimate syllables Myers and Carleton (1996) proposed the constraints in (6) and (7) below. In (6) the phonological domain ‘Prosodic Stem’ (P-Stem) (Inkelas 1989) which corresponds to the morphological stem or M-stem is defined while (7) aligns tones with respect to this domain.

- (6) LX=PR: ALIGN (M Stem-L, P Stem-L) & ALIGN (M Stem-R, P Stem-R)
M Stem coincides with the Prosodic Stem (being aligned with it at both edges).
- (7) ALIGN-R: ALIGN (H, Verb stem-R, P Stem)
The right edge of every tone belonging morphologically to a verb stem is aligned with the right edge of a P Stem.
- (8) NON-FINALITY:
The final syllable of the verb stem is not part of the P Stem (in specified tenses).

The constraints above ensure that the right edge of a verb stem coincides with the right edge of a prosodic stem (except in the tenses where (8) excludes the final syllable from the P Stem) and that a tone (H in this case) aligns with the right-most edge of the verb stem (P Stem). ALIGN-R is satisfied if a high tone is associated with the final syllable of the P Stem, and a violation is incurred in each case where the H tone is separated from the final syllable of the prosodic stem. Thus, the constraints predict that H will appear on the final syllable in the P Stem and in tenses where the final syllable of the verb stem is not part of the P Stem (by Non-Finality), the prediction is that the H will appear on the penult of the entire verb stem which will now be the right edge of the P Stem. This accounts for all the tenses in which H appears on the penultimate syllable (e.g. *tí-ma-pukuút-a* — ‘we clean all the time’). It follows that in the tenses where H appears on the penult, Non-Finality is not dominated to ensure that H does not appear on the final syllable of the verb stem. Conversely, Align-R dominates Non-Finality in tenses where the H appears on the final syllable of the verb stem (e.g. *ndi-ku-mú-pukuút-á* — I am cleaning him/her).

To account for cases where H is placed on the initial syllable of the entire verbal construction (e.g. *tí-ma-pukuút-a* — ‘we clean all the time’), Myers and Carleton

(1996) proposed an alignment constraint which affects the left edge of the Prosodic Word (PW) as shown in (9).

(9) ALIGN-L: (H-L, PW-L)

Associate H with the left-most tone-bearer in the prosodic word.

The constraint above, which applies to all H tones in the word (and not just those from the verb stem) is dominated by the constraint ALIGN- R so that association of the H is with the left-most tone bearing unit in the word except in the verb stems.

In order to account for the tenses which assign a high tone to the vowel after the tense prefix, Myers and Carleton proposed a constraint* DOMAIN (specific to the tenses which do this) which builds on the notion that there is a constituent called AUX which groups all inflectional morphemes preceding the verb stem and this constraint essentially stipulates that the high tone of the tense morphemes concerned does not appear within AUX. The stipulatory nature of constraints like this and their implications are discussed below. Let us now turn to a consideration of problematic cases involving grammatically assigned high tones in some grammatical tenses and contexts in Chichewa.

4. Problematic cases in Chichewa tonal patterns

Some of the key issues in the realisation of high tones in Chichewa verbal constructions are: i) the interaction between lexical and grammatically assigned H tones; ii) the complex interplay among rules which affect high tones (for instance, Tone Doubling/Shifting, Plateauing, Deletion/Meeussen's Rule, Retraction) and how this affects their surface positions; iii) the number of opacity effects arising from the failure in the application of some tone rules in various grammatical contexts (cf. Downing & Mtenje 2017). As it has been noted, Chichewa, like many other Bantu languages, has a complex system of verbal tone patterns most of which are determined by morphological factors like the presence of tense, object, aspectual and other prefixes. The question which arises is what is the extent to which this intricate morphologically based tonal system can be accounted for using the apparatus of approaches like OT. We start by looking at morphological contexts with sequences of H tones.

4.1. The application of Meeussen's Rule in Chichewa

There are many instances in the Chichewa tonal system where sequences of H tones are attested either as a result of the juxtaposition of two morphemes with underlying high tones or the placement of H next to a morpheme with a high tone in a tense which assigns H to a particular domain.

Let us look at high-toned suffixes and how they contribute to H tone sequences. There are some suffixes in Chichewa which are underlyingly high-toned like the intensive suffix /-its/ets/. When this suffix is added to a verb root which is also lexically H toned, a sequence of H tones appears as shown below.

(10) A sequence of H tones from H toned root and H toned suffix

Underlying representation		Surface forms
gon-H]+ ets-H]	gon-eétsá	sleep excessively
sleep-int suf		
kanilil-H]+its-H]	kanilil-iíts-á	get stuck excessively
get stuck-int suf		

The juxtaposition of H tones creates a structure which violates the Obligatory Contour Principle (OCP) which prohibits such a sequence. One strategy for avoiding this violation is to delete one of the H tones. The common rule in Bantu which accomplishes this is Meeussen's Rule. The forms in (10) show that Meeussen's Rule applies there and deletes one of the two H tones and the remaining one appears on the final vowel of the verb stem from where it spreads leftwards to the second mora of the long penultimate vowel through the vowel retraction rule referred to above.

Another example of the application of Meeussen's Rule in Chichewa is shown in (11) where an HH sequence appears on the penult and the final vowel through the tense and the the intensive suffix, respectively.

(11) Meeussen's Rule applying in penult H plus H toned suffix contexts

- | | | |
|----|---|-------------|
| a) | fulumil-a (low toned verb) | hurry |
| | hurry-fv | |
| b) | fulumil-iíts-á (intensive suffix with final H and retraction) | hurry a lot |
| | hurry-int-fv | |
| | tí-ma-fulumíil-a (H assigned to penult by present habitual tense) | we hurry |
| | 1sp pl-prh-hurry-fv | |
| c) | tí-ma-fulumil-iíts-a (intensive suffix H deleted by Meeussen's Rule) | we |
| | 1sp pl-prh-hurry-int-fv | hurry a lot |

The last form above clearly shows that the H tone of the intensive suffix has been deleted, thus explaining why it surfaces with a low tone. Hyman and Mtenje (1999) discuss in detail the interaction between lexical and grammatical H tones in Chichewa and provide a theoretical framework to account for the phenomenon.

Let us consider a case where the OCP seems to be violated as shown below.

(12) H tones in distant future tense

tí-dzá-púkuut-a	we will clean in the future
1sp pl-dis fut-clean-fv	

It was pointed out above that in accounting for the tone pattern in this tense, rule-based frameworks have proposed that the distant future tense prefix is underlyingly high toned and it also assigns H to the initial vowel in the verbal construction. The H on the tense prefix also spreads to the following vowel, thus creating a sequence of three H tones. It may appear on the surface as if Meeussen's Rule does not apply here, thus resulting in a violation of the OCP.

However, it has been noted that Meeussen's Rule applies in the structure in (12) when an object prefix, which has an underlying H tone, is added as seen in the example below.

(13) ndi-dzá-mú-pukuut-a

If the H of the object marker had doubled, we would have expected a high tone to appear on -pu but since there is no H there, we must conclude that it did not double because it was deleted by Meeussen's Rule. The H which appears on the object prefix must have come from the tense marker through spreading.

To account for the difference between (12) and (13) with regard to the application of Meeussen's Rule, Hyman and Mtenje (1999) and Kanerva (1990) proposed that the rule applies in the domain largely known as the Macrostem—a structure comprising the object prefix and the verb stem. This explains why the rule fails to apply to the H of the tense prefix in (12), which is outside the Macrostem, but applies in (13).

There are other contexts which have also been identified where the OCP is violated. For instance, Moto (1989), Kanerva (1990), Downing and Mtenje (2017) and others have shown that sequences of H tones are tolerated across a proclitic-noun boundary and across prosodic words.

In OT and other related theoretical frameworks, it is possible to derive these facts from the interaction of domains-sensitive constraints. For instance, the constraint against the occurrence of sequences of high tones is the OCP itself which states that 'identical adjacent elements are forbidden'. This constraint can be restricted to affect only HH sequences within a Macrostem. But what these approaches do not make transparent are the opaque effects of the interaction among a number of rules and morphological contexts in which some HH sequences appear. Let us consider some cases involving the object prefixes.

4.2. Object prefixes and tone assignment

There are a number of morphological contexts in which object prefixes contribute to the overall tone patterns. We will consider some of them in the sections below. We start with imperatives.

4.2.1. Object prefixes in imperatives

(14) OM H tone in imperatives

	Verb	Gloss
a)	dzi-fótókozeel-é refl-explain-fv	explain to yourself
b)	ndi-fótókozeel-é lsp-explain-fv	explain to me
c)	fótókozeel-é explain-fv	explain to me

Downing and Mtenje (2017) and Hyman and Mtenje (1999) have shown that the imperatives appear with a high tone on their final vowels. When an object prefix is

added, the high tone still occurs in that position. It is debatable, for contexts where the object marker occurs, whether the final H comes from the object prefix or it is the one from the imperative construction. In either case, a high tone is added to the final vowel and this accounts for the H on the final vowels in (14). The H on the verb stem is attributed to the object prefix which places its H on the vowel after it, from where it spreads to the following syllable. What is particularly striking is the example in (14c) which has no morphologically overt object prefix but tonally functions like the forms with full object prefixes and has H on the first two syllables of the verb stem. In a rule-based framework, which recognises tonal melodies associated with each tense (cf. Downing & Mtenje 2017), this can be easily accounted for by having a tone melody for imperative constructions with object prefixes which have H on the final vowel and on the first vowel of the verb stem.

In an OT framework, however, the inputs for (14b) and (14c) would be different and would look like those in (15) and (16), respectively.

(15) input for *ndi-fótókozeel-é*
ndi-fotokozel- é

(16) input for *fótókozeel-é*
fotokozel-é

The relevant constraints which would be used to evaluate the outputs and their ranking are OCP>Non-Finality>Align as proposed by Myers and Carleton (1996) and these would be supported by Faithfulness Constraints as shown in (17) and (18).

(17) MAX-IO: Every element in the input has a correspondent in the output

(18) DEP-IO: Every element in the output has a correspondent in the input

It should be noted that in order to account for the optimality of (14b), both of these faithfulness constraints would not be violated, since there is faithfulness between the input H and output H tones. The only violation of DEP-IO would be the extra surface H tone on /-to/ (which comes through spreading). On the other hand, the optimal output for (22d) would incur double violations of DEP-IO. We need to point out that adding an extra H tone on the verb in the input structure to (14c), where there is no object prefix, does not improve the situation because there will be two adjacent H tones (one on the verb and the other on the final vowel). This would be a violation of the highly ranked OCP. All this makes it difficult, from the constraints set available, to account for the optimality of both (14b) and (14c), which belong to the same grammatical construction but have to be representationally different in their inputs and be assessed differently with respect to the constraints but attain the same level of optimality.

4.2.2. *Object prefix tone and its interaction with other rules*

As has already been pointed out, one of the biggest challenges of non-derivational approaches (e.g. OT) to grammatically conditioned tone facts like the contexts in

which the OCP may be violated is the fact that they fail to capture the effects of the several rules which disturb the positions of H tones in the verb stem. Below we give examples of surface forms of monosyllabic verbs which are derived by the application of two rules, Tone Bumping (Hyman & Mtenje 1999; Kanerva 1990) and Retraction and which appear to violate the OCP. Consider the examples below in the Distant Future tense.

(19) Tone Bumping and H Retraction in short verb and long verb stems

Monosyllabic verbs	Gloss	Long verb stems	Gloss
ndí-dzá-múú-ph-á	I will kill him/her	ndí-dzá-mú-pukuut-a	I will clean him/her
lsp-disfut-op-kill-fv		lsp-disfut-op-clean-fv	

In the long verb, each of the first three syllables has an independent H tone. The subject prefix gets its H from the tense maker, which also has its own underlying H tone. The object prefix also has an underlying high tone. The context meets the condition for the application of Meeussen's Rule on the H tone of the object prefix since it is within the Macrostem. The rule applies and this explains why the object prefix H does not double to the next syllable. However, the monosyllabic verb, which similarly has successive H tones on the first three syllables, has H on the object marker which appears to have resisted Meeussen's Rule and, hence, violates the OCP. Note that this H cannot be as a result of the spreading of the H of the tense prefix because the condition for Tone Doubling is not satisfied.

An OT type of analysis of the two future tense forms would not penalise the output in the longer verb for violating the OCP because it has no H on the object marker. However, the evaluation of the output of the monosyllabic verb stem would (erroneously) penalise it for having violated the OCP since the object prefix has a high tone. Thus, in accounting for outputs in one and the same tense, there would be two different evaluations with regard to the violation of the constraint OCP. In one form, the longer verb, the highly ranked OCP would not be violable and yet in the shorter form, the same constraint would be violable. This raises conceptual challenges on the whole issue of whether one and the same constraint can have different rankings within the same grammatical construction.

In rule-based derivational accounts of tone melodies/patterns which consider underlying tone representations and the rules that apply to them to derive surface forms, a problem like this does not arise because there are three tone rules which have interacted to produce the surface form in the monosyllabic verb. The first important point to note is that the OCP is obeyed in both forms because, while Meeussen's Rule applies in the longer verb stem, in the shorter verb stem the H of the object prefix has undergone a rule termed 'Tone Bumping' (Kanerva 1990; Hyman & Mtenje 1999) which pushes a high tone that is preceded by another high tone one syllable to its right. As it may be appreciated, the effect of this rule is to avoid a violation of the OCP, just like Meeussen's Rule does. After Tone Bumping, which puts the H of the object prefix on the final syllable of the monosyllabic verb in (19), two other rules apply. The bumped tone is retracted to the second mora of the long penultimate syllable by the independent rule of High Tone Retraction

referred to earlier, thus creating a contour tone on that syllable, and then another rule, called ‘High Tone Plateauing’ (Kanerva 1990), levels the contour tone to yield a long penultimate syllable with level H tones. This creates the impression that Meeussen’s Rule has not applied. As it can be appreciated, while the rule-based derivational analysis recognises the respect for the OCP in both forms in (17), an OT type of analysis which only looks at surface forms (outputs) without considering their ‘derivational history’, erroneously concludes that one form (the monosyllabic verb) violates the OCP when, in fact, it does not if its underlying form and the rules that applied to it are taken into account (see Downing and Mtenje 2017 for more examples of this type).

The forms in (19) also show another challenge for constraints-based analyses. If we look at the final vowels, we note that the longer verb ends in a low tone while the monosyllabic verb has a high tone on the same final syllable. In evaluating optimal outputs for these forms the one which has H on the final syllable (the monosyllabic verb) will not incur a violation of the constraint Align-R while the longer verb will because it has no H which is aligned with the right edge and yet this violation does not seem to attract any serious penalty with respect to its optimality. In fact, there is no other constraint whose violation or lack of it, would distinguish between these two outputs in terms of their optimality, other than the OCP violation in the short verb but which we have already noted has no impact on its optimality. Now, it is difficult to appreciate why these optimal outputs, both of which are in the same grammatical construction, should vary with respect to this alignment constraint, especially since it is not based on the length of its input. In fact, when other longer verb forms are considered, one notes that all of them behave like the polysyllabic output in (18) with respect to the violation of this alignment constraint as shown below.

(20) Monosyllabic verb	Gloss
a) á-tíí-dy-á	they will eat us
3sp-op-eat-fv	
b) ndí-múú-mw-á	I will drink it
1sp-op-drink-fv	
Longer verb	Gloss
á-tí-meeny-a	they will beat us
3sp-op-beat-fv	
ndí-mú-vundikiil-a	I will cover him/her
1sp-op-cover-fv	

A constraints-based account thus clearly misses a generalisation which makes all longer verbs end in low tones (and thus be misaligned on their right edges with a high tone). On the other hand, a rule-based approach attributes this difference in the tonal patterns between monosyllabic verbs and longer verbs to the interaction among the following rules: Tone Bumping, Retraction and Plateauing. This is further illustrated by the fact that when the monosyllabic verbs are made longer by the addition of suffixes, as would be expected, they take the tone pattern of the longer verbs and, therefore, appear with no high tone on the final vowel as seen below.

- | | |
|--|--------------------------|
| (21) Monosyllabic verb with applicative suffix | Gloss |
| a) á-tí-dy-eel-a
3sp-op-eat-applic-fv | they will eat for us |
| b) ndí-dzá-mú-ph-eel-a
1sp-disfut-op-kill-applic-fv | I will kill for him/her |
| c) ndí-mú-mw-eel-a
1sp-disfut-op-drink-applic-fv | I will drink for him/her |

Again, the fact that monosyllabic verbs with suffixes have the same tonal pattern as polysyllabic verbs would not follow straightforwardly from a constraints-based approach to Chichewa tonal melodies/patterns.

Let us consider additional examples of short and long verb stems which have object prefixes.

(22) H on final vowel of long verb stems in imperatives

- | | |
|---------------------------------------|--------------------|
| a) mu-fótókozeel-é
2sp-explain-fv | explain to him/her |
| b) ndi-fótókozeel-é
1sp-explain-fv | explain to me |
| c) fótókozel-é
explain-fv | explain to me |

(23) No H on final vowels of imperatives with monosyllabic and bisyllabic verbs

- | | |
|------------------------------|--------------|
| a) múu-ph-e
op-kill-fv | kill him/her |
| b) ndii-th-e
op-finish-fv | finish me |
| c) a-méeny-e
op-beat-fv | beat them |

In the forms in (23), both monosyllabic and bisyllabic verbs have H on the penultimate syllable but not on the final vowel while those in (22) do. This would be difficult to account for in a constraints-based approach because within the same grammatical construction, there would be two different rankings for the constraint Align-R, depending on whether the verb is monosyllabic/bisyllabic or polysyllabic. The optimal output candidates for the polysyllabic forms in (20) would not violate Align-R (presumably due to its high ranking) since their right edges are aligned with a high tone while optimal output candidates for the shorter verbs would violate that constraint (presumably because it is lowly ranked) since their right edges are not aligned with high tones. Now, given the fact that Align-R is a highly ranked constraint and also that there is no other known constraint whose high ranking would optimise the outputs in both (22) and (23) (irrespective of their differences in the violation of Align-R), it is difficult to explain how within one and the same grammatical construction, a constraint could be ranked differently for the same set of data.

In a rule-based account of the data above, the tonal differences follow straightforwardly from the effects of Meeussen's Rule. As Downing and Mtenje

(2017) show, the object prefix places a high tone on the vowel to its immediate right followed by tone spreading where appropriate. In monosyllabic verbs, the H remains on the object prefix itself. The imperative construction also appears with a high tone on the final vowels in the verb stems in both (22) and (23). The major difference between the short and long verb stems is that in the former, (23), the H on the final vowel is adjacent to the H assigned to the vowel on the right side of the object prefix. This triggers Meeussen's Rule which deletes the stem final high tone (to avoid an OCP violation), leaving only the H on the penultimate vowel which then becomes a contour tone following the independent vowel lengthening process on that syllable. In the longer verbs in (22), the high tone assigned to the final vowel of the verb stem is not adjacent to that placed on the first vowel of the verb stem by the object prefix, hence Meeussen's Rule does not apply. This explains why the H tone on that vowel survives. These tonal facts show that a rule-based derivational account, which takes into consideration the interaction among the various tone deletion and shifting rules, is more explanatory than the OT alternatives.

In the sections above, we have observed that the high tone contributed by an object marker in various grammatical contexts interacts in various ways with other tones. However, as it will be noted below, there are specific tenses in which the object prefix contributes a high tone and also others where it does not. This shows that the assignment of tone by the object prefix is tense-determined. The question which arises then is how a constraints-based approach can predict these morphologically idiosyncratic tonal effects of the object prefix in Chichewa. We turn to a discussion of this issue in the next section.

4.2.3. *Object marker H tone assignment in selected tenses*

Downing and Mtenje (2017) provide a detailed discussion of affirmative and negative tenses in which an object prefix adds a high tone to the verb stem or the prosodic word. For purposes of this chapter, we will select a few of them to illustrate the point.

(24) A sample of tenses in which an object prefix places a high tone on the penultimate syllable

	Verb	Tense	Gloss
a)	ndi-ku-témbéleel-a 1sp-prog-curse-fv	present progressive	I am cursing
b)	ndi-ku-mú-témbeléel-a 1sp-prog-op-curse-fv	present progressive	I am cursing him/her
c)	ndi-na-témbéleel-a 1sp-rcp-curse-fv	recent past	I cursed, recently
d)	ndi-na-mú-témbeléel-a 1sp-rcp-op-curse-fv	recent past	I cursed him/her recently

(25) A sample of tenses in which an object prefix does not assign H to penult

a)	ndi-ná-témbeleel-a 1sp-smp-curse-fv	simple past	I cursed
b)	ndi-ná-mú-tembeleel-a 1sp-smp-op-curse-fv	simple past	I cursed him/her

- | | | | |
|----|--|----------------|----------------------|
| c) | ndí-dzá-témbeleel-a
1sp-disfut-curse-fv | distant future | I will curse |
| d) | ndí-dzá-mú-tembeleel-a
1sp-disfut-op-curse-fv | distant future | I will curse him/her |

While in a constraints-based approach, the tonal effects of the object prefix in cases where it places a high tone to the penultimate syllable can be accounted for by highly ranking the alignment constraint Non-Finality so that it is not violated in those tenses, what remains obscure is the very fact that the effects of the contribution of the H by the object prefix are idiosyncratic and cannot be predicted since it is purely tense determined. Thus, Non-Finality is essentially a constraint which is basically tense-(morphologically) dependent and requires a stipulation regarding the tenses in which it applies, as Myers and Carleton's (1996) analysis of these tonal facts does.

It may be argued that the question of whether a constraint is phonologically or morphologically determined falls outside the realm of OT-based accounts and that what matters are the surface phonological outputs. While there may be merit in such reasoning, the sensitivity of constraints to specific tenses, as is the case in the stipulation of which Chichewa tenses are subject to Non-Finality, raises the question about the generality of constraints. It is a well-known fact that one of the fundamental principles of constraints in OT is that they are general and they are expected to apply with minimal sensitivity to language-specific conditions. Based on this, relating the application of constraints to specific tenses (or morpheme-specific conditions) removes part of their generality. Such statements may be seen as notational variants of stipulations or exceptions, a feature which one normally expects in rule-based approaches.

The main issue in the OT accounts of the complex morphologically determined assignment of high tones to various domains in the verb stem (cf. Myers & Carleton 1996) is that because there are many exceptions to the tonal processes, due to their morphological contexts, the constraints proposed also have many exceptions and include stipulations.

4.3. Tone spreading and its exceptions in Chichewa verbal tenses

Although tone spreading is predominant in Chichewa, there are many instances of tenses where the rule is blocked. We present some of them below.

(26) Some tenses in which H tone spreading does not apply (this H in bold)

	Verb	Tense	Gloss
a)	ndí-ma-fotokóoz-a 1sp-prh-explain-fv	Present habitual	I explain
b)	ndi-nká-fotokóoz-a 1sp-ph-explain-fv	Past habitual	I used to explain
c)	ndi-dzí-fotokóoz-a 1sp-nec-explain-fv	Necessitative	I need to be explaining
d)	ndi-kú-ngo-fótókooz-a 1sp-prog-asp-explain-fv	JUST tense	I am just explaining

- | | | | |
|----|--|---------------------|-------------------|
| e) | ndí-nga-fotokóoz-e
lsp-asp-explain-fv | EVEN IF tense | Even if I explain |
| f) | ó-sa-fotokóoz-a
pref-neg-explain-fv | Negative imperative | Do not explain |

As may be observed, the tenses (grammatical contexts) in which tone spreading fails do not share anything in common to allow for a general statement which defines the conditions governing high tone spreading. In a rule-based framework the situation would be handled by stipulating the tenses in which tone doubling does not occur and, given the nature of the approach, this is not unusual.

In constraints-based analyses, where constraints are expected to be general, the constraint responsible for spreading the H tone, Spread, would require a similar stipulation listing the particular tenses in which it applies. This situation is akin to the case of the Non-Finality constraint given above where the tenses in which it applies also need to be specified. The stipulatory nature of the constraints is the main issue of concern here because the context-listing approach is what would be expected of rule-based accounts and not a theory of constraints ranking which is based on the fundamental principle that such constraints are general and not morpheme-specific.

4.4. Lexical versus grammatical tones

Hyman and Mtenje (1999) observed that, in contexts where high tones assigned by grammatical elements like tense and object makers compete with lexical H tones, the former take precedence. To illustrate this point, we consider cases where a grammatically assigned high tone on the final vowel of the verb stem (e.g. the subjunctive) coincides with that of a high-toned suffix (e.g. intensive suffix -its/ets) and a lexical verbal high tone. This is shown in (27) where the high tone verb [khululuúk-á] is used.

- (27) 3 H tones on final vowel
 khululuuk[H]-its[H]-a[H] [khululuk-iíts-á] ‘pardon intensively’
 pardon-intens-fv

In (27), there is a sequence of three H tones, all of which are on the final vowel [a]. The question which arises is what happens in such a context. If all the three H tones were to be phonetically available, we would expect a super high tone on that final vowel, but this is not the case. Instead, there is only one H tone and the surface form is [khululuk-iíts-á]. One of the H tones must have taken precedence but at this stage it is not easy to tell which one it is. Clear evidence to show that the grammatical tone overrides the lexical tone is shown in (28) where the tense assigns H to the penultimate syllable of a high tone verb which also contains a high-toned suffix.

- (28) Grammatical H overrides lexical H
 ndí-ma-khululuk-iíts-a
 lsp-prh-pardon-intens-fv

In (28), the present habitual tense assigns a high tone to the penultimate syllable and the H tone of the intensive suffix (-its) and the lexical H of the verb appear on the final vowel. As can be seen from the form there, it is the H which is assigned by the tense that overrides the other non-grammatical H tones (through Meeussen's Rule). As Hyman and Mtenje (1999) show, this is the pattern found in all cases where a grammatically assigned H competes with a lexical high tone. In rule-based derivational accounts, a statement to this effect is made in the formulation of the rules affected. However, it is difficult to see how this important behavioural difference in the status of grammatical and lexical tones can follow from the architecture of a constraints-based approach like OT.

4.5. Cindali morphology and tone assignment

Working within an OT framework, Mtenje (2006) proposed an analysis of verb tense tonal facts in Cindali which are very close to those noted for Chichewa as discussed in the sections above. Cindali has tenses which also place a high tone on various positions in the verb stem. Specifically, tense prefixes assign a high tone to two positions in the verb. In the infinitive, the present progressive, the near future and the distant future tenses, a high tone appears on the penultimate vowel of the verb stem while in the simple past, present habitual and past habitual tenses H occurs on the antepenultimate vowel. This is illustrated below.

(29) H on penult vowel

Verb	Tense	Gloss
tu-ku-tendekéš-a 1sp pl-prog-prepare-fv	Present progressive	we are preparing
tu-kwisu-ku-kungulúš-a 1sp pl-fut-roll-fv	Distant future	we will roll
íti-wa-kungulúš-e nr fut-sp3-roll-fv	Near future	they will roll soon

While H appears on the penultimate vowel in (29), there are cases in the same tenses where the H appears on the antepenultimate instead of the expected penult vowel when other verbs are used, as shown below.

(30) H on the antepenultimate vowel

a) a-ku-dúmul-a 3sp-prog-cut-fv	Present progressive	s/he is cutting
b) tu-kwisu-ku-túngul-a 3sp pl-fut-pick	Distant future	we will pick
c) íti-mu-fúmbul-e nrfut-2sp-reveal-fvthat in	Near future	you will reveal

To distinguish cases where the tenses place H on the antepenultimate vowel as opposed to the penult Mtenje (2006) observed that the former end in -ul and -il, which are also independent suffixes.

It is clear from (29) and (30) that it is the specific morphemes, and not the tenses per se, which determine the location of the high tones. In order to account for the occurrence of a high tone on the penultimate vowel Mtenje (2006) proposed the constraints below.

(31) Final Foot (FinFt)

Place a left-headed final foot at the end of each word

(32) Final Foot H (FinFt H)

Place a high tone at the head of each foot

The assignment of H by specific morphemes was captured by the language-specific constraint in (33).

(33) No High (NoH)

*ul/il H

The morphemes -ul and -il do not bear a high tone.

Mtenje (2006) also discussed related cases of tenses in Cindali in which a high tone appears on antepenult vowels in one set of words as in the cases in (30) and the penult in other forms as in (29). These are the simple past, present habitual and past habitual tenses. The simple past tense has three allomorphs which also have different tonal effects: namely, -ite, -iše and -ile and whose choice seems to be lexically determined. The -ite- allomorph occurs in verbs with H on the antepenult vowel while the others appear in verbs with penult H tones. This is illustrated in the examples below.

(34) H on antepenult vowel in past tense forms with suffix -ite

- | | | |
|----|---------------|---------------|
| a) | a-kwél-ite | s/he excelled |
| | 3sp-excel-pst | |
| b) | wa-wúk-ite | they went |
| | 3sp pl-go-pst | |

(35) H on penult vowel in past tense forms with suffixes -iše and -ile

- | | | |
|----|-------------------|---------------|
| a) | n-a-potw-iše | I failed |
| | 1sp-fail-pst | |
| b) | wa-fumbw-íle | they revealed |
| | 3sp pl-reveal-pst | |

To account for the cases where the H appears on the antepenult forms instead of the penult, a morphological constraint similar to (33) was proposed as shown below.

(36) *iteH

The morpheme -ite does not bear a high tone

What is clear from the data above is that tense allomorphy determines whether H appears on the penult or the antepenultimate syllable in each of the tenses involved and to account for this the proposed analysis sets up ‘mini grammars’ for each tense and an evaluation of candidates is made with reference to the specific allomorphs and how the outputs respect the highly ranked constraints (33) and (36) which prohibit H tones on the allomorphs shown there.

Let us now consider the implications of these allomorph-based constraints for the general nature of constraints in an OT type of approach. One of the main tenets of OT is that constraints proposed for the analysis of any linguistic data ought to be simple and universal and that any language-specific effects are expected to follow from the interaction of the constraints. There are two issues with the OT analysis proposed for the Cindali data. Firstly, it is clear that the occurrence of a high tone on the penult or antepenult syllable in the tenses concerned is solely determined by the type of allomorph the tense has. It is not surprising, therefore, that the analysis proposed requires the use of constraints which are allomorph-specific. But as pointed out in the Chichewa cases discussed above, the statement of morpheme (or in this case allomorph-specific) constraints is extremely language-specific and this is a departure from the general spirit of OT which expects constraints to be universal (or at least general) and where the language-particular effects are supposed to follow from the general architecture of the constraints.

The second issue is that while the resort to ‘mini grammars’ has been made in other approaches within the framework of OT, this has been in situations where a group of related grammatical categories have shown similar properties which are then describable by a given constraint or set of constraints. In the case of Cindali, the constraints are stated for each allomorph in a specific tense and this does not warrant a ‘mini grammar’.

While the question of how far constraints in OT can embrace language-specific aspects remains, it is important to note that the challenges which constraints-based approaches have faced in their attempts to account for the complex tonal facts in Bantu languages arise from the fact that the majority of the processes are morphologically driven and hence have many opaque effects arising from the nature of morphological operations. The superiority of OT type analyses of other Bantu phonological phenomena has been acknowledged, but the area of morphologically determined tonal processes still has residual challenges for these approaches as shown for Chichewa and Cindali in this chapter.

Conclusion

In this paper, we have considered aspects of the complexities of Chichewa verbal tones and some of the opaque effects which arise from a number of morphological contexts in which high tones appear. These include violations of the OCP and the failure of tone spreading in some tenses. We have also shown how the complex interaction among rules like high tone deletion, shifting, plateauing and spreading obliterates the real sources of high tones in verbal structures. The suppression of lexical tones by grammatically assigned tones in contexts where the two compete has also been highlighted. It has also been pointed out that, in Cindali, allomorph-specific constraints are needed in order to account for tone assignment in its verbal tenses.

Overall, the opaque effects which arise from morphological contexts pose a challenge to constraints-based analyses where these are stipulated (or listed in some cases) instead of following from the general architecture and universal nature of constraints. On the other hand, rule-based derivational accounts of the complex verb tonal patterns of languages like Chichewa and Cindali are able to handle the peculiarities of morphologically determined tonal effects because, by their nature, they accommodate morpheme-specific features.

Abbreviations used

The following abbreviations have been used in this chapter:

APPLIC	= applicative
ASP	= aspect
CL	= class
DIS	= distant
FUT	= future
FV	= final vowel
INF	= infinitive
INTENS	= intensive
NEC	= necessitative
NRFUT	= near future
OP	= object prefix
PERF	= perfective
PH	= past habitual
PL	= plural
PREF	= prefix
PRH	= present habitual
PROG	= progressive
PST	= past
RCP	= recent past
REFL	= reflexive
SMP	= simple past
SP	= subject prefix
SUF	= suffix

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Chapter 5

Sound perspectives? Speech and speaker dynamics over a century of Scottish English

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1. Introduction¹

The impact of perspective on scientific description, thinking and theories, has been recognised for a long time. Baird's (2004) reflections on 'thing knowledge' chart the role of instruments on scientific theory and thought. More recently, Huggett (e.g. 2017) uses the example of shifts in archaeological survey tools, from tape measures and dumpy levels to digital total stations (theodolites), and the accompanying digital visualisation mapping tools, not only to illustrate the transformative impact of digital archaeology, but also to point to the cognitive constraints which the same tools and software introduce for archaeologists more generally (following Dijkstra 2012: 129 on the influence of computer software on cognition). In linguistics too, many different aspects of perspective matter.

This paper is concerned with two aspects of analytical perspective which relate to our understanding of linguistic variation. Structured variability in language occurs at all linguistic levels and is governed by a large range of diverse factors. One aspect of perspective concerns linguistic variation in time and social space: viewed through a synchronic lens, linguistic variation informs our appreciation of language in general, and linguistic and social-cognitive constraints on particular languages at particular points in time; a diachronic lens expands the focus across time. As Weinreich et al. (1968) point out, structured variability is integral to linguistic description and explanation as a whole, by being at once the stuff of the present, the reflexes of the past, and the potential for changes in the future. The other aspect, which is often not explicit, is the role of analytical perspective on linguistic variation itself.

My observations are based on a particular kind of structured variability, phonetic and phonological variation, within the sociolinguistic context of the recorded history

¹ The research summarised here has been carried out in collaboration with a number of colleagues, including: Eleanor Lawson, Brian Jose, Rachel Macdonald, Tamara Rathcke, Jim Scobbie, Morgan Sonderegger, Márton Sóskuthy, and Claire Timmins. I am very grateful to the Leverhulme Trust for their major grant awards, F/179/AX (Accent change in Glaswegian) for my initial survey of Glaswegian, and more recently, RPG-149 (The role of phonetic variation in sound change), which supported the construction and initial analyses of the Sounds of the City corpus. The ultrasound research has been supported by ESRC grants RES-000-22-2032 and RES-06-23-3246. I am very grateful to the editors of this volume, and in particular to Rajend Mesthrie, for their invitation to participate, and their friendly support.

of Glaswegian vernacular across the 20th century. These two aspects of perspective frame the key research questions for this short paper:

RQ1: What are the ‘things’ which we observe? How do different analytical perspectives on phonetic variation affect how we interpret that variation? Specifically, how do different kinds of observation — within segment/across a phonological contrast/even beyond segments — auditory/acoustic/articulatory phonetic — shape our interpretations?

RQ2: How are these ‘things’ embedded in time and social space? Specifically, how is this variation linked to shifts in social events and spaces over the history of the city of Glasgow? How do we know whether, or when, these ‘things’ might be sound changes (following Milroy 2003)?

I consider these questions by reviewing a series of studies (including some ongoing and still unpublished) on two segments in Glaswegian English, the first thought to be stable and not undergoing sound change (/s/), the second thought to be changing (postvocalic /r/).

2. Context

2.1. The city of Glasgow

Glasgow is Scotland’s largest city, located on the west of the populous Scottish ‘Central Belt’, its population including the conurbation is approaching 1.6 million (*Scotland’s Census*, 2011). By the end of the 19th century, Glasgow was immensely wealthy and was close to her peak (Gibb 1983). The city’s fortune derived originally from transatlantic trade in goods and slaves, and came to rely on heavy industry, such as shipbuilding, foundries, locomotive and other engine building, with all the supplying industries (e.g. Reed 1999). Glasgow’s economic decline was slowed by the two World Wars, both of which generated essential business. But, even as early as the late 1950s, competition first from America and then Eastern Europe led to sharp industrial decline. Urban regeneration was promoted in 1990 when Glasgow was designated European City of Culture. The city reinvented itself as a home of service industries, especially call centres, apparently banking on the ‘trustworthy’ and ‘friendly’ accent, but mainly the available workforce (Paddison 1993).

The economic boom in Glasgow resulted in the construction of large numbers of tenement blocks, especially from the 1890s (Edwards 1999). The population of the city centre increased exponentially as whole families lived in either two rooms, or a ‘single end’ (Horsey 1990). The structure of the buildings and Glaswegian families meant that tenements housed entire extended families, sustaining substantially close-knit social networks (Milroy 1980). By the end of World War II, Glasgow’s overcrowded slums were infamous. Glasgow’s City Corporation tackled the problem with two partly completed urban redevelopment plans (Smith & Wannop 1985). Between the late 1950s and 1974, 70 per cent of the tenements were demolished (Markus 1999). Poor quality housing ‘schemes’ were built on the edge of the city, without amenities or transport links. Extended families who were used to living together, were either moved to the schemes, sometimes at different ends of the city, or into blocks of flats which led to intense isolation (Horsey 1990).

The changes in urban housing over the 20th century constitute internal factors relevant for language change. Social network structures shifted from (1) very dense close-knit networks, likely to function as a social ‘norm enforcement mechanism’, probably preserving linguistic patterns and resisting innovations (Milroy 1992) via (2) fragmented networks, which would fail to exert such a strong enforcing influence, and also be vulnerable to incoming variation, to (3) close-knit networks once more, now able to enforce existing and new variation (Milroy 1987). Ideological social stratification was also sharpened. During the urban redevelopment between the 1950s and 1970s, over 250 000 working-class Glaswegians were dispersed through the (well-intentioned) actions of the Glasgow Corporation, mainly middle-class. Aspirational upper-working-class and lower-middle-class Glaswegians were encouraged to occupy garden suburbs and new towns. There was — and still is — demonstrable resentment about the implementation of the resulting housing policies, which is reflected in jokes, stories, poems and songs.

Key external factors, in terms of the impact on mobility, both inward and outward, were the two World Wars. Glasgow sent a substantial number of men to fight in the First World War, and as an important transatlantic port and industrial base, also witnessed substantial numbers of visitors, workers, and traders (GCC 2014). The Second World War also incurred more substantial social and geographical mixing. Glaswegians at home were exposed for the first time to other dialects. In 1923, the BBC opened its first broadcasting station outside London, in Glasgow. From the 1960s, television was introduced and swiftly became widespread. The impact of television on social behaviours was less immediately obvious than had been anticipated, but was discernible also for language in Glasgow (Stuart-Smith et al. 2013).

2.2. Language in Glasgow

Scottish English, spoken in Glasgow, is recognised (Aitken 1979) to be a socio-linguistic continuum consisting of the confluence of two distinct linguistic varieties. ‘Glaswegian vernacular’ (also called ‘Glasgow Scots’), spoken by working-class communities, continues West Central Scots, itself derived from a Northern form of Old English (Macafee 1983). Scottish Standard English continues a more recent variety of Southern English (first imported into Scotland after James VI of Scotland and I of England moved his court to London), which gained impetus after the Union of the Parliaments in 1707. The aristocracy, and then the emerging middle-classes, sought to eradicate vulgar Scotticisms and to speak English, especially for education, the law and the church. Scottish Standard English is spoken by the middle-classes to distance themselves from Glasgow ‘slang’ (Corbett & Stuart-Smith 2012).

Overt discourses of linguistic correctness and ‘talking properly’ circulate in Glasgow, especially among school teachers and professionals (e.g. Macaulay 1977). This contrasts with pejorative views of Glasgow vernacular as ‘slang’ and ‘bad language’. Both varieties are ‘enregistered’ in Agha’s (2003) sense of being systematically associated with clusters of social and cultural ideologies relating to communities and their stereotypes. Aspects of linguistic enregisterment are shared across Glasgow, such that many can put on either ‘voice’, and both are parodied in local comedy (see e.g. this sketch from a local comedy show, *Chewin’ the Fat: Translating for the Neds*: <https://www.youtube.com/watch?v=xk0sS4IFGXA>).

Glasgow was one of the first dialects to be scrutinised using Labov’s variationist methods by Macaulay (1977); the variables he observed (vowels and glottal stop) appeared to be stable. Macafee (1983) was the first to observe some ‘sporadic’ innovations and levelling of traditional features (e.g. [f] for /θ/ in e.g. *tooth*, [k] for /x/ in e.g. *loch*). Subsequent work in the 1990s and 2000s established the integration of innovative phonetic variants, levelling of some traditional variants, but also maintenance of non-standard Scots variation, resulting in an altered yet still clearly distinctive early 21st-century Glasgow vernacular (e.g. Stuart-Smith et al. 2007).

3. Data

The language data are from several sources. The Sounds of the City (SoTC) project developed an electronic corpus of spontaneous, naturally-occurring speech with orthographic transcription, and utterance, word and phone-level segmentation from 138 speakers, stored in a LABBCAT database (Fromont & Hay 2012), allowing fast search and extraction. The corpus covers over 100 years of Glaswegian in real time and apparent time (e.g. Labov 1994); see Table 5.1.

Table 5.1: The real- and apparent-time structure of the Sounds of the City corpus.

DECADE OF RECORDING	OLD (67–90 yrs) (Decade of birth)	MIDDLE-AGED (40–55 yrs) (Decade of birth)	YOUNG (10–17 yrs) (Decade of birth)
1970s	3 f, 3 m (1890s)	7 f, 7 m (1920s)	4 f, 6 m (1960s)
1980s	6 f, 6 m (1900s)	4 f, 12 m (1930s)	2 f, 5 m (1970s)
1990s	6 m, 6 f (1910s)	6 f, 6 m (1940s)	6 f, 6 m (1980s)
2000s	6 m, 6 f (1920s)	6 m, 5 f (1950s)	6 m, 6 f (1990s)

The real-time construct assumes that recordings made at different points in time can be compared to infer change over time (here from different members of the same city). The apparent-time construct assumes that speakers fundamentally acquire their language system around the age of 7/8 years old, and that this largely travels with them as they age. Thus examining the speech of a 70-year-old offers an effective window onto her speech some 60 years earlier. Few have tested the validity of the apparent time construct, but Sankoff and Blondeau’s (2007) panel study of rhotics in Montreal French suggests that it is valid for many members of a community, but not all.

The SoTC recordings are amenable to auditory and acoustic phonetic analysis, and provide the data for /s/. The data for /r/ are from the SoTC corpus and three other corpora: (1) the Berliner Lautarchiv corpus (BL), a set of six short recordings of Scottish soldiers made in German prisoner-of-war camps in 1916/17 (Stuart-Smith and Lawson 2017); (2) the West Lothian 2007 audio-Ultrasound-Tongue-Imaging (UTI) corpus (WL07), spontaneous conversations from 14 working-class boys (12–13 years) in Livingstone (Lawson et al. 2008); and (3) the Western Central Belt 2012 audio-UTI corpus (WCB12), elicited speech from 16 working- and middle-class girls and boys (12–13 years) made in Glasgow (Lawson et al. 2018). Full details of the

phonetic and statistical analyses summarised in sections 4 and 5 are given in the publications, or are available on request for work in progress. Statistical results reported were significant with p -values <0.05 , if not subjected to further correction.

4. /s/: stable gender marker or change in progress?

4.1. Sex and gender in /s/ in the 1990s (Stuart-Smith 2007b)

By the late 1990s, phoneticians were questioning whether sex-induced physiological differences in vocal tract size were entirely responsible for female English speakers consistently showing higher frequency /s/ than male speakers. Female speakers might also signal social gender through using more fronted /s/ articulations (Flipsen et al. 1999). At the time, as in many phonetic and sociolinguistic studies until very recently, ‘sex’ was taken to refer to physiological/biological sex, whereas ‘gender’ referred to social presentation of gender identity, assuming two gender categories, ‘(presenting as) male’, and ‘(presenting as) female’.² Socially-constructed gender differences relating to social class are clearly evident in Glasgow society; English in Glasgow offered an ideal context to discover whether /s/ was governed by sex or gender or both.

Stuart-Smith (2007b) analysed all instances of /s/ from a read wordlist (e.g. *seven, ice, icy*) recorded in 1997 from 32 speakers, stratified by gender, social class, and age (older, 40–60 years; younger, 13–14 years). Following Jesus and Shadle (2002), spectral measures of peak and front slope were calculated from Long Term Average Spectra as illustrated schematically in Figure 5.1.

Spectral peak mainly reflects differences in front cavity size/length; smaller/shorter cavities will show higher peak frequencies. Slope differences will shift with cavity differences, but also in response to the shape and degree of constriction.

Figure 5.2 shows that both sex and gender affect Glasgow /s/. Female speakers have overall higher peaks than males, but working-class girls’ peak measures are much lower, and pattern with those of male speakers. The study confirms /s/ as a stable variable governed by both sex and socially constructed gender in read speech in the 1990s. The most striking result is the stark distancing of working-class girls from their middle-class counterparts to the extent that they cluster with men. Such sociolinguistic polarisation is reminiscent of Eckert’s (2000) ‘burned-out’ as in Burnout versus Jock girls in Detroit, and likely relates to both the re-formed close-knit social networks in the inner-city and the accompanying entrenched class-based ideologies. The read wordlists may have enhanced the differentiation further; Stuart-Smith et al. (2007) found that reading the wordlist to the university fieldworker lead to working-class adolescents taking the stylistic opportunity to use more, rather than less, non-standard variants for almost all variables.

2 There are now numerous studies of /s/ which take a theoretically more nuanced view of sexuality and gendered identities, including now on Glaswegian English.

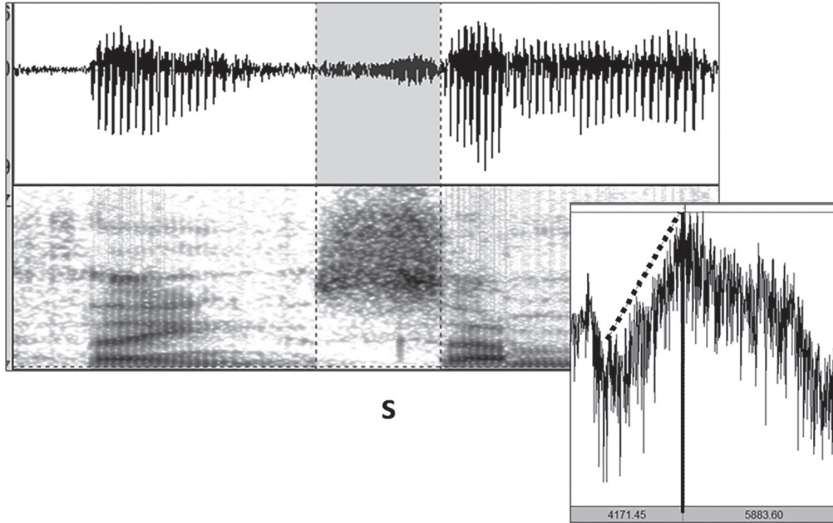


Figure 5.1: Long-term average spectrum (lower right panel) showing peak (solid line) and front slope (dashed line) for /s/ said by a working-class woman in the phrase, 'I think some of the'. /s/ is shaded on the waveform and spectrogram (back panel).

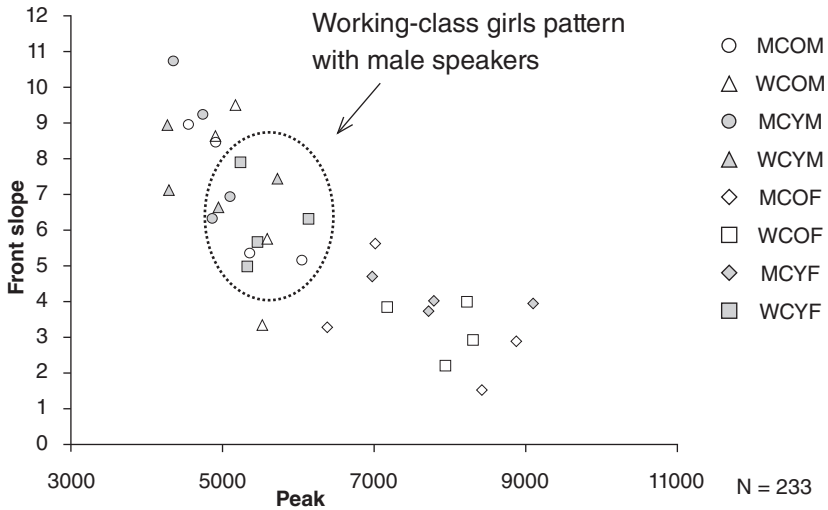


Figure 5.2: Average spectral peak (Hz) and front slope (transformed dB) for /s/ in 32 Glaswegian speakers recorded reading wordlists in 1997 (MC = middle-class; WC = working-class; O = older; Y = younger; M = male; F = female); adapted from Stuart-Smith (2007b, Fig. 3)

4.2. Gender in /s/ and /ʃ/ over time (Stuart-Smith, in progress)

In 2016, I returned to /s/ in Glasgow, changed observational and temporal perspectives, and asked a new set of questions. If a city and its society change over time, to what extent should we anticipate linguistic shifts too? Being kids in the 1970s was different to being adolescents in the 1990s; if social constructions of gender have shifted over time, are these reflected in gendered changes in /s/? In particular, were the 1990s working-class girls' lowered /s/ variants in 4.1 a recent development? And if /s/ is changing, does this entail a shift in /ʃ/ too? Is /s/ more socially informative than /ʃ/ as I had assumed before (cf. Eckert & McConnell-Ginet 2003)? How do our measures affect what we can interpret? Here I report the preliminary results from this new real- and apparent-time study on sibilants in Glasgow.

The new sample comprises spontaneous speech from 32 working-class speakers recorded at two time points, in the 1970s and the 1990s, stratified by gender and age; the 1990s speakers are the same as the previous study. Spectral measures of peak and front slope were calculated in Praat from Long Term Average Spectra, from all possible instances of stressed word-initial /s ʃ/, giving 5095 tokens.

4.2.1. The view from the peak

The main result for peak is a significant three-way interaction for *sound*, *gender* and *decade of birth* (Figure 5.3).

Female speakers show overall higher peaks than males, but only for /s/. Over time, real-time differences can be seen only for /s/ and for female speakers. Women born in the 1940s show higher peaks than those born in the 1920s, but the reverse is seen in girls. Girls born in the 1980s and recorded in the 1990s show lower peaks than those born in the 1960s and recorded in the 1970s. The 1990s girls show similar peak frequencies to the women born in the 1920s, and show the least difference from male speakers.

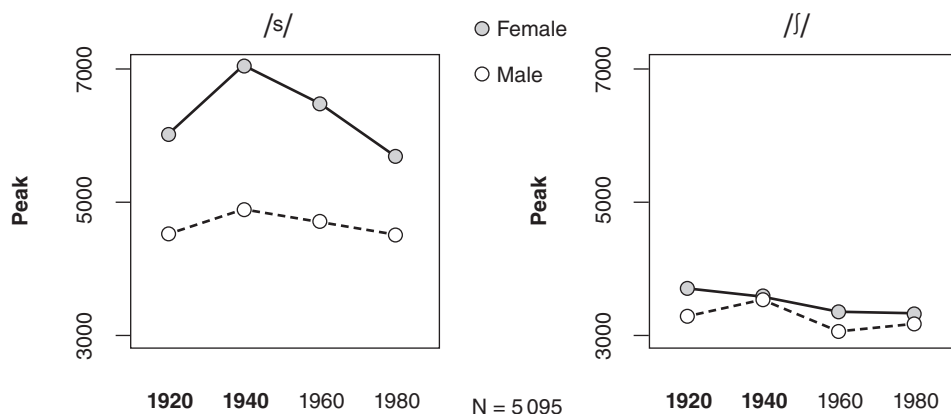


Figure 5.3: Linear Mixed Effects Model (LMEM) estimates of spectral peak (Hz) for initial /s ʃ/ for 32 Glaswegian vernacular speakers by decade of birth (bold font = older; light font = younger), sound and gender.

Thus far, the peak results reconfirm those of the first study, showing that the acoustic realisation of /s/ is governed by social gender (if the differences were only sex-induced, the girls of similar age and vocal tract size should show similar peak frequencies, but they don't). They also add information about /ʃ/, showing that the production of this sound also overrides any physiological constraints — all speakers irrespective of sex show the same low peak frequencies. They also partly confirm the prediction that shifts in social gender might be reflected in speech: the 1990s girls produce lower frequency /s/ than the 1970s girls, and in doing so, they reduce the male/female gender difference in /s/ in spontaneous speech over time. But we can also observe that the 1990s girls seem to be not so much matching male norms, but reverting to older vernacular female Glaswegian norms. This kind of reversal has also been found for other non-standard Scots variables, in the increased use of e.g. *hoose* for *house* in the same speakers (Stuart-Smith 2003).

4.2.3. The view from the slope

The main result for slope is also a significant three-way interaction for *sound*, *gender*, and *decade of birth* (Figure 5.4). /ʃ/ generally shows higher values than /s/, but not for the boys born in the 1980s and recorded in the 1990s, who show a real- and apparent-time increase with respect to the all male speakers. The girls recorded in the 1990s also show significantly higher slope values than the other female speakers. Slope values for /ʃ/ show real-time increases all speakers bar girls.

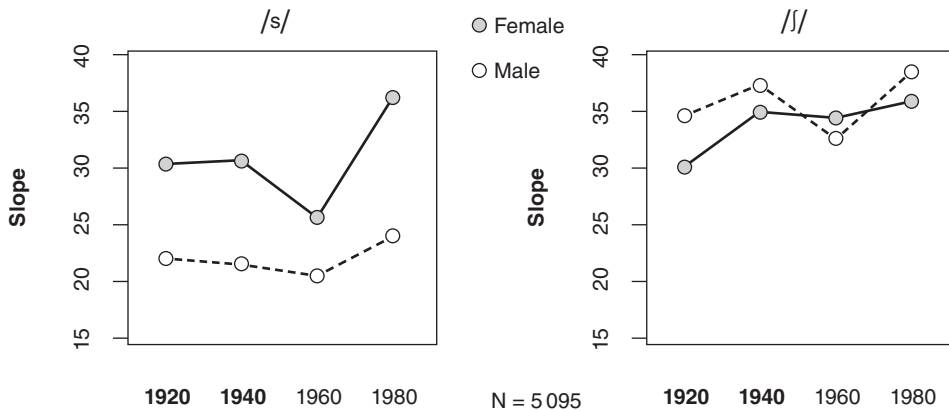


Figure 5.4: Linear Mixed Effects Model estimates of spectral front slope (dB) for initial /s/ /ʃ/ for 32 Glaswegian vernacular speakers by decade of birth (dark font = older; light font = younger), sound and gender.

Adding slope enables new inferences not available from considering peak alone. We see for the first time that boys too show real-time shifts; changes in working-class male identity from the 1970s to the 1990s seems also to entail subtle but significant changes to /s/ production. Specifically they altered their /s/ production so that a key aspect of their acoustic energy distribution, and so auditory quality — sounding more ‘retracted’,

is much more like that of /ʃ/. And, for the first time, /ʃ/ production emerges as both socially variable, presumably socially informative, and possibly undergoing change.

4.3. Changing perspectives on /s/ in Glasgow: Implications

These two studies of Glasgow /s/ show several differences in analytical perspective which are rewarding. Expanding focus from /s/ to the sibilant /s ʃ/ contrast, allows us to observe for the first time linguistic and social constraints on the production of both sibilants (not just /s/), and possible change in both sibilants over real- and apparent-time. Inspection of spectral peak confirmed the influence of sex and gender on the synchronic and diachronic acoustic production of /s/, but only for girls. Adding the measure of spectral slope showed that boys are also changing their /s/ production, albeit differently from girls. It also uncovered likely change in progress for /ʃ/, and showed that for this variety at least, /ʃ/ also appears to be socially informative.

Standing back, expanding the temporal window to an effective real- and apparent-time span of 60 years suggests that Glasgow vernacular sibilants may not be as stable as previously assumed. The real- and apparent-time differences in sibilant acoustics are most evident in the speech of adolescents born in the 1980s and recorded in the 1990s. Their childhoods in turn coincided with the reformation of close-knit networks in the inner-city and peripheral estates, following the period of substantial urban destruction and redevelopment. The first study showed these same working-class girls frozen in a snapshot, polarised from the middle-class girls to the extent that they patterned with men. Now we can infer that this was the result of a fairly recent change in /s/ production, likely enhanced by additional persona construction for reading the wordlist in the presence of the university fieldworker.

5. Postvocalic /r/: long-term change in progress (with a twist)

5.1. Postvocalic /r/ at the end of the 20th century (e.g. Stuart-Smith et al. 2014)

Scottish English is classically observed to be ‘rhotic’, showing consonantal /r/ in coda position in words such as *car* or *card* (Wells 1982). But even by 1901, there were reports of weak rhoticity as characteristic of the urban speech of the ‘degenerate Glasgow-Irish’ (Trotter in Johnston 1997: 511); refined speakers of the same period used apical trills, taps, or postalveolar approximants (e.g. Grant & Dixon 1921). The first sociolinguistic studies on Scottish postvocalic /r/ were in Edinburgh, and showed erosion of the audible consonantal /r/ (‘derhoticisation’), to plain vowels, or vowels with pharyngealisation, especially in working-class male speakers. Female speakers preferred postalveolar approximants (e.g. Speitel & Johnston 1983). At the same time, Macafee (1983) reported similar auditory weakening in Glasgow. Subsequent sociolinguistic studies in the 1990s and 2000s confirmed extensive derhoticisation in working-class speakers (male and especially female) alongside postalveolar or retroflex approximants in middle-class speakers (e.g. Stuart-Smith 2003).

In the early 21st century, there is now a clearly polarised sociolinguistic continuum for Scottish rhoticity, from audibly non-rhotic or weak rhoticity in working-class speech to auditorily strong rhoticity in middle-class speech, with most advanced derhoticisation in Glasgow. The continuum seems to combine the reflexes of two changes in progress. The first appears to be a long-term change from below, likely dialect internal, towards derhoticisation, which may or may not ultimately lead

to non-rhoticity. Anglo-English non-rhoticity doesn't seem to be relevant mainly because the phonetic outcomes of derhoticisation are so different from Anglo-English non-rhotic cognates. The second seems to be a change from above, led by middle-class female speakers, exploiting the postalveolar approximant to mark confidence in a specifically Scottish (not British), middle-class (not working-class) identity (Johnston 1985).

5.2. The variants of postvocalic /r/ (Lawson et al. 2014; Lawson et al. 2018)

Establishing the auditory and acoustic phonetic variants for postvocalic /r/ has posed major challenges. The first sociolinguistic studies used narrow auditory transcription, translating the responses to systematic repeated listening in terms of IPA symbols reflecting quasi-articulatory categories (Ogden 2009). Different approaches to transcribing derhoticisation entailed different theoretical perspectives. Recognising a large number of phonetic variants emphasises the process of variation and change as gradient ('R-vocalisation', e.g. Stuart-Smith 2003). Coding the outcome as categorically 'rhotic' or 'non-rhotic' (e.g. Romaine 1979), suggests a final outcome of 'R-Loss'. Auditory categories for weakly articulated consonantal /r/ have also been hard to assign, especially distinguishing between instances where no articulation was audible at all (no /r/, 'plain vowel') and those where the vowel was produced with some residual secondary articulation, such as velarisation, uvularisation or pharyngealisation (derhoticised, 'velarised', 'uvularised', 'pharyngealised' 'vowels').

The acoustic characteristics of approximant rhotics with an anterior constriction are well known from studies of American English /r/. The expected acoustic signature is a drop in frequency of the third formant (F3) (Stevens 1998). The acoustics of weak rhotics, especially those produced with a very weak dorsal articulations, have received far less attention. Contrary to anterior approximant /r/, uvular and dorsal approximant /r/ typically shows a high or rising F3 (Ladefoged & Maddieson 1996). Weak, derhoticising /r/ can also be tricky to segment acoustically, because there may be little visible acoustic energy corresponding to an 'r' on the spectrogram. It may also be difficult to obtain F3 measures because weak /r/ also shows attenuation of acoustic energy above the second formant (F2) (Stuart-Smith 2007a).

Shifting our observational phonetic perspective to articulatory investigation using Ultrasound Tongue Imaging (UTI) has resolved some of these difficulties. UTI uses medical ultrasound technology to produce visual dynamic representations of tongue configuration and tongue movement (for information on UTI, see www.seeingspeech.ac.uk).

Lawson et al. (2008) show how UTI data from the WL07 corpus reveal a likely mechanism for derhoticisation through gestural asynchrony. Specifically, we found derhoticised variants to show (1) an early tongue root retraction gesture, and (2) a tongue tip raising gesture, delayed with respect to the offset of voicing (see Figure 5.5). This articulatory pattern helps account for the difficulty in fixing an auditory percept for derhoticising /r/, as the delayed anterior gesture may be partly or fully masked by a following consonant, or it may be partly or fully inaudible if voicing has ceased. The early tongue root retraction gesture accounts for auditory impressions of pharyngealisation or uvularisation being produced in pre-rhotic vowels. The shifts in cavities resulting from this complex gestural interplay may also account for the

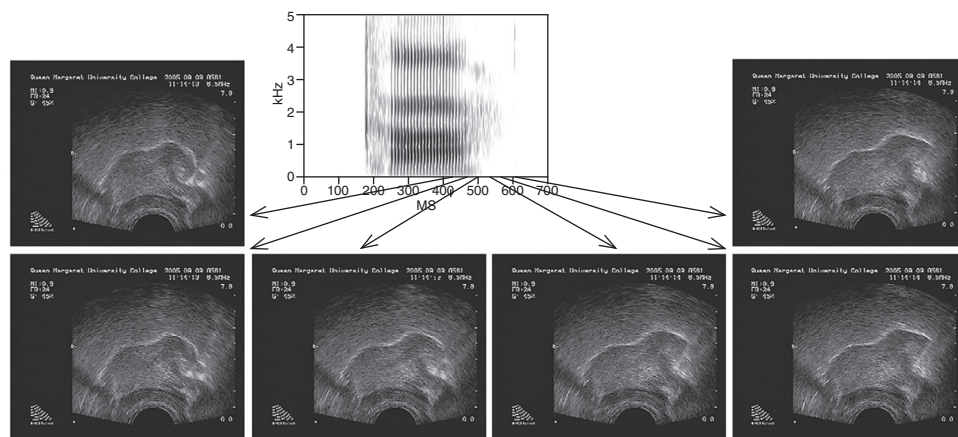


Figure 5.5: Key UTI frames of an adult male speaker from West Lothian, saying ‘car’ with a covert tip-raising gesture in the production of coda /r/. The ultrasound images correspond to the time point of the spectrogram. (Tongue root is to the left and tongue tip to the right of the UTI frame.) Moving through the frames, it is clear that the tongue front and tip begins to rise after voicing has ceased, and achieves its maximum raising well after (Fig. 9 in Stuart-Smith et al. 2014).

weakened acoustic energy during the rhotic, and the ambiguous acoustic signal which requires listener experience to parse accurately (Lennon 2017).

Our most recent study, Lawson et al. (2018), provides the first empirical confirmation for the articulatory ~ acoustic ~ auditory relationship pertaining for the entire sociolinguistic continuum of postvocalic /r/, from derhoticising speakers through to those who show auditorily very strong /r/. We analysed 44 /r/-ful words elicited from 15 speakers from the WCB12 corpus to consider the links between auditory /r/-fulness (using an auditory r-index), acoustic characteristics (F1 to F4 values) and articulatory timing (relationship of the maximum anterior tongue gesture with respect to the offset of voicing). Figure 5.6 shows the plots for the strongest correlations.

From the derhoticisation pole, the results show: the greater the tongue gesture lag, the weaker the auditory percept, and the higher the F3 value; conversely from that of auditory /r/ strengthening, they show: the earlier the tongue gesture, the stronger the auditory percept, and the lower the F3 value. We could only uncover these phonetic relationships for derhoticisation because we used a socially stratified speaker sample, which is still unusual for laboratory phonology (Scobbie & Stuart-Smith 2012).

These changing analytical perspectives on phonetic characterisations of postvocalic /r/ have substantially influenced our thinking and interpretation (reciprocally) as we have carried out our research together over the past 20 years. For example, as our auditory constructs shifted from categorical ‘present’/‘absent’ to fine-grained detailed phonetic variants, so did our conceptualisation of the phenomenon we were observing. The articulatory data revolutionised our understanding of what the variation might ‘be’, at last letting us understand why their acoustics were so difficult to capture, and why they were so ambiguous and hard to transcribe.

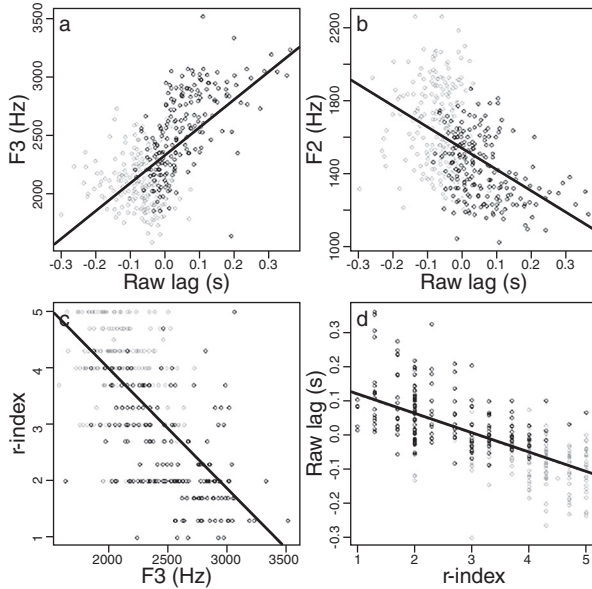


Figure 5.6: Scatterplots of strongest correlations for 15 adolescent speakers of Glaswegian: (a) raw lag ~ F3 (b) raw lag ~ F2 (c) F3 ~ r-index (d) r-index ~ raw lag. r-index runs from 1 = weakest (no /r/) to 5 = auditorily strongest ('schwar', a vowel with tongue bunching throughout; Lawson et al. 2013); positive raw lag indicates time of tongue maximum after offset of voicing, negative lag time of tongue maximum before offset of voicing. Working-class datapoints are black, middle-class datapoints are grey. (Fig. 3 in Lawson et al. 2018).

5.3. Postvocalic /r/ across the 20th century (Stuart-Smith & Lawson 2017)

I now move from these contemporary synchronic data to consider the results—and possible inferences—from two rather different real-time studies of derhoticisation. The first is reported in Stuart-Smith and Lawson (2017), who compare auditory data from the World War I soldiers with results from selected speakers from the SoTC corpus to achieve a perspective on postvocalic /r/ in Glasgow vernacular across the 20th century. All possible instances of postvocalic /r/ were transcribed: (1) from the six Western Central Belt BL men, born in the 1890s and recorded in 1916/17 (361 tokens); (2) from 32 speakers from the SoTC corpus, middle-aged men born in the 1940s and 1950s, and adolescent boys born in the 1980s and 1990s.

The results are shown in Figure 5.7. The most visually obvious result is that the adolescent speakers, born in the 1980s and 1990s, show much higher rates of absent or weak postvocalic /r/ (on average 70 per cent) than the other three speaker groups. By the 1980s, derhoticisation had joined the raft of consonant changes, including TH-fronting, which took off after gaining social-indexical meanings including urban toughness and 'street smarts' (Speitel & Johnston 1983: 27). This result is a repeat of those presented in Stuart-Smith et al. (2007) and Stuart-Smith et al. (2014); which show extensive derhoticisation in working-class adolescents in the 1990s and 2000s, especially in read speech. Their impact is derived from being viewed within the new

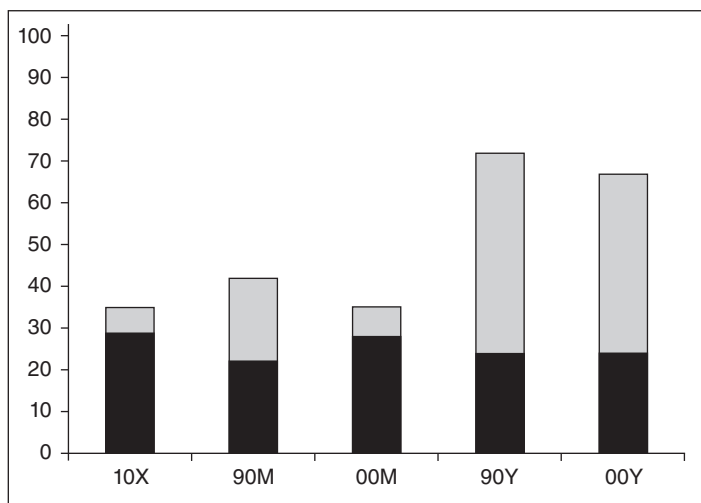


Figure 5.7: Percentage of weak rhotic variants of coda /r/ in the six Western Central Belt BL men (10X) and in the SoTC corpus for middle-aged (M) men and adolescent (Y) boys recorded in the 1990s (90) and 2000s (00). Derhotic variants are dark; non-rhotic/plain vowels are light; n = 4 048.

temporal perspective of the whole century; it is immediately clear how weak /r/ took off in the 1980s.

The second striking result concerns the early decades of the 20th century. Even in 1916/17, the soldiers are already showing, on average, 35 per cent of their postvocalic /r/ tokens, as weak or audibly absent. They also pattern with the middle-aged speakers, born five decades later, in the 1940s and 1950s. The occurrence of weak /r/ in the BL speakers also shows clear phonotactic conditioning, with some phonological contexts inducing more weakening than others (e.g. weakening is most likely in word-final, unstressed syllables, e.g. *butter*). Such phonotactic constraints can be explained by gestural delay (section 5.2), which may contribute at least part of the mechanism for derhoticisation as a phonetically-induced, dialect-internal, change. This finding suggests that phonotactically-conditioned derhoticisation is very likely to have been present in Glasgow dialect when the soldiers acquired their vernacular as children in the 1890s, and likely in the decades before then, thus stretching back the window for the early phases of this sound change.

5.4. How segmental is derhoticisation in the early 20th century? (Sóskuthy & Stuart-Smith 2017)

Finally, I present some preliminary results from an ongoing real-time study of derhoticisation in the early decades of the 20th century, which prompts a radical rethinking of the phonetic mechanisms for this change. Specifically, we have to recognise that the segmental derhoticisation observed at the end of the century may have been triggered by a non-segmental phonetic factor at the start of the century, voice quality, or the ‘quasi-permanent quality running through all the sound that issues from [a speaker’s] mouth’ (Abercrombie 1967: 91). Voice quality arises from

physiological factors, but is also acquired as an integral part of a speaker's dialect, indexing regional and social groups. Trudgill (1974) became convinced that the sociolinguistic variation he had observed in Norwich would be far better explained in terms of specific vocal settings, than considering segments in an 'atomistic' way. My early study of voice quality in Glasgow (Stuart-Smith 1999) had found more instances of 'velarised' voice (raised and backed tongue body) in working-class speakers, than the expected pharyngealised 'Glasgow voice'. I also wondered then about the extent to which secondary articulations of especially laterals and rhotics might influence overall impressions of voice quality. Our hypothesis was that Glaswegian might have experienced a real-time change in voice quality over the century, and that this in turn, might have helped trigger and/or spread /r/-weakening.

Our sample was drawn from the SoTC spontaneous speech recordings from 24 older speakers (67–90 years), male and female, recorded in the 1970s, 1980s, 1990s, 2000s and born respectively in the 1890s, 1900s, 1910s and 1920s. F3 tracks were taken for the V+/r/ sequence, e.g. *dear*, and hand-corrected. Our analysis had five steps:

1. Generalised Additive Mixed Modelling analysis of the formant tracks showed that male and female speakers born in the 1920s showed significantly high, and rising, F3 across the V+/r/ sequence consistent with an interpretation of weakened /r/ (cf. Figure 5.6).
2. A 'blind' auditory analysis of the /r/ variants did not show strong support for segmental /r/-weakening in these older speakers, though a trend to use weaker variants is visible in female speakers.
3. Acoustic analysis of F3 for all stressed tokens of the BOOT, CAT, COT, FACE, FLEECE, GOAT, STRUT vowels for all speakers (14 393 tokens) shows a significant real-time rise in F3 over the four decades (Figure 5.8).

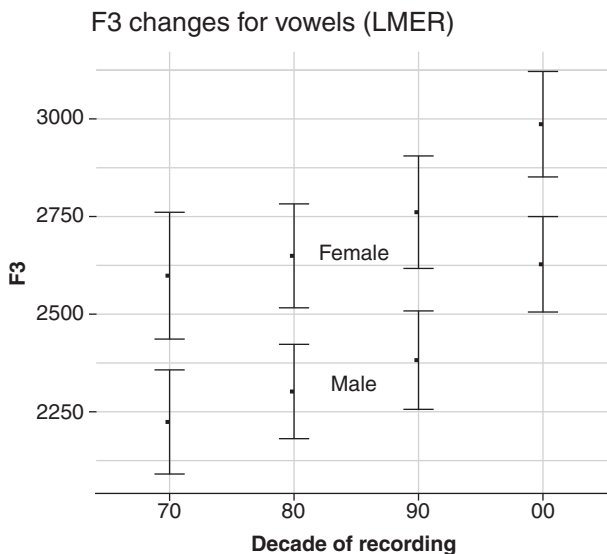


Figure 5.8: Linear Mixed Effects Model estimates for change in F3 (Hz) in seven stressed monophthongs from 24 older speakers of Glaswegian by gender and decade of recording. Women show consistently higher F3 values than men; F3 rises over the decades for all speakers.

4. A ‘blind’, auditory, Vocal Protocol Analysis (Laver 1991), focusing on lingual tip/blade, lingual body, and pharyngeal settings, on randomised three minute segments, showed a shift in auditory tongue body height over time. This is consistent with my judgements of velarised voice in working-class speakers reported in Stuart-Smith (1999).
5. Finally, the V+/r/ formant tracks were analysed again, but with F3 average for each speaker’s vowels included as a predictor. This allowed us to discover whether /r/ would show a rise in F3, above and beyond that already taking place in the speaker’s vowels. For male speakers, the F3 rise for /r/ was no longer significant; for female speakers, the F3 rise is still significant, but much reduced.

The key novel finding is the evidence for an acoustic and auditory real-time change in voice quality in Glaswegian, which effectively cancels out the acoustic segmental /r/ weakening for male speakers.

5.5. Rethinking the mechanism of postvocalic /r/ weakening over the 20th century (Sóskuthy & Stuart-Smith 2017)

What we have always considered to be a segmental change, may now have begun as a change in voice quality. I draw together some observations arising from these new observational and temporal perspectives:

1. A steady shift in voice quality, evidenced through rising F3 and auditory shift in tongue body height, was in progress by the 1890s, or began in the 1890s and continued. This may be related to the very substantial economic boom in Glasgow towards the end of the 19th century, which entailed substantial activity and trade in the city’s ports which were right in the heart of the city. We note that Liverpool and Glasgow were in close nautical contact, and Liverpool’s distinctive voice quality includes velarisation.
2. The World War I soldiers’ data show phonotactically induced derhoticisation of postvocalic /r/ by 1916/17, especially in unstressed prepausal syllables, e.g. *faither#* (Scots for *father*). Certain phonological contexts are more likely to incur gestural delay, and thus an audibly absent or audibly weak /r/. The articulatory data from WL07 show not only gestural delay, but also an early tongue root retraction gesture. Weak /r/ in these phonotactic environments is likely to have a weakened anterior gesture and audible secondary articulation on the pre-rhotic vowel from the early dorsal gesture. But we must also note that these speakers do, even at this stage, show some instances of weak/absent /r/ which are less phonotactically likely, showing some indications of more general segmental change in these younger adult speakers during World War I.
3. The auditory similarity between the voice quality setting and weak /r/ may have led to the voice quality setting being misparsed as a segmental property of coda /r/. In other words, a longer domain suprasegmental setting may have become associated with specific segmental variants given some auditory, acoustic and articulatory similarities, which in turn helped trigger increased use of weak /r/ variants in these contexts. The voice quality results suggest that women may have led the segmental shift, which would be consistent with the finding at the end of the century that working-class girls showed the most instances of no audible /r/ (Stuart-Smith 2003).

4. The middle-aged speakers from SoTC data pattern with the BL speakers, suggesting that for several decades Glaswegian vernacular experienced both a gradual shift in voice quality and phonotactically induced /r/-weakening, with perhaps more segmental weakening for some (probably female) speakers than others. (This interpretation rests on an evidence gap for the 1920s and 1930 which still needs to be filled.)
5. Derhoticisation then took off as a segmental change in the 1980s, as one of a group of non-standard, socially salient, consonantal features affording their speakers to maximally distance themselves from the ‘posh’, respectable, middle-class Glaswegians, especially when given the stylistic opportunities to do so (such as reading a wordlist to a university researcher; passing posh people on the street in the city, and so on; Stuart-Smith et al. 2007).

6. Conclusion

Even this brief discussion shows how much analytical perspective matters for understanding linguistic variation within and across time for a community. For /s/, shifting the perspective from /s/, to /s/ and /ʃ/, did not result in /ʃ/ as a dull foil against which /s/ sparkled. Rather — supported by the extended temporal perspective, and enhanced phonetic observation — both sibilants emerged as socially informative, both play a role in synchronic and diachronic gender construction for both boys and girls, and both are not stable but appear to be changing, likely at least partly in response to shifts in the city’s societal norms. What the new study currently lacks is the crucial comparison over time by social class; achieving an accompanying real-time Scottish Standard Glasgow corpus to parallel the SoTC corpus is an essential ongoing goal, in order to properly observe and understand linguistic variation in the context of the social dynamics of the city over time.

For postvocalic /r/, basic phonetic observation was extremely challenging during the early years when auditory and acoustic analysis lacked the powerful and insightful beam of articulatory data. Now we have made substantial progress by being able to establish for the first time, the key links between articulatory ~ acoustic ~ auditory data both for a derhoticising variety of any language, and for the entire sociolinguistic continuum for postvocalic /r/ in Scottish English in the early 21st century. Expanding the temporal perspective on derhoticisation with the comparison of speakers across the 20th century, from World War I to the 1990s, allows us the luxury of a sketchy view of the distribution of weak /r/ over time and social space. At this stage, like Milroy (2003), I find myself wondering just at what particular point in time this sound change can be assigned, and if indeed it can be pinned down successfully. After all, the loss of rhoticity in Anglo-English took place over several centuries (Dobson 1957). And that was probably an appropriate reflection, because the findings of the new study changed our observational perspective to encompass not only /r/ but also long-domain voice quality (i.e. redefine what the ‘thing’ is), and then demonstrated a likely important role for voice quality for understanding derhoticisation as a ‘change’ (i.e. how these ‘things’ are embedded in time and social space).

More generally, for both segments, and indeed for other aspects of phonetic and phonological variation, changing these analytical perspectives has pushed, and continues to push, us out of our comfort zone. We are forced to think hard and

differently about structured variability. In so doing, our reward is that we are then able to revisit key fundamental assumptions and interpretations for our linguistic data.

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Chapter 6

Adaptability and meaning potential

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1. Introduction: Language use and meaning¹

Studying language use, the province of linguistic pragmatics, is a fascinating enterprise. It is, after all, all about meaning. And therefore it touches every aspect of human life. The complexity of the task before us, however, has not always been in evidence in academic endeavours. More often than not—and quite understandably—scholars' preoccupation has been to concentrate on manageable chunks or, as today's business and research project jargon would have it, 'work packages'.

Within linguistic pragmatics as the study of language use, one such work package was defined by the long-time dominance of Grice's (1957) notion of (non-natural) meaning as 'the speaker's intention in the making of an utterance to produce an effect in the hearer by means of the hearer's recognition of the intention to produce that effect'. Though this was meant to describe a basic property of utterances in human languages, we must notice that in this definition meaning gets somehow 'detached' from language by getting located in the speaker's individual intentionality.

Grice's view has not remained unchallenged. For instance, the basis of Sperber and Wilson's (1986) relevance theory is the notion of 'ostensive' communication, which tries to account, not only for 'meaning' in utterances, but also for communication by means of showing or 'displaying evidence that'. But this so-called post-Gricean theory preserves the idea that what counts is the *overt evidence of an intention to produce a certain effect, belief, impression*. Hence, in this paradigm, intentionality remains central. That is, the goal of inferential processes, based on elements of coding and/or elements of context, is still to discover the speaker's (or, more generally, the communicator's) intended meaning. This also remains the basic line in Sperber and Wilson's (2015) recent article 'Beyond speaker's meaning'.

But the meaning that is (interactively) generated is *not only* the product of intentions. For instance, my intentions in writing this lecture do not fully determine your (the audience's) interpretations. What's more: this paper would not be a success if they did. To the extent that I am trying to raise interesting questions, I cannot fully grasp all the implications which the utterances I am producing have for my audience,

¹ This paper is a succinct rendition of a number of ideas that have been presented on a number of earlier occasions in the course of 2017, notably in Helsinki, Vienna, Shanghai, Beijing, Athens, Paris, Hong Kong and Antwerp (in that order). I am grateful for the useful discussions that have helped me a great deal to get this text into a more or less coherent shape. David Bradley's and Raj Mesthrie's useful comments on a first version are much appreciated.

not because they may ‘misunderstand’, but simply because of the concrete setting, with people with different theoretical, academic, experiential backgrounds, so that any audience members’ interpretations might be quite different to what I am trying to talk about and have ‘in mind’—and this is already carelessly formulated on the dangerous assumption that what is ‘in my mind’ would be clear ideas (rather than a mix of ideas and what others might want to call ‘impressions’).

Therefore, once we have started to detach meaning from language (by placing it in individual intentionality), we may not be able to avoid, *conceptually and theoretically*, even further detaching meaning from language, by fully recognising the role of ‘context’, allowing for processes of meaning generation far removed from individual intentionality (including the often less consciously monitored multimodal dimensions of communicative behaviour).

Methodologically, however, if we want meaning to remain an empirical object of investigation in spite of the intangible nature of many of its constitutive forces, there is a need for re-attaching meaning to language or linguistic form (as well as formal properties of multimodal behaviour). Central to the recipe for doing so is the notion of **contextual indexing**: we must be able to look for *observable traces revealing the specific ways in which language users (interpreters as well as utterers) orient to selected aspects of context*.² If we manage to do that, it becomes possible to replace the question ‘What did language user X intend utterance Y to mean in context Z?’ with ‘What IS the meaning of utterance Y in context Z?’ I have made this argument earlier.³ But at that time I forgot about a very important condition: it is only possible to do so *if ‘meaning’ is interpreted as ‘meaning potential’*.

Why do we need this focus on potentiality? That is what the rest of this paper will have to try and spell out.

2. Meaning potential and meaning-generating dynamics

Perhaps the most flattering thing one can say about human beings of the sapiens type is that they are meaning-making machines. Interactively generating meanings by means of language relies on three abilities.

Even though the world is highly structured, if you start looking at the nuts and bolts, it first appears to us as a relatively under-differentiated blur of meaning-making potential. In our interaction with this world, we develop cognitive and perceptual differentiation by using *our ability to capture it in categories*, to which we tend to link words. A second ability we invoke is to try and *understand the relations between categorised ‘entities’*, which we can then go on to conceptualise in terms of states or events, for the description of which we have evolutionarily developed a bunch of useful linguistic tools. Using those tools, moreover, requires a context of interaction in which we must invoke a third ability, *theory of mind*, to grasp what is happening in other people’s heads.

2 For more detailed comments on the role of context, in relation to structure, in a theory of pragmatics, see Verschueren (2008).

3 I am referring here to Verschueren (1995), in which a ‘pragmatic return to meaning’ was argued for.

The result is no longer the initial blur of meaning-making potential. We are really engaged in a dynamic process of making meaning when using our abilities to categorise, to establish relations between categorised entities, and to guess ‘what is in someone else’s mind’. But categories are always *approximative*, which is why lexical fields vary significantly across languages. Equally approximative is the establishment of relations between categories. That is why the same state of affairs can always be described in different ways, involving different perspectives. You can even express roughly the same idea either positively or negatively — we’ll come back to that later. When doing so, you may be expressing more or less the same idea, but there is a perspective reversal. You’re approaching the same ‘reality’ from two different angles.

Similarly, our ideas about what is happening in someone else’s mind is always *hypothetical*. But we must make hypotheses. Otherwise we do not know where or how to start saying what we want to say. We must decide what we can assume without making it explicit. We must decide what pieces of information can be left in the care of contextual indexing mechanisms, and which ones need to appear in the form of propositional content.

As a result of these approximations and hypotheses, the process of meaning-making is highly dynamic, and the product of meaning-making processes is not meaning in any strictly identifiable or fixed sense, but a new level of meaning potential, provided by the affordances of specific linguistic tools. This is the claim I will argue for in the remainder of this paper.

3. Adaptability and contextual indexing

The three abilities referred to in the previous section enable us to use language in such a way that we can more or less successfully communicate with a variable range of linguistic tools, the meaning of which is largely negotiable in actual use. In other words, they explain the *adaptability* that is involved.

A particularly central aspect of the adaptable dynamics of meaning-generating, as already hinted at, is the essential, but largely indeterminate, *interaction of explicit and implicit meaning*. Two basic observations in this respect concern the impossibility of total explicitness and the expectation of implicitness.⁴ There are at least two related design features of language: all languages (all utterances?) use a combination of implicit and explicit meaning, and all languages have structural means for ‘marking’ implicit meaning.

It may seem paradoxical to talk about ‘marking’ implicit meaning. After all, meaning that is ‘marked’ cannot be truly implicit. Yet the pragmatics literature is full of descriptions of devices to do so, ranging from deictic shifters, presupposition-carrying constructions and implication-triggering utterances, to unspoken assumptions carried along in someone’s discourse. All this means is that implicitness

4 The expectation of implicitness was shown, for instance, by Harold Garfinkel’s so-called ‘breaching experiments’ (see Garfinkel 1991). Garfinkel told his students to break expectations by persistently asking interlocutors to explain more clearly what they meant whenever they said something. Following such an instruction can make you extremely unpopular.

and explicitness are necessarily gradable notions. It is these phenomena that provide the **contextual indexing** that enables our methodologically necessary ‘tracing’ of language users’ orientation to context.

The ‘gradability’ involved in contextual indexing, or in the interplay between explicit and implicit meaning, means both that aspects of meaning are situated along some kind of scalar dimension and that this ‘situatedness’ is not fixed, so that meaning cannot be fully determined but only approached. That is why talking about meaning must involve reference to ‘meaning potential’.

Recapitulating: central to the argument I am trying to make is the notion of contextual indexing, conceived in such a way that the question ‘What does X mean?’ not only requires the extension ‘... in context Y’, but necessitates a reformulation in terms of *meaning potential*.

4. What’s new?

In fact, this is not such a new idea. Not only is there the obvious link with the notions of *adaptability* and *negotiability*, embodying the assumption (or admission) that language barely has any fully fixed form-function relationships (cf. Verschueren 1999), there is a clear link with a large variety of quite common notions implying **gradability** in natural language. Just consider Heather Burnett’s (2017) recent work which offers a logical, almost mathematical, approach to gradability, or Franke and Jäger’s (2016) plea for a ‘probabilistic pragmatics’. But the idea is much older, reflected already in grammarians’ concepts of *grammaticality* and *acceptability*, which, far from being absolute notions, are related to assumed meanings in a class of contexts, implying a gradable scale rather than a bipolar contrast. There is also a reason why, within the field of linguistic pragmatics, context has commonly been discussed in terms of *contextualisation*, emphasising a process rather than a ‘factual’ state of affairs. Another related notion is Duranti’s (2015) *intentional continuum*, emanating from the basic claim that the extent to which intention plays a role is entirely context-, institution- and culture-dependent, rather than something that is or is not there. The linguistic literature further abounds with gradable notions such as *saliency* (Giora 2003), *givenness* (Chafe 1976; Gundel et al. 2010), *epistemic gradients* (Heritage & Clayman 2010), *evidentiality* (Cornillie et al. 2015), and even *reliability* (McCready 2015). And two gradable continua are recognised by Sperber and Wilson (2015) in their attempt to go ‘beyond speaker meaning’, one from meaning to showing, and one from determinate to indeterminate (an example of indeterminate meaning being ‘Juliet is the sun’, and of determinate showing, pointing at the clock in response to ‘What time is it?’).

We may also want to compare our understanding of meaning potential, and the indefiniteness it entails, with Gibson’s (1986) *theory of affordances*. In Gibson’s psychology of perception physical properties of an environment provide different ‘affordances’ relative to properties of the animal moving about in that environment. Similarly, people’s behaviour or speech provides affordances for other people relative to who they are. Translated into our terms, an utterance does not have an identifiable fixed meaning; rather, it provides a highly adaptable complex of meaning potential.

Finally, we cannot avoid the comparison with Halliday’s lexically identical notion of ‘meaning potential’, dating back to 1973. In fact, for Halliday, language

may be more or less synonymous with meaning potential. He uses the term to designate the range of linguistic possibilities available to a language user on the basis of semantic networks of meaning choices, which often correspond to behavioural choices. For instance, to control someone's behaviour you can choose threats (which may be conditional or unconditional), appeals (where you have the further choice between pleas or blackmail), or rules (which can be general or specific). What I mean, by contrast, becomes clearer when distinguishing levels of potentiality.

5. Levels of potentiality

Level 1 is the undifferentiated level of context in its widest sense, where meaning is indeed only present in its potentiality. In principle, this is the unlimited range of everything that can potentially be made relevant for meaning-making processes. From this range, elements can be picked up and lifted into level 2.⁵

Level 2, then, is the perceptually and organisationally more differentiated context (resulting from an initial mobilisation of the three cognitive abilities underlying meaning-making dynamics, as discussed in section 2) which enables more specific forms of contextual indexing, more concrete affordances for generating meanings (ranging from physical over cultural and social to mental 'realities'). Let us call this the level of *environmental affordances*.

Level 3, finally, would then be the concrete level of *language-related affordances* provided by specific linguistic tools.

Levels 1 and 2 make my notion broader than Halliday's, while level 3 makes it more specific: the range of meanings that can be activated in relation to specific linguistic choices. I will concentrate here on level 3, but one should always keep in mind the connection with levels 1 and 2. But before going into further detail, I would like to present some elementary suggestions on how to 'map' meaning potential at level 3, using a simplified method of presentation which has already been tested on a couple of earlier occasions (see Verschueren 2016b; 2017).

6. Mapping meaning potential

The rudimentary tool for the mapping of meaning potential that I have used on a number of occasions (and that I will come back to later in this paper as well), starts from the structure of a theory of pragmatics represented in Figure 6.1 (and explained in Verschueren 1999). The underlying assumption, which this paper is also based on, is that language use is all about generating meanings. The central task of accounting for language use is to describe and explain the dynamics of the processes involved. In describing the dynamics reference must be made to (1) the contextual as well as structural coordinates of the choices made in utterance production and interpretation (the 'locus'), and (2) the status that the processes occupy in relation to the human mind (for which I use the term 'salience'). In other words, an account of the dynamic

5 In recent discussions of the Japanese notion of *ba* or *basho*, 'world', as a notion relevant to understand human communicative behaviour level 1 may correspond to what William Hanks (in a paper presented on 11–14 October 2017, in Paris, France, at the colloquium *Translation, Interaction and Context: Cross-disciplinary Perspectives*) called 'primary *basho*'.

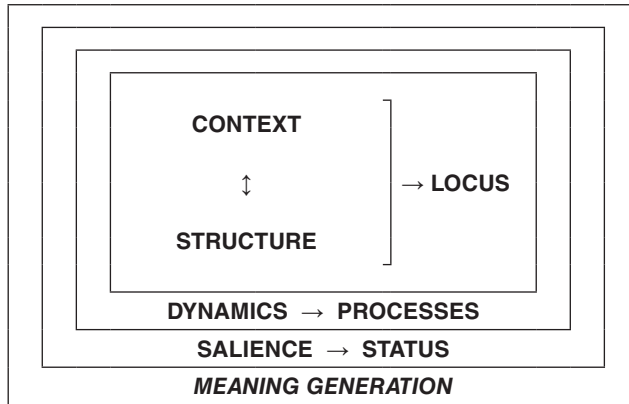


Figure 6.1: Structure of a theory of pragmatics

meaning-generating processes requires reference to three dimensions: context, structure, and salience. The dimensions to be ‘mapped’ are presented in Figure 6.2.

In order to get a two-dimensional presentation of the three-dimensional analysis I make use of the linearity of utterances, in other words, the sequential structure. Table 6.1 shows the resulting representational model, with sequential structure at the top, the elements of contextual meaning that are ‘indexed’ at the bottom, and different levels of salience of the processes involved in between. As I said, this remains a rudimentary model, especially because levels of salience are at this stage attributed intuitively, the basic question being: how likely is an aspect of implicit meaning to be questioned explicitly? If it is likely to be questioned it is close to the surface of explicitness (top layer in the diagram). The more unlikely an element of meaning is to be questioned, because it is carried along as if already agreed upon, the more digging will be required to bring it up; i.e. it will be situated at a deeper level (a lower layer in the diagram).

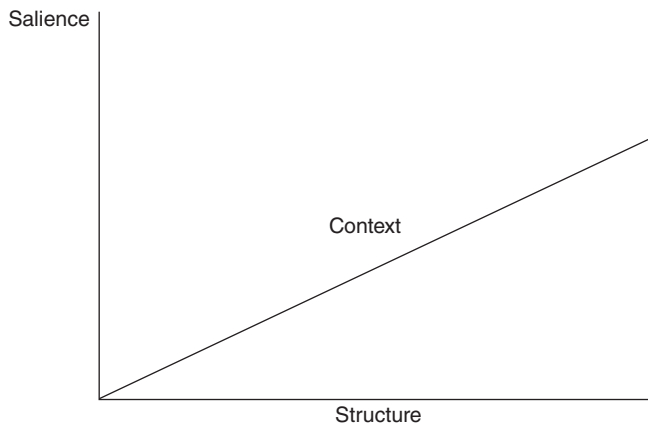


Figure 6.2: Dimensions to be ‘mapped’

Table 6.1: Two-dimensional presentation of the three-dimensional analysis.

	(Sequential) structure			
Saliency				
Contextual indexing				

7. Contrastive meaning potential

The meaning potential that is related to specific linguistic choices is easiest to gauge when languages and aspects of language use are contrasted. Hence the usefulness of contrastive pragmatics (cf. Verschueren 2016a), which may help us to account for the processes underlying the fact—recognised by all translators—that it is virtually impossible to tell the ‘same’ story in two different languages.

Recognising the processes is one thing. But how does the notion of ‘meaning potential’ (with the occasional aid of the representational model presented in section 6) help us to describe and explain the way in which meaning generation hinges on a language- and context-specific dynamic interplay between variable levels of explicit and implicit meaning?

In what follows I will borrow some examples from the pragmatic literature to illustrate (1) the idea of affordances provided by specific linguistic tools available in specific languages, and (2) the way in which meaning potential can be contrastively or differentially ‘realised’.

7.1. The affordances of available tools

Here is an example (the only one in this contribution that explicitly involves a simple form of multimodality; borrowed from Barron 2012) that may be talked about in terms of the affordances provided by the interaction between contextual aspects and formal aspects of languages. The example comes from an Irish anti-smoking campaign with the following central message:

(1) Break the habit for good

The English idiomatic expression ‘breaking a habit’ allows the campaign designer to exploit the possibilities of playing around with the literal meaning of ‘break’ as well. She does so by presenting the picture of a broken cigarette. The broken cigarette, in turn, is given the shape of the letter V, which is then, in its broken-cigarette-form, inserted in the ‘SAVE’ of a highlighted message:

(2) SAV ∇ E A FORTUNE

The idiomatic expression, in other words, provides specific affordances for the further construction of the anti-smoking ad. We may go as far as to say that the idiom enabled the campaign designer to focus on the saving aspect of stopping the habit of smoking. This is not to say that with different linguistic tools the same focus could not have been chosen. Of course it could. But now look at the specific affordances offered by

an aspect of the German language in a comparable German anti-smoking advertisement.

The visually highlighted message of the German advert is the following:

- (3) Rauchen macht stark
‘Smoking makes strong’

This clearly runs counter to expectations in a context in which propaganda in favour of smoking is forbidden. So you are forced to continue reading what follows in smaller script:

- (4) Stark abhängig — ähnlich wie Heroin
‘Strongly dependent — just like heroin’

The simple property of German adjectives that their identical form can also be used as an adverb, enables the campaign designer to easily focus on the addictive qualities of smoking. This would not work in English, where adjective and adverb are different. Again, this does not mean that a similar focus on addiction could not be achieved by different means. Of course it could. The point is simply that different linguistic forms bring along different meaning potential, at level 3 of potentiality.

7.2. Contrastive ‘realisation’ of meaning potential

The perceptually and organisationally differentiated context at the level of environmental affordances (level 2 of potentiality) provides the unstable and malleable raw material of meaning potential from which, at level 3, ‘sedimented’ realisation patterns are forged into the shape of concrete linguistic tools. *Language, or any specific language, is in other words, a conglomerate of sedimented realisation patterns of meaning potential.* At level 3, moreover, such sedimented realisation patterns provide further meaning potential: not only can the *patterns differ* (leading to differences in affordance for concrete realisations of potential and enabling us to make contrastive observations across language communities), but once available, patterns lead to *contrastive forms of usage* (opening up the way towards the actual realisation of pattern-specific affordances).

In what follows, I want to illustrate (1) different ‘sedimented’ realisation patterns for comparable meaning potential, as well as (2) different ways of using available patterns. Again, the examples have simply been taken from the available linguistic literature, and could be multiplied endlessly.

Positive vs negative constructions

Many events and states of affairs can be conceptualised either positively or negatively. Languages provide tools for expressing these different conceptualisations. But not all languages do this in the same way. Here is a typical negative construction in English:

- | | | | | |
|-----|---------|-----|-----------------|-------|
| (5) | subject | AUX | negative marker | VERB |
| | I | do | not | smoke |

Other languages (Dutch, German) do not need the AUX, but only the negative marker:

(6) subject	VERB	negative marker
Ik	rook	niet
[I	smoke	not]

Still others require more than one marker, though this may vary diachronically or in relation to stylistic requirements; French exhibits the ‘Jespersen cycle’ (cf. Van der Auwera 2009): starting from a single marker, adding one to strengthen negation, and then sticking to the added marker as single marker.⁶

- (7) French
- a) jeo ne di (before 1600)
 - b) je ne dis (pas) (1600 to 1700)
 - c) je ne dis pas (Standard written French)
 - d) je (ne) dis pas (Standard spoken French)
 - e) je dis pas (Colloquial French)
- ‘I don’t say’
(Jespersen 1924: 335–336; Rowlett 1998: 90)

Thus the same general meaning potential leads to different sedimented realisation patterns in different languages. But the available patterns are not necessarily used in the same way. A case in point (already referred to in section 2): sometimes the ‘same’ idea can be expressed either positively or negatively. Here is an example from *The Economist* (The World in 2013):

(8) It is easy to despair of the British economy
which appeared in its French edition as follows:

- (9) Il faut bien du courage pour ne pas désespérer de l’économie britannique
(Literally:) ‘One really needs courage not to despair of the British economy’

Clearly, what we witness here is a perspective reversal. But how do we map the differences in meaning potential? Note that I avoid saying ‘differences in meaning’—simply because there is no guarantee that potential differences in interpretation will also be actualised among the users (both on the side of the utterer’s intentions and the interpreter’s interpretations). Using the rudimentary representation technique sketched in section 6, the differences between the English and the French versions look like what you see in Table 6.2.

⁶ Note that (7) does not present the full story of the development of negative constructions in French. Thus 17th-century French also used *point* as an alternative to *pas*, and in present-day literary French *pas* is optional with a couple of verbs (as in *Je ne sais [pas]*). I am grateful to David Bradley for these remarks.

Table 6.2: Sketch of differences in meaning potential.

Perspective reversal			
It is easy <i>Il faut bien du courage</i>		to despair of <i>pour ne pas désespérer de</i>	the British economy <i>l'économie britannique</i>
focus on effort	focus on ease	despair introduced as default	existential presupposition

Taking into account that the placement of the dots on the salience scale is merely intuitive (using the rule of thumb specified, relating to the likelihood of an aspect of contextual indexing or meaning potential to be questioned explicitly), we see the following: the opposite foci (on effort vs on ease) are elements of meaning that come close to being fully explicit in both versions. The despair that is introduced as default, however, requires more processing (and is thus located slightly deeper on the salience scale) in the French version where it is embedded in a negative construction. The existential presupposition attached to the definite description *the British economy*, *l'économie britannique*, is the element of meaning that is least likely to be questioned, and this is the same for the two versions.

Such observations beg lots of questions. Is the difference between the English and the French versions the result of stylistic preferences? Or is there something in the language system (as a conglomerate of sedimented realisation patterns of meaning potential) pushing in specific directions? Or is the French literal translation equally available as a choice, i.e. equally likely to be chosen? Whatever the answer to these questions may be, what is the overall *potential meaning effect*, especially if similar nuances emerge throughout the text of which these sentences are the opening lines? Does the perspective reversal significantly affect the interpretation that we can expect in relation to the topic of the British economy? And how important are these nuances?

These are all open questions — but important ones to be answered eventually, even if the answers can be expected to remain approximative.

Evidentials

Judgements about events and states of affairs may derive from different sources of evidence, and may occupy different levels of certainty in the minds of language users. These different aspects of meaning potential are reflected in different sedimented realisation patterns. Below are some simple structurally contrastive examples.

Sometimes we may observe similar means with similar potential. A case in point is the speculative usage of French future perfect:

- (10) Il aura fait son choix
he have-FUT made his choice
 ‘He has probably made his choice’

In this case, the literal English equivalent, ‘He will have made his choice’, is an option with more or less the same function. Sometimes, however, similar means are available, but without similar potential. An example is the hearsay evidential usage of the French conditional:

- (11) Il aurait choisi la mort
he have-COND chosen the death
 ‘He is said to have chosen death’

Although the English sentence, ‘He would have chosen death’, is grammatically well-formed, it would not be used in the same sense. Sometimes we come across patterns in one language that seem to lack counterparts with equivalent meaning potential in others. Elly Ifantidou (2001) provides us with an example from Greek, in which the evidential marker *taha*, meaning ‘supposedly’, can not only be used in a declarative as in (12):

- (12) *Taha efige* (declarative)
 left-3d
 ‘Supposedly, he left’

and not only in an interrogative as in (13)

- (13) *Taha tha figi?* (interrogative)
 will leave-3d
 ‘Is he supposedly leaving?’

for which a more idiomatic English translation would probably be ‘Is he perhaps leaving?’ But the same evidential marker can even be used in an imperative as in (14):

- (14) *Fige taha* (imperative)
 leave

Here one cannot even try the literal translation ‘Supposedly, leave’, and it is hard to imagine any idiomatic functional equivalent in English, even if we understand that *taha* must simply be seen as a weak evidential marker which can be used to undercut the speaker’s own intentionality. Utterance (14) would then mean that the speaker tells the hearer to go, while signalling that he/she does not really want the hearer to do so. But how does one express this succinctly if one does not have the same linguistic tool available? One could imagine an irritated utterance of ‘Leave then!’, also implying that the addressee’s leaving is against the utterer’s wishes, or imagine a hesitant ‘Perhaps you should leave’. But is the meaning potential really the same as for Greek (14)?

Here we must add that available patterns are not necessarily used in ways one would predict from their structural position in the language system. For an example we go back to *The Economist* (The World in 2013), and the same article about the British economy in English and in French:

- (15) Britain may have one of the worst-performing economies among the G7 ...
But ...
- (16) Certes, la Grande-Bretagne a l'une des économies les moins performantes du G7 ... Mais ...
(Literally:) 'Certainly, Britain has one of the worst-performing economies of the G7 ... But ...'

Typically, *may have* in (15) and *certes*, 'certainly', in (16) occupy different positions on an evidential scale, namely possibility vs certainty. But they become functionally more or less equivalent in the concessive argumentation pattern marked by *but* in (15) and *mais* in (16). Yet, a difference in actualised meaning potential may remain: the factuality of Britain having one of the worst-performing economies among the G7 can be expected to be more clearly outspoken for the French audience than for the British audience, if for no other reason, due to the unqualified verb form *a*, 'has'.

Nominalisation

Complex events and states of affairs can be expressed analytically and descriptively, or they can be bundled into a single complex concept by means of a noun-like structure, i.e. nominalisation. Languages differ in the means available for performing such nominalisation processes. Languages may offer different means, the similar potential of which is not beyond doubt. Maynard (1996), for instance, points at the rhetorical effects at the discourse level of differences in the possibilities of nominalisation in Japanese and English. Consider (17), and its translation in (18).

- (17) *hi ga nagaku natta koto wa kakushi yoo mo naku,*
daytime S long became NOM T hide also BE-NEG
- (18) but the days had obviously grown longer

In (17), the nominaliser *koto* grammatically changes the clause *hi ga nagaku natta* into a nominal, while its translation equivalent, *the days had grown longer*, is the main clause of (18), turning the main clause of (17) into the adverb *obviously*. A literal English equivalent to (17) could be something like 'the daytime having become longer was not hidden'—a very cumbersome sentence indeed. The suggestion is that, however difficult it may be to describe in detail, the availability of seriously different grammatical resources has an effect on what the resulting discourse communicates.

The question is: what is the possible difference in meaning potential between the nominalised and the non-nominalised version of 'the daytime that has grown longer'? That would be hard to say in this example. But there is a vast critical discourse

analysis literature that tends to equate the nominalisation of complex events and states of affairs with attempts to hide agency. Though this belief in a one-to-one correspondence between forms and functions must be distrusted, such observations lead to relevant questions.

We can further illustrate this with reference to contrasting examples of pattern usage, for which we go back, once more, to *The Economist* (The World in 2013). Compare the following two versions of the ‘same’ line about Xi Jinping (*italics added*):

- (18) *Consolidating his grip over an 80m-member Communist Party amid growing frustration in China over the lethargic pace of economic and political reform will tax him greatly.*
- (19) Il éprouvera toutes les peines du monde à *consolider son emprise sur un Parti communiste fort de quatre-vingts millions de membres, dans un climat de mécontentement croissant dû à la lenteur des réformes économiques et politiques.*
(Literally) ‘He will experience all the trouble in the world to consolidate ...’

Although in the French version, Xi Jinping still ‘undergoes’/experiences something, the degree of agentivity is clearly higher. The question that remains is: what does this contribute to the meaning potential of the French text, compared with the English one? This is especially relevant if the same pattern of contrast persists, as in:

- (20) *Healing the Party’s own ailments* will also be a tough task for Mr Xi.
- (21) M. Xi aura aussi la tâche délicate *de guérir le Parti chinois de ses maux.*
(Literally) ‘Mr Xi will also have the delicate task to heal ...’

Complex syntax

When describing events or states of affairs this can be done with a concatenation of simple utterances, or it can be done by means of constructing syntactically complex structures. Nir and Berman (2010) present a contrastive study between aspects of what they call ‘complex syntax’ in English, French, Hebrew and Spanish. While simple syntax in a narrative would be a juxtaposition of isolated clauses (isotaxis) or a stringing of clauses by means of conjunctions such as *and* and *but* (symmetric parataxis), complex syntax consists of clause packaging, presenting different phases of an event as a single ‘event complex’. Such packaging links clauses syntactically in a variety of ways: asymmetric parataxis or dependent stringing (where a second clause can only be interpreted by reference to the first without being subordinated to it, as in ‘Her perspective was *that* ...’); hypotaxis or clause layering (as with relative clauses with *who* or *which*, or adverbial clauses with *when* or *where*); and endotaxis or clause nesting (as with ‘I had with him’ appearing in ‘One of the discussions I had with him occurred two weeks ago’). The patterns are available in all the languages they investigate. But when it comes to usage, at least two important rhetorical interlanguage differences emerge from Nir and Berman’s research. First, the number

of clauses per clause package differs significantly between French (the lowest number, with an average of three), Hebrew, English, and Spanish (the highest number, with an average of five). Second, the preferred strategies for clause packaging vary a lot, for example with much more hypotaxis in Hebrew (accounting for about half of the cases) than in Spanish, English or French (where only just over a quarter of the cases of clause packaging are hypotactic). Here we may be able to identify typological differences in preferential recourse to specific language resources. But, clearly, they interact with rhetorical strategies in the construction of discourse, hence in the generation of meaning. Hence we cannot avoid the issue of meaning potential. In other words, what are the effects, in terms of the meaning, that are generated for the 'same' stories in different languages?

Conclusion

The rather abstract remarks on meaning-generating dynamics in section 2 were hopefully made slightly more concrete in the later sections. But we must briefly return to the theoretical and practical significance of the observations we have made, as well as to the methodological challenges involved.

The theoretical remarks I made about human beings as meaning-making machines amount to something very simple, probably so simple that usually we are insufficiently aware of it. Once it has passed through the filter of language (an inevitable filter in all domains of social life) all human 'reality' is in fact '*augmented reality*'. Augmented reality is not a domain restricted to fiction, even though the uniqueness of human language in comparison to other naturally occurring communication systems may be the fact that it enables us to talk about things that are not 'real' but merely imagined or invented. Nor is augmented reality restricted to applications of Artificial Intelligence. No, in the public sphere, for instance, augmented reality is not such a bad characterisation of *ideology* in its most general sense of the way in which, in a given community, the world is interpreted or what is, in a given community, regarded as normal (cf. Verschueren 2012).

If pushing 'reality' through the filter of language leads to 'augmented reality' this must mean that there cannot be one true view of the world. This goes for trivial events. If, after an academic session, all members of the audience were given five minutes to tell about what had happened in the session, we would get roughly as many stories as there were people in the audience. Or if one of them would be asked to tell what happened, first in English, then in French or Chinese, or any other language, we would also get two different stories. Things become less trivial, of course, in the differences between the world views and the related stories of Bernie Sanders and Donald Trump, or, for that matter, any of their more provincial equivalents.

So, how does one distinguish 'real' from 'unreal', 'true' from 'false' when it comes to the beliefs that are carried along in discourse? On many occasions, that may be the wrong question because often it is unanswerable. A more useful question is: what is beneficial vs what is not? And here the 'machine' metaphor in talking about people as meaning-making machines breaks down: 'morality' comes in, with an almost 'ecological' concern for people's well-being. All versions of reality are, to a certain extent, myths. Myths are necessary as a basis for group formation and

collaboration. But some myths are more beneficial than others. Some are distinctly destructive.

When doing research in areas that touch upon these processes, therefore, we cannot avoid somehow taking ‘political’ positions. But first we must analyse. Taking political positions does not exonerate us from the responsibility we have as academics to undertake research that is theoretically and methodologically sound. How do we account for the ways in which versions of the same story differ, both within the same language, and across different languages? How do we assess the meaning potential of specific linguistic tools, the widely divergent affordances they provide for the creation of the myriad augmented realities that surround us? And how do we assess the possible effects which the actual use of specific language forms, with their range of affordances, can be expected to have on the way in which events in the world are interpreted?

We all know that a recent presidential decision to recognise Jerusalem as the capital of Israel is being discussed in entirely different terms in different corners of American as well as in Israeli society, differently again in the Arab world, in Europe, etc. We know the main trends that are visible at the surface, and most of these are predictable from our awareness of the different stakes that are involved. But how are these discourses shaped? How did the mobilisation of sedimented realisation patterns of meaning potential provided by language, contribute to the discourses that are an integral part of the political processes responsible for a virtually insoluble quagmire in the Middle East, or, for that matter, for election results?

We already have fragments of answers to such questions. But we are still facing serious challenges if we want to go beyond the highly intuitive remarks I have been making in this paper, and if we want to reach relatively precise and reliable descriptions of phenomena that are themselves fuzzy — a characterisation that is utterly realistic and that must lead to the conclusion that the ‘precision’ to be reached can be merely indicative or approximate. There are two methodological challenges in particular:

- 1) At the level of sedimented realisation patterns for meaning potential, we must be able to assess the position which specific structural choices occupy (i.e. what comparative meaning potential do they have?) in relation to other possibilities (whether or not along the same paradigmatic dimension).
- 2) At the level of actual realisation or usage, we must be able to assess the likelihood that specific choices will be interpreted in a specific way or will influence interpretations in a more or less specifiable way.

There are good reasons to be optimistic about prospects for further advances. New research tools have been in rapid development. I am thinking of computational tools for the large-scale scanning of comparative data (cf. Boas’s ‘multilingual FrameNets’ [2010]), which may certainly help to meet the first challenge. After all, the position of choices in relation to other possibilities may be related to matters of frequency, accessibility and availability. For the second challenge we may turn to experimental tools. If used in combination with extensive linguistic-ethnographic work, there is a promising future there. Clearly, there is plenty of work to be done.

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Chapter 7

Bilinguals' brain plasticity can be subtractive too: Is less more?

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For a first approximation, let us consider brain plasticity to be that ability of the brain to continue learning — indeed mastering — new materials. In his 1949 book *The Organization of Behavior*, psychologist Donald Hebb presented his theory of how learning takes place at the cellular level: when the axon of one cell repeatedly excited another cell, such that growth processes and/or changes in metabolism take place in either cell (or both cells), enhancing the efficiency of conveying electrical signals along a path from one to the other. Thus we summarise what would come to be called 'Hebb's Law' that 'neurons that fire together wire together'. That statement of Hebb's Law can easily explain what I've come to think of as 'positive' or 'additive' plasticity, which explains how we learn new things, how we get better at them, often, indeed, how they may become automatic — or more automatic — in our performance of them. However, Hebb's Law only indirectly explains language attrition — the apparent over-riding of an L1 when an L2 becomes one's dominant language, often when has immigrated to a new-language country alone. (For a review of the neurolinguistics of attrition, see Köpke 2004). To understand that, I argue, what we must consider is a corollary of Hebb's Law that we might articulate as follows: 'Neurons that do not fire together do not wire together' or, more specifically to our point, 'Neurons that no longer fire together much no longer wire together, reducing the efficiency of their interconnection'.

Since Hebb's much cited observation, our knowledge of how additive plasticity obtains has increased substantially, I might even say logarithmically in the current century. The growth processes that Hebb referred to have come to include not only increases in the dendrites that enable connections between one neuron and others, but also increases in the number and quality of the glial cells that support them, and enhancement of the myelination — effectively the insulation — of the axons that convey electrical pulses from one cell body to the dendrites of the next. In the hippocampus, at least, neurogenesis itself may occur as part of additive plasticity.

We also have markedly more information on the metabolism Hebb refers to, the ways in which chemicals that permit electrical signals to move from one neuron's axon to another's dendrites can change their composition and thus facilitate (or, I would note, defacilitate) interactions across the synapses that connect them. Receptors on the dendrites of the second cell, too, can change their sensitivity to the chemicals and thus contribute to fine-tuning efficient conveyance of electrical impulses.

For the purposes of this talk it is important to note that until approximately the

1980s, brain plasticity for language-related phenomena in humans was considered to be restricted to childhood, that is, it was a phenomenon that effectively shut down at a certain period. This led Lenneberg, in his 1967 book, *Biological Foundations of Language*, to posit a Critical Period Hypothesis asserting that, after around puberty, humans' brains no longer were able to learn a language, that the plasticity that should underlie learning a language—either a first one that the child had unfortunately somehow not been exposed to, or a new, second or later one, was no longer available.

Of course today we know that is not altogether true. For one thing, people can learn a new language post-puberty and a few can at least approach native-like abilities in it. For another, different aspects of language seem to have different sensitive periods after which mastering that aspect—for phonology and morphosyntax, say—becomes more challenging. With respect to the brain substrates for such learning, it has become clear, moreover, that additive plasticity continues across the lifespan. And that first-pass definition I gave above, that we could 'consider brain plasticity to be that ability of the brain to continue learning—indeed mastering—new materials', must clearly be modified to include the additive and subtractive aspects of plasticity.

We see such additive plasticity outside the realm of language in research like that on London cabbies and that on musicians. You likely know that Maguire and colleagues published a series of studies (e.g. 2000) of London cabbies who (up until the ubiquitisation of global positioning devices, I'm guessing) were required to spend several thousands of hours over the course of two or more years memorising the streets and buildings of London and, as a result, had expanded hippocampal localisation regions in their brains. Similarly, when musicians have been compared to non-musicians, cortical differences can be seen, both for the motor maps for fingers that are crucially used for a given instrument and for brain regions involved in listening to music (for a review of this literature, see Schlaug 2015). Ideally such brain-imaging studies should be conducted longitudinally, from before the aspirant cabbies started studying The Knowledge, and before the musicians began their intensive study of music, so that we could parse out the extent to which people choose these professions because their brains are structured in a way that makes learning maps or music easy, or whether what they learn actually changes their brain organisation and processing.

It was with the work of Marian Diamond and her colleagues (e.g. 1964; 2001) that we began to see that not only learning but also concomitant brain changes could continue well beyond early adolescence, indeed, throughout the lifespan—at least in rodents. Already in the 1960s, Diamond demonstrated that the brains of rats that lived in enriched environments showed greater cortical volume than those of rats that lived in simpler environments. Giving rats new toys to play with every few days or the possibility of interacting with other rats or an obstacle in getting to their food results in great cortical thickness—which means more dendrites—of the pertinent regions of their brains, well beyond their adolescence. Not only was it possible to enrich the rats' environment and thus thicken pertinent regions of their cortex, but Diamond also demonstrated that one could then deliberately return the rats to a simpler—impoverished—state, and those regions would diminish in thickness. She could then reverse these brain changes yet again by returning, e.g. a thymus gland that had been extracted (Diamond 2001).

The parallels to language learning are clear: if one learns a single language, over childhood aspects of it become ‘fixed’. As we know from the work of Janet Werker and colleagues (e.g. Werker & Tees 1984; 2005), for the first nine or so months of our lives, we are open to making distinctions among all the world’s phonemes, but then, if we’re exposed to only one language, our ability to make distinctions narrows down to the phonemes of that language. If we’ve been exposed to two languages, our openness to many distinctions lasts for two or so months longer, then we narrow down to the distinctions made in those two languages. But in order to understand the brain bases of L1 attrition — the partial loss of the first language, we must ask what happens if we have no exposure to one of those languages for a period.

The most striking examples of the language attrition that ensues come to us from the literature on children who are entirely removed from their L1: international adoptees who go to a country where it is easy for them *not* to be exposed to their L1. As Pallier and colleagues (2003) demonstrated in a study of a group of eight adoptees from Korea who moved to France between the ages of 3 and 8 years and subsequently had no exposure to Korean — when they were in their mid-20s they performed exactly like French native speakers on several tasks. One task involved matching a written French word to one of two Korean words, which were spoken. Another task required the participants to say how confident they were in determining whether sentences they heard in French, Korean and several other languages, which neither they nor the control monolingual French speakers knew (Japanese, Polish, Swedish, and Wolof), were in Korean. Of course, the adoptees, like the non-adopted French speakers, were confident that the French sentences were not in Korean, but they were unable to judge the sentences in the other languages. Not only did they make no distinction between Korean and the other languages, but in a scanning task, their brains also did not respond differently to Korean any more than to Japanese and Polish. It does appear that the adoptees’ early exposure to Korean — up to age 8 in the 2003 study and to age 9 in Ventureyra’s follow-up studies (Ventureyra and Pallier 2004) had left no trace in their brains.

Other studies suggest that all is not lost, however; that is, there are still hints of some remnants of the early L1 phonological knowledge that the international adoptees had before their adoptions. Kenneth Hyltenstam and his colleagues (2009) report on another group of children from Korea who were adopted to Sweden and another adopted from Spanish-speaking countries. The voice-onset-time (VOT) tasks showed that the young-adult participants showed remarkable sparing of phonological information, although none for morphosyntactic information.

In a third such population, Pierce and colleagues (2014) studied a group of 13 monolingual non-adopted French speakers; 23 monolingual French speakers who had been adopted from China before the age 3, at an average age of 12.8 months; and a group of 12 bilingual Chinese-French speakers. Participants were tested at an average age of 13.5 years, with their ages ranging from 9 to 17 years, and there is no report that their age at testing made a difference to their performance. As, *mutatis mutandis*, in the studies from Pallier’s lab, the adopted individuals reported that they did not know Chinese at all.

Their task was one of tone-recognition. Though the adoptees had been exposed to different varieties of Chinese, three tones were selected that existed in all the

varieties: a high tone, a high-rising one and a low-rising one. In the MRI scanner, participants had to determine if the final tone of a pair of three-syllable non-words (or hummed 'words') was the same. In this study, the results were very different from those of the Korean-French individuals; these adoptees' results looked like those of the Chinese-French bilinguals in that the participants used the planum temporale on the *left* hemisphere to perform this task, whereas the French monolinguals used the *right* one. Indeed, the age at which the adoptees started to use French correlated with their degree of left dominance; the later they were adopted — that is, the longer they had heard Chinese — the more dominant their left planum temporale was for making tone-similarity judgements. Such differences in brain regions involved in the same process of course suggests that plasticity had been operating.

One of the factors that made neuroplasticity hard to envision in the 20th century was the comparatively well-documented profusion of neuronal connections seen in animals' brains over the course of fetal development and very early life that gradually devolves into a period where new neurons no longer develop outside of the hippocampus, which is responsible for memory, and the olfactory bulb. So much of the cortex — the external half-inch of densely connected neurons that permits humans to undertake all sorts of cognitive tasks beyond memory — is composed of these neurons that may form new 'connections' to other neurons via their dendrites. If no new neurons can be formed (except for memory functions), how can plasticity continue beyond adolescence?

The answer lies in the many other factors that can enhance neural connections: the myelination that insulates the axons which extend from cell bodies, facilitating electrical pulses' travel from one neuron to the next, the glial cells that provide nutritional and other support to neurons can also be more abundant and of higher quality, providing a richer environment for the neurons. Even the blood vessels that provide oxygen to enable the brain to function can change across the lifespan, providing more to certain regions that are often used and less to those that are not called upon as often. Chemicals that facilitate the travel of electrical pulses from one neuron to the next in operating networks change their proportions to enhance the speed of transitions, and the vesicles on either side of synaptic connections can change their characteristics to condition the chemical changes that will permit this. (For an accessible summary of the neurobiology of behaviour, see Robert Sapolsky's *Behave: The Biology of Humans at Our Best and Our Worst* published in 2017.)

And it's not just the nearby cortical connections that get enhanced via plasticity; it's also those of the white matter connections composed of tracts connecting cortical regions to more distant cortical regions that are affected by the full range of phenomena that participate in enhancing plasticity.

What is the human equivalent of more toys and more company and new challenges to overcome for rats? Learning a second language is of particular interest to many of us in the United States, where it's so rare that those who succeed as late learners (by which I mean mastering a language that one was not exposed to at home) are considered remarkable. Some studies have found enhanced cortex in the classical language region of bilinguals (e.g. Mechelli et al. 2004) and have reported greater cortical density in an inferior parietal region in late bilinguals compared to monolinguals, and even greater density among early bilinguals.

However, not all the phenomena of brain development are what we might term ‘additive’ or ‘positive’: Neurons that do *not* have others they fire with — simultaneously or sequentially — may die off. (Hebb might say: neurons that don’t fire together don’t wire together.) Dendrites that do not form connections get pruned from the very beginnings of our lives. When disease brings demyelination, electrical pulses may connect more slowly towards the neurons they should connect with, perhaps even missing a crucial connection time-wise, or with less amplitude across synapses crucial for a set of behaviors. I must point out that this is not necessarily bad; it can be said to enhance efficiency of the brain not to have all those unconnected dendrites taking up space and glial support. This may account for the slower time course of lexical retrieval in bilinguals that Gollan reports, (e.g., Sandoval et al. 2010), despite the advantage that at least some groups of bilinguals seem to show for inhibition tasks.

Remember how Diamond gave rats company and changed their toys every few days, resulting in thicker cortices? These types of manipulations, she found, are actually reversible. For example, she reported in 2001 that she removed their thymus glands and saw that regions of their frontal cortex got thinner, only to get thicker again when their thymus glands were reinserted. Clearly, the plastic brain changes that respond to new input can be both additive and subtractive!

The first hint I had of what I now think of as plasticity in bilinguals was from a study I did of highly proficient, young adult, bilingual speakers of Hebrew and English. I made the mistake of hiding this away in a book I was editing (with Lise Menn: *Exceptional Language and Linguistics*), long before the internet would have made it relatively available, in 1982, so I’m guessing you never saw this study. The children had lived in both English-speaking and Hebrew-speaking countries during their childhood and adolescence and when we tested them in young adulthood, they passed for native speakers of each language, from both their own report of how they were treated by native speakers of each language and by our lab observations. They thought, as we did, that a word pronounced /bayt/ means something one does with one’s teeth in English and a house in Hebrew. However, it turns out the stop consonant phoneme-pair series, which occurs in both languages (p-b, t-d, k-g), are actually pronounced slightly differently in the two languages. Our testing of monolingual speakers of each language determined that VOT is earlier in Hebrew than in English, both for voiced and voiceless consonants in each pair. We were not surprised, then, that our bilinguals had a broader range of uncertainty than the monolinguals on the ‘comprehension’ task where they listened to a range of synthetic ‘b’s’ and ‘p’s, and labelled each one ‘b’ or ‘p’ produced voiced and voiceless stop consonants between those of the respective monolingual speakers. Nor were we surprised that their production of their ‘p’s and ‘b’s for the two languages were between those of the respective monolinguals.

What was surprising, however, was that our bilingual participants had distinct consonants for the two languages, both of which were between the consonants of the two monolingual groups. That is, for example, their ‘p’ for English had VOT that was later than their ‘p’ for Hebrew, but both of these were later than the Hebrew monolinguals’ ‘p’ and earlier than the English monolinguals’ ‘p’. (See Obler, 1982, for details.) Moreover, equally surprising was that their ‘b’s for the two languages were closer to the earlier ‘b’s of the Hebrew monolinguals and their ‘p’s were closer

to the 'p's' of the English monolinguals. In determining how to sound like native speakers of each language, totally unconsciously of course, their brains had chosen to exaggerate the difference between the voiced and voiceless consonants, measurable in milliseconds, unnoticeable to native speakers.

You may question whether this is really plasticity (as we think of it today) that was operating for these bilinguals. After all, they were relatively young when introduced to the two languages, so their putative plasticity may simply have been a first-time learning, rather than the change from one state to another when confronted with a new and somewhat different system to master. I would argue that it does count as plasticity by the definition of plasticity that asserts it is responsible for the brain's ability to learn new information that it is confronted with. Though we had no possibility of getting functional brain images of our participants in 1982, the behavioural patterns they displayed strongly suggested that their brains had been setting up efficient systems for the two languages to which they were exposed, different from the brains of the respective monolinguals.

But perhaps we should turn to later learners who more clearly had an L1 and then learned an L2, in whom additive plasticity should be reflected in the ability to acquire a new language with larger and smaller differences from the L1, and subtractive plasticity should be reflected in attrition of the first language. In such individuals, the effects of L1 on L2 surely arose in the early stages of learning the L2 in the form of interference or transfer—those 20th-century terms—that actually represented attempts *against* plasticity, I would argue. That is, they were not attempts to make new connections and new networks to acquire the new language, but rather conservative attempts to make use of 'old' L1 forms or templates, phonetic forms of L2 phonemes and morphophonological forms of L2 words, morphosyntax and syntax that conformed to L1 patterns. Only if we had a longitudinal study of how L2 forms approached a more nativelike state from a less nativelike one, could we with certainty call that the result of plasticity in learning the L2. Alternately, and actually easier to carry out, would be a study of how L1, which we assume was nativelike, became influenced by having acquired the L2.

The first such study I was involved in was the 2010 dissertation study of Dr Hia Datta who asked whether it was interference that resulted in L1 attrition in bilingual immigrants or L1 disuse. She tested 27 Bengali-English-speaking adults over the age of 20, all of whom who had immigrated to the United States after the age of 10 years. All had started acquiring English in India before emigrating, and had learned Hindi as an L3 there as well. At the time of testing, 18 reported themselves to be English dominant, and nine reported themselves to be Bengali dominant. (This dominance was confirmed by a list-generation task.) They also reported their percentage of use of each of their three languages.

In the study, participants had to respond to sets of words in translation-equivalent word-pairs that were carefully selected with respect to their frequency in the two languages. In order to determine whether the attrition of L1 resulted from less use of that language as the L2 was being acquired, or from influence of L2 on L1, Datta selected four types of translation-equivalent pairs: one-quarter of the experimental word pairs were high familiarity in both languages (e.g. 'bread' and its translation equivalent); a quarter were low-familiarity in both languages (e.g. 'arrow' and its

equivalent); a quarter were high-familiarity in Bengali and low-familiarity in English (e.g. ‘gourd’ and its Bengali translation equivalent) and a quarter were the opposite (e.g. ‘airplane’ in English and its translation equivalent in Bengali).

The participants’ task was, on the surface, not a simple one, but they did not perceive it to be difficult. All they had to do was say a word to themselves, then judge whether the word they soon heard was one syllable or not. How it worked was, on the screen they saw a focus point to get their attention, and then, for 400 microseconds, they saw a picture which they were instructed to name to themselves, after which they heard a word that was either semantically related to the picture — in which case one would expect shorter response times (RTs) and smaller ‘event-related potentials’ (ERP N400) — or not — in which case one would expect the opposite. In fact the L1-dominant participants showed slower responses overall, as a group, and more difference between the auditory word in English and Bengali. Similarly, the ERP patterns distinguished the two.

With respect to the different pairs of translation equivalents, Datta reasoned that if lesser use of L1 was the primary factor operating, attrition (i.e. longer RTs) would be seen for all pairs. If, however, the attrition resulted from L2 impinging on L1, attrition would be seen for all pair-types except the ones that were high-frequency in Bengali and low-frequency in English — the ‘gourd’ pair.

Both RTs and ERPs were measured. In fact there were greater N400s to semantically unrelated words in English but not in Bengali, consistent with L1 attrition in these participants. Bengali words that were high-familiarity in Bengali and low-familiarity in English were least affected. With respect to the ERP results, it was the English familiarity categories that determined these, rather than the Bengali ones, suggesting a subtle form of attrition of L1 whereby sensitivity to distinctions in lexical familiarity was flattened. Rather than disuse, then, Dr Datta concluded that what was evident was interference from L2 onto L1, a clear reflection of plasticity as the L2 lexical items, as they were being learned and moved toward automatic processing, presumably got ‘listed’ near its translation equivalents, perhaps sharing networks for each particular lexical item and strengthening them while, at the same time, subtly influencing them.

One more finding is of interest in this study: not only did the percentage of L2 use versus L1 use predict performance; the percentage use of the L3, Hindi, did as well. Clearly what influenced the plasticity, then, was the amount of ‘practice’, i.e. use of a given language, which gave its neurons, one might say, the opportunity to fire together and thus wire together. As a result of this, influence of the L2 on the L1 was seen as increased proficiency, on top of what we can assume was the earlier L1 influence on the L2 which we call ‘interference’ or ‘transfer’. Of course different language components may show the two types of influence at different degrees of proficiency, say for lexicon versus accent.

Let us turn to consider whether syntax also reflects plasticity. The 2016 dissertation of Dr Eve Higby addressed this issue by selecting a type of verb that differs between Spanish and English, namely, controlled motion verbs. Such verbs can be intransitive or transitive in English (e.g. *The trainer ran quickly*; *The trainer ran the race quickly*); they can also be used in causative sentences like *The trainer ran the athlete around the track quickly*. Spanish, by contrast, does not permit these

causative sentences (native Spanish speakers will reject them, according to e.g. Cabrera & Zubizarreta 2003), but does permit both transitive and intransitive ones for the translation-equivalent verbs. An interesting question, then, is whether native Spanish speakers can acquire use of this structure in their Spanish once they've acquired it in English, and whether we can observe this transfer in brain measures such as event-related potentials.

Higby's participants were 31 highly proficient bilingual Spanish-English speakers, 14 native speakers of Spanish with limited knowledge of English or any other language, and 13 native-speaking English monolinguals. Participants were asked to make acceptability judgements about Spanish sentences, and the crucial ones, of course, were the causatives, as performance on these could relate to performance on grammatical and ungrammatical control sentences. Interestingly, while the behavioural data showed no difference between the bilinguals and the Spanish speakers — all judged the causative sentences as possible but not great — it was the ERP data that distinguished the groups. For the Spanish-speaking monolinguals there was a left frontal positivity for causatives like that for ungrammatical control sentences. Neither early ($X = 5.6$ years age of acquisition) nor later ($X = 15.2$ years age of acquisition) bilinguals showed such patterns. Rather, the bilinguals processed the causative sentences similarly to the grammatical control sentences.

We must assume that these bilinguals would have performed like the Spanish-speaking monolinguals before they started learning English, yet today their brain processing of the sentences that are not acceptable in Spanish showed that it had been influenced by their knowledge of the acceptability of the English translation-equivalent sentences.

This study, like a set of others looking at L2 influence on L1, suggests that the neural networks that were used for L1 have been expanded for L2, resulting in an attrition of the boundaries for making judgements about the L1. These, moreover, were not seen at the behavioural level but, rather, at the level of brain processing. This finding about syntactic processing in bilinguals, then, I would argue, is not unlike that of the stop-consonant distinctions in the 1982 Obler paper. What plasticity is doing in learning a new language is permitting the most efficient system that allows the language learners to continue performance that is native-speaker-like in their L1, yet builds a structure that works for the L2 as well. This must combine the additive plasticity of enhancing connections that will be useful for one or the other of two languages — ideally, that will be useful for both as we saw in the VOT study of Hebrew-English speakers, with the subtractive plasticity of pruning dendrites or changing chemical conditions at synapses or demyelinating axons such that connections that work efficiently for L1 may be modified to work for L2 as well.

I must conclude by confessing that it's a frustrating time to be a neurolinguist! Here we are, nearly two decades into the 21st century, over 150 years into scientific study of brain organisation for language and there have been, on the one hand, substantial advances in our knowledge about how cells and cellular networks operate (both neurons and the glial cells that support them, in the chemicals and proteins that permit synaptic connections among neurons, and about the myelination and chemical changes that enhances it). On the other hand, experimental linguists, psycholinguists and cognitive neuroscientists are learning more about regions and networks of

processing language — and languages in the case of multilinguals — in the brain. Yet what we do not yet understand is the link between these. Only when we can determine how individual chains of neurons get stronger or more efficient when learning a given unit of anything like language (and may get weaker or less efficient if that unit is not used or is less used), or is better replaced by another connection (so that a second language can operate alongside the first one), will our understanding of plasticity be complete.

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Chapter 8

A phylogenetic study of North-Western Bantu and South Bantoid languages

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1. Introduction

The Bantu family represents the largest African language family in terms of geographical area (spoken in 27 countries in sub-Saharan Africa), number of speakers (approximately 240 million speakers) and number of distinct languages (between 400 and 600 languages). Bantu languages belong to the Niger-Congo phylum, the most important language family in Africa (approximately 1 400 languages).

Since the early 1950s, numerous classifications of Bantu languages have been proposed. External classifications, which study the relationships of the Bantu languages with the other language groups in the Niger-Congo family, (Greenberg 1963; Bennett & Sterk 1977; Williamson & Blench 2000) have shown that Bantu languages constitute a subgroup belonging to the Bantoid group, which belongs to the Benue-Congo group, which is part of the Niger-Congo family (Figure 8.1).

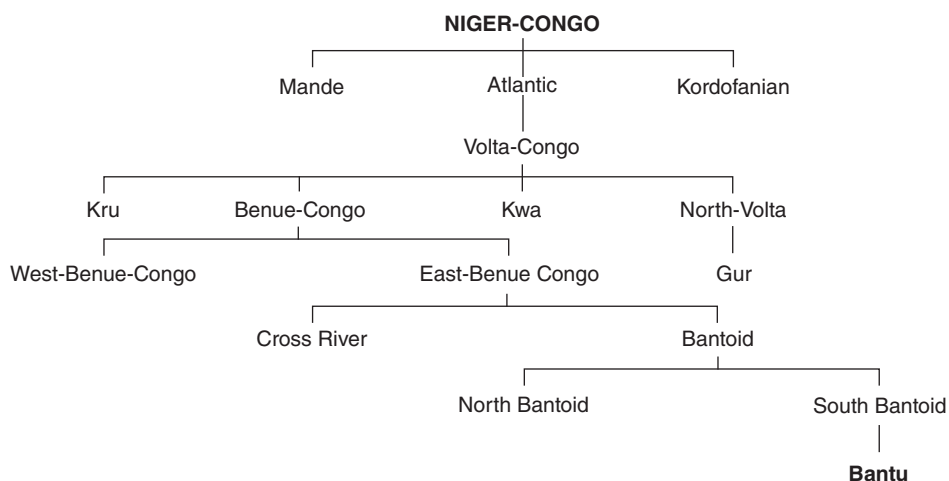


Figure 8.1: Simplified Niger-Congo tree, adapted from Williamson & Blench (2000).

Internal classifications, which are focused on the study of the internal structure of the Bantu languages (e.g. how Bantu languages are related to each other), have allowed us to better understand the Bantu-speaking people, their languages and their history. The Bantu area has been divided into 15 geo-linguistic zones by Guthrie (1948; 1967–1971). A letter from A to S has been assigned to each zone (A, B, C, D, E, F, G, H, K, L, M, N, P, R and S); each zone was then divided into decades (corresponding to linguistic groups A10, A20, etc.); and inside of these groups, a number has been assigned to individual languages (A11, A12, etc.). Bantuists still use the coding system in order to refer to Bantu languages. The first studies conducted on Bantu languages have divided the Bantu languages into two main groups: Western Bantu and Eastern Bantu (Guthrie 1948; Guthrie 1967–1971; Ehret 1999; Bastin et al. 1999). Moreover, these previous classifications have highlighted the specificity of the North-Western area which generally constitutes the first group to diverge within the Bantu tree: Guthrie (1967–1971); Henrici (1973); Bennett & Sterk (1977); Heine et al. (1977); Voorhoeve (1980); Bastin et al. (1983); Dieu & Renaud (1983); Piron (1995); Bastin et al. (1999); Holden (2002); Rexová et al. (2006); Grollemund (2012); Currie et al. (2013) and Grollemund et al. (2015).

North-Western languages generally refer to languages spoken in a delimited geographical area including Cameroon, Gabon, Congo, Equatorial Guinea and parts of Democratic Republic of Congo (DRC). It generally includes Bantu languages spoken in the zones A, B, C and parts of D and H. However, the exact extent of North-Western Bantu area can vary depending on the authors. Indeed, according to Jacquot (1960), the North-Western area is composed of A, B, C and part of the languages spoken in zone H. Dieu and Renaud (1983) in their ‘Equatorial’ group have included A, B, C and parts of D languages. Bastin et al. (1999) and Bastin and Piron (1999) include in this group A languages (without the Mbam-Bubi languages, generally composed of A31-40-50-60 languages) and B10-20-30 languages. Nurse and Philippson (2003) in a group named ‘Forest Bantu languages’ have included A, B, C, parts of H and D10-30 languages. Nurse (2008: 10) is the first one to include under the label ‘North-Western’ Bantu (A, B, C, parts of D and H) and Bantoid languages (Mamfe and Grassfields Bantu). Previous studies conducted on North-Western Bantu languages have recognised this area as the most divergent in comparison with the Western and Eastern Bantu areas (Henrici 1973; Heine et al. 1977; Bastin et al. 1983; Bastin et al. 1999; Holden 2002; Rexová et al. 2006; Grollemund 2012; Currie et al. 2013 and Grollemund et al. 2015). The linguistic divergence observed in this particular zone can be explained by a primary split which separated the North-Western Bantu languages from the remaining Bantu languages (subdivided into West and East). We also observe a high degree of linguistic diversity which is caused by the geographical situation of the North-Western area which is witnessed in the contacts between different Bantu groups and between Bantu and Bantoid populations.

In order to investigate the complexity of the North-Western area, we have decided to focus our study on an enlarged North-Western area comprising Bantu (A, B, C, parts of D, H and L) and South Bantoid (non-Bantu) languages spoken in Cameroon and Nigeria. We will propose a new phylogenetic classification of these languages. The previous phylogenetic classifications established by Holden (2002), Holden and

Gray (2006), Rexová et al. (2006) and Currie et al. (2013) were all based on the same data and encoding established by Bastin et al. in 1999. Moreover, very few North-Western Bantu languages were selected in these studies (except for Currie et al. (2013) who have worked on the whole of Bastin's sample) leading to some misinterpretations of the Bantu migration. We will propose in this study a classification based on new data (with a better sample of the North-Western languages, including Bantu and South Bantoid languages) and a new encoding, to which we will apply two different phylogenetic methods: a distance-based method by using a Neighbour-Net algorithm (Bryant & Moulton 2004) which will allow us to visualise conflicts in the data thanks to the webbing which is generally caused by either contacts between languages or borrowings (horizontal transfers) and a character-based method by using a Bayesian method which will allow us to understand the hierarchy between these languages (vertical transfers). The aims are (1) to investigate the contacts between the Bantoid and the Bantu languages, we will try to understand the role played by the Mbam-Bubi languages which represent, according to Bastin and Piron (1999: 152–153), the key of the articulation between Bantu and Bantoid, (2) to investigate the contacts between Bantu languages belonging to the North-Western area and the remaining Bantu languages, and finally, (3) based on the analysis of the trees, we will try to understand the very first Bantu migration waves.

2. Data and method

In order to build our classification, we have selected 40 South Bantoid non-Bantu languages and 166 Bantu languages belonging to six different zones: A, B, C, D, H and L (Table 8.1). As an outgroup, we have chosen a Jukunoid language spoken in Nigeria, called Mbembe.

The map (Figure 8.2), shows the location of the different Bantu languages spoken in this area. A languages are mostly concentrated in Cameroon, Equatorial Guinea and Gabon; B languages are mostly spoken in Gabon, but also in Congo and the DRC; C languages are spoken in Congo and the DRC and H languages are spoken in Congo and DRC (and parts of Gabon for Civili H12a). South Bantoid languages are located in western Cameroon.

We work on a database composed of 100 words belonging to the basic lexicon. The data were collected during fieldwork or taken from dictionaries. We used a wordlist called 'ALGAB' (Atlas Linguistique du GABon), a wordlist designed for fieldwork in Gabon and more generally for Bantu languages. This wordlist is normally composed of 159 items belonging to the basic vocabulary but we decided for our sample to work solely with the 100 most documented words.¹ For each word, we looked for cognate sets (words that resemble them with a similar meaning, which can reveal a potential relatedness between languages). When it was possible, we used the

¹ List: animal, arm, ashes, bark, bed, belly, big, bird, bite, blood, bone, breast, burn, child, cloud, come, count, dew, die, dog, drink, ear, eat, egg, elephant, eye, face, fall, fat/oil, feather, fingernail, fire, fire-wood, fish, five, fly, four, give, goat, ground/soil, hair, head, hear, heart, horn, house, hunger, iron, intestine, kill, knee, knife, know, leaf, leg, liver, louse, man, moon, mouth, name, navel, neck, night, nose, one, person, rain, road/path, root, salt, sand, see, send, shame, sing, skin, sky, sleep, smoke, snake, spear, steal, stone, sun, tail, ten, three, tongue, tooth, tree, two, urine, village, vomit, walk, war, water, wind, woman.

Table 8.1: Languages selected for the classification.

GROUPS	LANGUAGES
Bantoid non-Bantu (40 languages)	7 Beoid languages: Tiv, Koshin, Noni, Nchanti, Abar, Missong, Bu 2 Ekoid languages: Ejagham, Keake 5 Jarawan languages: Bwazza, Mbula, Bile, Kulung, Duguri 23 Grassfields languages: Kom, Oku, Aghem, Weh, Isu, Babungo, Babessi, Bu, Lamso, Ngie, Njen, Moghamo, Ngembu, Oshie, Fefe, Fotouni, Mungaka, Bamun, Nkwen, Bafut, Mankon, Limbum, Adere 2 Tivoid languages: Tiv, Esimbi 1 Mamfe language: Kenyang
Zone A (62 languages)	A11 Londo, A121 Mbonge, A122 Bakundu, A141 Lefo, A15 Manenguba, A15A Mbuu, A15B Mienge, A15C Elung, A15C Akossi, A15C Mkaa, A151 Nkongho, A22 Bakweri, A24 Duala, A26 Pongo, A27 Malimba, A31 Bubi, A32C Batanga, A33a Yasa, A34 Benga, A41 Barombi, A42 Abo, A43a Basaa, A44 Tunen, A45 Nyokon, A46 Nomaande, A461 Bonek, A462 Yambeta, A51 Bafia, A53 Bafia Rikpa, A54 Tibe, A601 Tuki, A601A Ngoro Asom, A601A Ngoro Bisoo, A601A Ngoro Lunda, A62A Nuasue, A62A Nukalonge, A62B Mmala, A62C Libie, A621 Nubaca, A622 Nugunu, A63 Mangisa, A71 Eton, A72a Ewondo, A74a Bulu, A75a Fang Bitam, A75a Fang Minvoul, A75a Fang Medouneu, A803 Shiwa, A81 Kwasio, A83 Mekaa, A832 Bekol, A84 Konzime, A841 Badwe, A85b Bekwil Makokou, A85b Bekwil Mvadi, A85b Bekwel 4, A86c Mpiemo, A87 Bomwali, A91 Kwakum, A92b Pomo, A92C Kweso, A93 Kako
Zone B (54 languages)	B11a Mpongwe, B11b Orungu, B11c Galwa, B11d Dyumba, B11F Enenga, B31 Tsogo, B32 Kande, B301 Viya, B302 Himba, B304 Pinzi, B305 Vove, B21 Seki, B22a Kele, B22b Ngom, B22b Koya, B22E Mwesa, B23 Mbangwe, B24 Wumbvu, B25 Kota, B251 Shake, B252 Mahongwe, B201 Ndas, B202 Sigu, B203 Samaye Itebe, B204 Ndambomo Linze, B204 Ndambomo Mbadi, B204 Ndambomo Massoukou, B41 Shira, B42 Sangu Mimongo, B42 Sangu Mbigou, B43 Punu, B44 Lumbu, B404 Ngubi, B51 Duma, B51 Duma Lastoursville, B52 Nzebi, B53 Tsaangi Poungi, B501 Wanzi Est, B501 Wanzi Moanda, B503 Vili, B62 Mbaama, B63 Ndumu, B601 Lempini, B602 Kainingi Nord, B602 Kainingi Sud, B71a Teke Ossele, B71a Teke Djoko, B71 Teke Congo, B71a Teke Leconi, B701Atsitsege, B81 Tiene, B85d Nsongo, B86 Dzing, B865 Nzadi
Zone C (23 languages)	C101 Babole Epena, C101 Babole Mahounda, C104 Aka, C105 Mbenga, C15 Bongili, C24 Koyo, C25 Mboshi, C25C Ondinga, C32 Bobangi, C322 Zamba, C323 Mpama, C34 Sakata, C36d Lingala, C41 Ngombe, C43A Baati, C44 Bwa, C52 Soko, C55 Lokele, C61 Mongo, C71 Tetela, C76 Ombo, C83 Bushong, C85 Wongo
Zone D (17 languages)	D11 Mbole, D12 Lengola, D13 Metoko, D14 Enya, D201 Liko, D21 Baali, D211 Kango, D24 Songola, D25 Lega, D28 Holoholo, D308 Bodo, D32 Bira, D33 Nyali, D333 Ndaaka, D334 Mbo, D43 Nyanga, JD53 Shi
Zone H (8 languages)	H11 Beembe, H12 Civili Congo, H16 Kikongo, H16c Yombe, H16f Laadi, H31 Yaka, H41 Mbala, H42 Hunganna
Zone L (2 languages)	L11 Pende, L13 Kwese

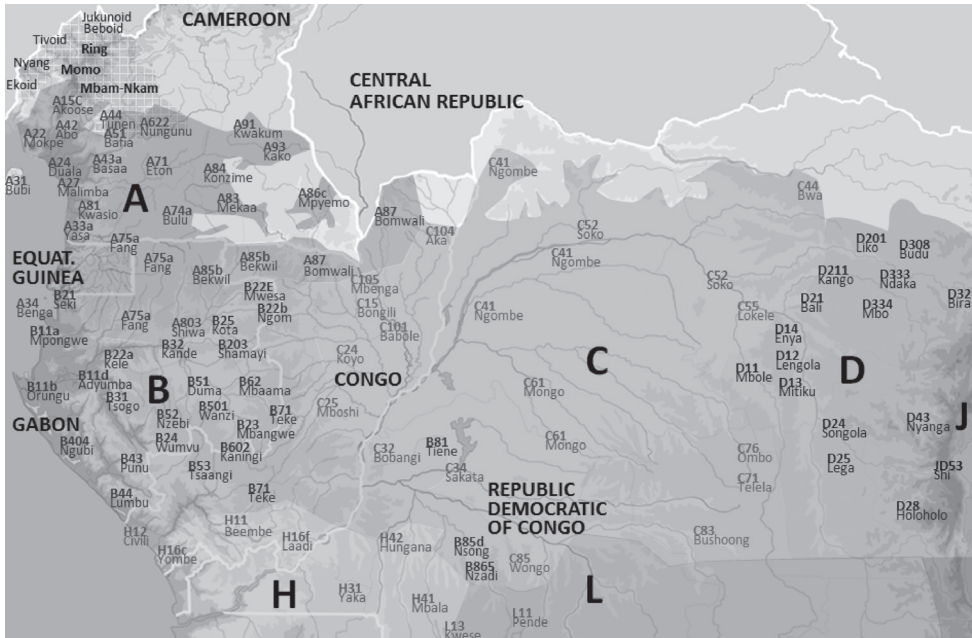


Figure 8.2: Location of South Bantoid and Bantu languages studied in the North-Western area.

Comparative Method in order to find ‘real’ cognates. Otherwise, we used the principle of resemblance. We got a total of 2 427 cognate sets coded as discrete binary characters.

Two trees were built. The first one is a network representation, generated by using a Neighbour-Net algorithm (Bryant & Moulton 2004). Neighbour-Net is a distance-based method that allows the reconstruction of phylogenetic networks. This method calculates the distance between each pair of taxa which produces a distance matrix. Then, the Neighbour-Net algorithm uses agglomeration: taxa are combined into progressively larger and larger overlapping clusters. The second tree is a Bayesian tree-like representation, produced using a Markov chain Monte Carlo (MCMC) approach (Larget & Simon 1999; Pagel & Meade 2004). Model testing was performed (see Table 8.3) and, based on the stepping stone likelihoods (Xie et al. 2010), we selected the two state covarion model (Tuffley & Steel 1998) for the final experiments. (While the stepping stone likelihood would suggest using the two-state covarion plus a gamma site-heterogeneity model we reject it for the same reasons as detailed by Grollemund et al. 2015.) The two state covarion allows the rate of evolution to switch between a fast and a slow rate at various points in the tree, which allows for the modelling of rapid bursts of evolution. The tree was inferred using Mbembe_Jukunoid as the outgroup. The chains for the final experiments were run for 60 million iterations, with a sampling period of 10 000 iterations. The analysis here is on a sample of 1 000 uncorrelated trees taken from the end of the chain.

Table 8.2: Encoding the data (binary encoding).

Languages	'tooth'	Binary	'mouth'	Binary
A621 Nubaca	ɲĩy	1 0 0	ɲiit	1 0 0 0
A81 Kwasio	ʝɛ	0 1 0	num	0 1 0 0
A93 Kako	sũ	0 0 1	numbu	0 1 0 0
B11a Mpongwe	ino	1 0 0	oywana	0 0 1 0
B22a Kele	lefoɲa	0 0 1	gwan	0 0 1 0
B22E Mwesa	digyɛ	0 1 0	gwana	0 0 1 0
B41 Shira	diinu	1 0 0	muunu	0 0 0 1
B51 Duma	nziiju	1 0 0	mujwa	0 0 0 1

Table 8.3: Model testing for selecting the phylogenetic method used in the final experiments. Each model was run five times.

Model	Log-likelihood \pm s.d.	Stepping stone log-likelihood (Xie et al. 2011)
Two state (binary)	-31912.7 \pm 15.8	-33361.1
Two state binary with a gamma site-heterogeneity model (Yang 1996)	-31322.1 \pm 15.7	-32748.8
Two state covarion model (Tuffley & Steel 1998)	-30993.2 \pm 15.8	-32395.9
Two state covarion plus a gamma site-heterogeneity model	-30970.2 \pm 15.9	-32370.6

3. Results

The network presented in Figure 8.3 displays the relationships between languages. According to Fitch (1997), the analysis of the webbing in a phylogenetic network allows to visualise alternative histories. The network representation is more adapted for the study of complex phenomena like horizontal transfers (which corresponds in linguistics to borrowings and contacts between languages). In order to measure the distance between two languages, we have to look at the path from a language x to the language y : if the path involves an important amount of squares, it means that the languages are not closely related. But if the path between two languages is short (small number of squares), we will consider the two languages close to each other. The analysis of the network shows three main groups: the first one labelled 'Bantoid and Mbam-Bubi' is composed of the South-Bantoid non-Bantu languages (including the Jukunoid, Beboïd, Tivoïd, Ekoid and Grassfields languages). Surprisingly, this group also contained some Bantu languages: the Mbam-Bubi languages (some A40-60 languages) linked to A50 languages highlighting the relatedness of these languages with the South Bantoid languages selected for this study. Finally, we can observe a last grouping, formed by the Jarawan languages spoken in Nigeria which are generally classified as Bantoid non-Bantu languages. In the network representation, these

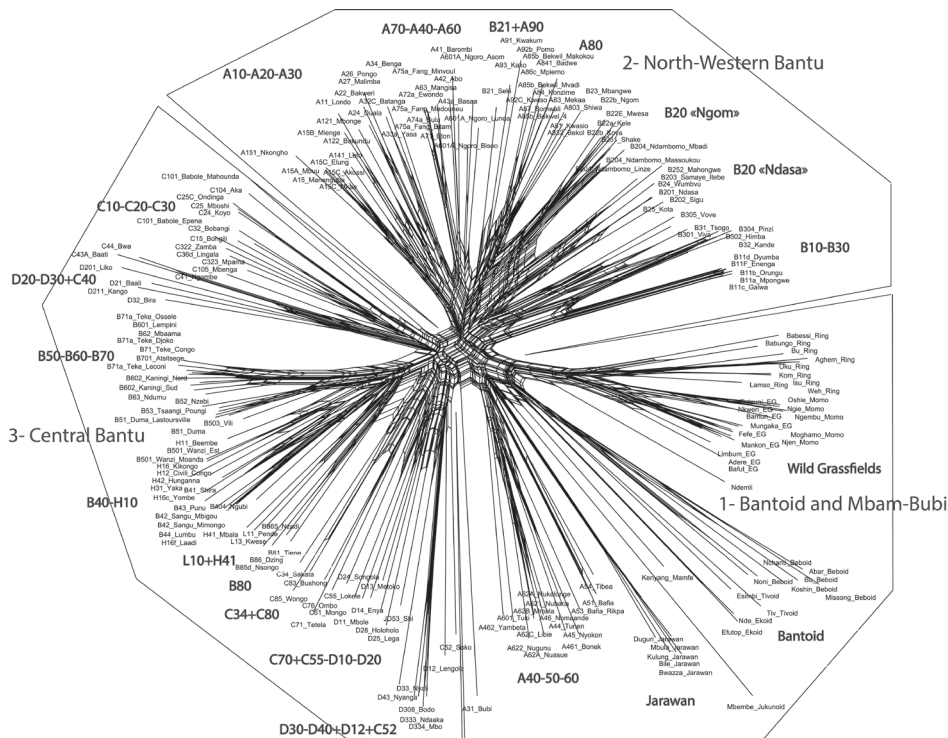


Figure 8.3: Network of 207 Bantu and South Bantoid languages.

Jarawan languages are linked to the A40-50-60 languages on one side and to the A31 Bubi on the other side. The ‘Bantoid and Mbam-Bubi’ group is composed of languages spoken in Cameroon and Nigeria and it highlights the fact that some Bantu languages (Bantu Mbam-Bubi, A31-40-50-60) are closer to Bantoid languages than other Bantu languages. This closeness can be explained by the geographical localisation of these languages, located in a zone of contacts (contacts between Bantoid and Bantu languages in Cameroon). The second group labelled ‘North-Western Bantu’ is composed of the remaining A languages, with the B10-20-30 languages. This group includes languages spoken in southern Cameroon and northern Gabon. We can distinguish a first branch composed of A10-20-30 languages which are very close to a subgroup composed of A70-40-60 languages. Then, we can distinguish a branch composed of A80-A90-B21 languages which are linked to two branches composed of B20 languages (‘B20 Ndas’ and ‘B20 Ngom’). The last subgroup within this North-Western Bantu languages is composed of B10-30 languages. We can notice the long thick branch of the B10 languages, showing that these languages are very similar and close. These North-Western Bantu languages are spoken in south Cameroon and north Gabon. The third and last group that we can distinguish is ‘Central Bantu’ and it is composed of the remaining B languages (B40-B50-B60-B70-B80), C, D, H and L languages. This group covers the southern part of Gabon, Congo and the DRC. The analysis of the network reveals that this ‘Central Bantu’ group can be divided into two subgroups: a first one composed of B40-50-60-70-80-H10-40-L10-C80 which corresponds

geographically to the southern part of Gabon, Congo, the DRC whereas the second subgroup is composed of C10-20-30-40-50-D10-20-30-40 which corresponds to northern and central Congo and the DRC. We can notice here that the B50-60-70 and B40-H10 Bantu languages, spoken in southern Gabon do not belong to the same group of languages spoken in the northern part of Gabon (North-Western Bantu). According to the network, the B40-H10 and B50-60-70 Bantu languages are more close to the C languages spoken in Congo and the DRC than the North-Western Bantu languages spoken in Gabon (B10-20-30).

The network representation allows us to visualise the relationships between languages and to distinguish the proximity (or not) of these languages. However, this representation does not show the hierarchy between the languages. In order to visualise the results differently, we have built a tree-like representation which will display the vertical transmission, the relatedness of the languages (with a common ancestor and the daughter languages).

The Bayesian tree presented in Figure 8.4 allows us to distinguish three main groups (as in the network representation). The first group corresponds to the ‘Bantoid and Mbam-Bubi group’ and is composed of the South Bantoid languages and Mbam-Bubi languages (Bantu). The first language to diverge is the Kenyang, a Nyang language spoken in Cameroon. Kenyang is followed by two Ekoid languages (Efutop and Nde). The third subgroup to split-off is composed of Tivoid and Beboid languages, which are linked together. We can observe a division within the Beboid languages: Noni and Nchanti are opposed to Koshin, Bu, Abar and Missong. This subdivision corresponds to a distinction between Eastern Beboid (Noni and Nchanti) and Western Beboid (Koshin, Bu, Abar and Missong). The last Bantoid group is composed of Grassfields languages. As in the network, we have the Ndemli which is an outgroup to the Grassfields languages. Grassfields languages are then divided into three subgroups: Eastern Grassfields (which is divided into four distinct subgroups: Northern Eastern Grassfield, Ngemba, Bamileke and Nun), Momo and Ring languages (subdivided into three subgroups: South, Centre and West). The last subgroup within the ‘Bantoid and Mbam-Bubi group’ is composed of Bantu and Jarawan languages. Jarawan languages (which are usually classified as Bantoid non-Bantu languages) are linked in this tree to the A31-40-60 languages, also called ‘Mbam-Bubi’ languages. The Mbam-Bubi group is, according to Bastin and Piron (1999), composed of the Bubi A31 and A40-60 languages spoken in the Mbam region in Cameroon. The relatedness of Jarawan with some A languages had been noticed before by Gerhardt (1982), Piron (1998), Blench (2006) and Grollemund (2012). Piron’s (1998: 67) classification put the Jarawan closer to North-Western languages rather than Bantoid languages. This phylogenetic classification confirms the relatedness existing between Jarawan languages and Mbam-Bubi languages and highlights the fact that Jarawan languages have been misclassified. Jarawan languages are Bantu languages that have separated early from the Bantu languages. But, because they have migrated from Cameroon until Nigeria, they have been in contact with many Bantoid languages. Therefore, their lexicon has changed and evolved which has misled many linguists who had classified them as Bantoid. Concerning A40 and A60 languages, they are generally split into two groups: one half is classified with the Mbam-Bubi languages whereas the remaining A40-60 languages are classified with the North-Western



Figure 8.4: Bayesian consensus tree of 207 Bantoid and Bantu languages (no deeper nodes were below 50 per cent). The numbers indicate the percentage of trees in the sample containing that node.

languages. The Mbam-Bubi group has always had a particular status. According to Bastin et al. (1999), Bastin and Piron (1999), Bostoen and Grégoire (2007) and Grollemund (2012), these languages play a key role in the Bantu migration. This group of languages, which are spoken near the Proto-Bantu nucleus, are situated between the Bantoid non-Bantu languages and the Bantu languages. The divergence of these languages is thus linked with the very first Bantu migration wave.

The ‘North-Western group’ is composed of a succession of little groups. The first one is composed of A10 languages, followed by A20-30 languages. These languages are spoken along the Cameroonian coast. Then, we have a group composed of A50 languages, linked to the remaining A40-60 languages and the A70 languages. This group corresponds to a group of languages spoken in the centre of Cameroon and in the north of Gabon. The next to split-off is a group composed of A80-90-B21 languages, followed by a group composed of B20 languages called ‘Ngom’ and a second group composed of B20 languages called ‘Ndasá’. This classification highlights the relatedness between A80 and A90 languages. We can also notice that the B20 group is divided into three groups: (1) the B21 Seki language belongs to the A80-90 group, (2) we then have a B20 ‘Ngom’ group followed by (3) a B20 ‘Ndasá’ group. The particular status of the B20 languages and its division had been debated by Bastin and Piron (1999), Alewijnse et al. (2007) and Grollemund (2012). Indeed, Bastin and Piron (1999: 157) in their lexicostatistic classification were the first ones to notice the isolated position of the Seki B21 and its relatedness with the A80-90. Moreover, their classification has also highlighted the division of the remaining of the B20 group into two groups: ‘Ndasá’ and ‘Ngom’. The particular status of these languages and the division of the B20 group is confirmed in this classification. Finally, the last subgroup to diverge is composed of B10-30 languages spoken in Gabon. Similarities between B10 and B30 languages have always been detected. These two groups form a homogeneous group.

The ‘Central Bantu’ group is composed of two main groups: the first one is composed of all the C and D languages whereas the second group is composed of the remaining B languages, H and L languages. This division corresponds to two geographical areas: the first one contained the languages spoken in the north and centre of Congo and the DRC, whereas the second one is composed of languages spoken in the southern part of Gabon, Congo and the DRC. In the network representation, C60-70-80 languages seem to be situated between these two subgroups (highlighting the probable contacts that might have occurred between C60-70-80 languages and these two subgroups), whereas in the tree C60-70-80 languages are classified with the first subgroup of languages spoken in the north and centre of Congo and the DRC. Within the first subgroup, we can distinguish a first subgroup composed of C10-20-30-40-D20-30 languages which corresponds to the languages spoken at the north of the Congo River (also called ‘North Zaire River’ by Vansina [1995:185]). This subgroup is linked to a group composed of C60-70-80 languages (called ‘North Zaire Inner Basin’, Vansina [1995]) spoken at the south of the Congo River. This group is then linked to a group composed of D10-20-30-40-C50 spoken at the eastern part of the DRC. Within the second subgroup, we can distinguish first the B80 languages linked to C34 Sakata (a language very close geographically and

linguistically to the B80 languages).² Then, we have a group composed of B40 linked to H10 languages, linked to H41-L10 languages. This classification highlights the strong relationships observed between H10 and B40 languages (Bastin & Piron 1999; Grollemund 2012) which can be explained by their geographic proximity. And finally, the last group within the ‘Central Bantu group’ is composed of B50-60-70 languages spoken mainly in Gabon but also in Congo.

4. Discussion

The results of this study have allowed us to divide the enlarged North-Western area into three zones: South Bantoid and Mbam-Bubi, the North-Western Bantu area and the remaining Bantu called here ‘Central’. Both trees (network and tree-like representations) have confirmed these three groupings: the network has put emphasis on the three groupings (with webbing within each subgroup) whereas the tree-like representation shows a succession of radiations inferring that the Bantu migration was composed of gradual spreads.

This phylogenetic classification of the enlarged North-Western languages has allowed us to better understand the classification of South Bantoid languages and Bantu languages, their delimitation and their hierarchy. Concerning the South Bantoid languages, the classification highlighted the division of Mamfe languages first, followed by Ekoid languages, followed by Tivoid linked to Beboïd languages and finally, Grassfields languages. The results have shown the strong relationship between Jarawan languages and Mbam-Bubi languages, implying that Jarawan languages do not belong to Bantoid non-Bantu languages. The network representation has included the Jarawan+Mbam-Bubi group within the South Bantoid group whereas in the tree, this group is situated between South Bantoid and Bantu languages. This implies that these languages spoken in that particular area, near the Proto-Bantu nucleus, constitute a transition between Bantoid and Bantu languages. We can also notice that Grassfields languages constitute an outgroup for Bantu languages. Concerning the North-Western area, our classification indicates that North-Western is composed of the remaining A and B10-20-30 languages, which corresponds geographically to southern Cameroon and northern Gabon. North-Western Bantu is constituted of the divergence of several little linguistic groups (A10-20-30, A40-50-60-70, A80-90-B21, B20 Ngom, B20 Ndasá, B10-30). We can notice that B10-30 languages constitutes an outgroup to the remaining Bantu languages.

Based on the analysis of the results, we can distinguish two linguistic frontiers (Figure 8.5). The first one would be situated in Cameroon and separates the South Bantoid languages from the North-Western languages. In the Bayesian tree, the Mbam-Bubi languages linked to the Jarawan languages are a kind of intermediate grouping located between the South Bantoid languages and the North-Western languages. This intermediate position of the Mbam-Bubi/Jarawan languages is to link with the very first movement of the Bantu-speaking people with the migration of A31-40-60 languages (the long branch of the Jarawan languages seems to indicate

2 The classification of the C34 Sakata with the B80 means that this language was mislabelled or misclassified by Guthrie.

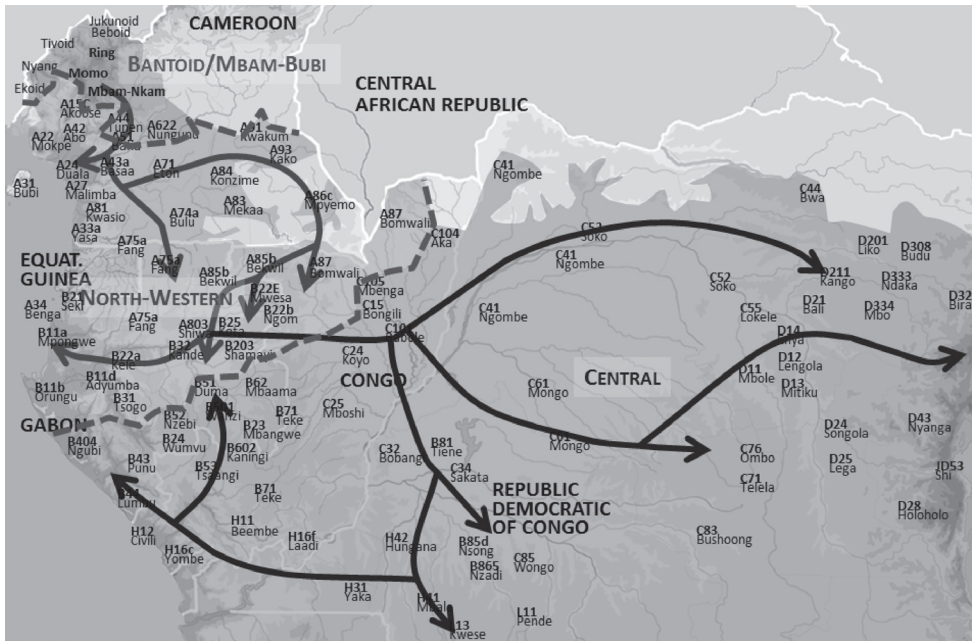


Figure 8.5: Enlarged North-Western area divided according to the groupings distinguished in the trees (Bantoid and Mbam-Bubi group, North-Western area, Central area). Dotted lines represent the linguistic frontiers and the arrows represent the migration paths inferred from the analysis of the trees.

that the Jarawan are quite different to the Mbam-Bubi languages, but there are enough similarities for them to be grouped together), followed by the A10-20-30 languages located in the Cameroonian coast.

The second linguistic frontier is located in Gabon and separates the North-Western languages from the remaining Bantu languages. In the Bayesian tree, we can notice that the B20 and B10-30 groups seem to be intermediate groups situated between the North-Western languages and the remaining Bantu languages. Indeed, these languages are located geographically around the second linguistic frontier (see Figure 8.5). This second frontier divided the Gabon into two areas: the first half (northern) was settled by a first migration wave coming directly from the Proto-Bantu nucleus whereas the second half (southern part) was settled by a later migration wave that originated from the C and D languages. As a consequence, the centre of Gabon constitutes an important zone of convergence. According to Van der Veen et al. (2009), this zone shows complex linguistic situations due to extensive linguistic convergence caused by prolonged contacts and multilingualism. The linguistic frontier observed in Gabon corresponds to the course of the Ogooué River which might have been an impediment for the Bantu migration.

Working on this sample of North-Western languages has allowed us to better understand the delimitation of the North-Western Bantu area. Indeed, the North-Western Bantu group is composed of A languages (minus the Mbam-Bubi languages)

and the B10-20-30 languages. This North-Western group constitutes (after the Mbam-Bubi languages) the second group to diverge within the Bantu tree — these results are in accordance with previous studies such as Grollemund (2012), Currie et al. (2013) and Grollemund et al. (2015). Moreover, this study has highlighted a second group called ‘Central Bantu’ and shows that the south of Gabon has been populated by a later migration wave, which is in discordance with the results of Holden (2002), Holden and Gray (2006) and Rexova et al. (2006), which postulated that there was a migration wave coming from the proto-Bantu nucleus (in a southerly direction) that populated Cameroon, Gabon and Angola.

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Chapter 9

A sixth language family of India: Great Andamanese, its historical status and salient present-day features

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1. Introduction

The results reported in the present paper are based on first-hand language data collected in the Andaman Islands (refer to Figure 9.1) by the author during the period of 2005–2009.¹ The Great Andamanese language family is represented by 10 languages (Figure 9.1) which can be grouped into three subgroups: Southern, Central and Northern. The present form of Great Andamanese (PGA for short) is a ‘koiné’ (Manoharan 1980; 1983) or ‘mixed’ language and derives its lexical resources from the four northern languages, Khora, Sare, Bo and Jeru.² The grammar of the language is largely based on Jeru. Except for Jeru and Sare (previously known as Aka-Cari), all Great Andamanese languages are now extinct. There are only five speakers of PGA left in a community of 56, although the results presented here are based on a study conducted at a time when there were 10 speakers. Two different, but interrelated, methodologies drawing from Historical Linguistics and Linguistic Typology have been used to demonstrate that PGA is an independent language family of India. Data from extra linguistic sources such as anthropology, archaeology and genetics have been used as additional supportive evidence. This presentation will give a summary of the findings and will familiarise the audience with some distinct characteristics of the highly endangered language of the hunter-gatherer society of the Great Andamanese population. The grammatical structures, unique in their own right, expose us to the cognitive world of an extremely ancient civilisation and perhaps give us a glimpse of ‘possible human language’.

2. The genetic history of the Andamanese population

The genetic history of the Andamanese tribes in general, and the Great Andamanese specifically, is highly important for understanding the evolution of modern humans.

1 My fieldwork on Great Andamanese was financially supported by the Hans Rausing Endangered Language Fund, SOAS, University of London, under the Endangered Language Documentation Programme for the project Vanishing Voices of the Great Andamanese (VOGA), 2005–2009.

2 Not to empower one language over the other, I am using PGA for the koiné variety of the present speech form.

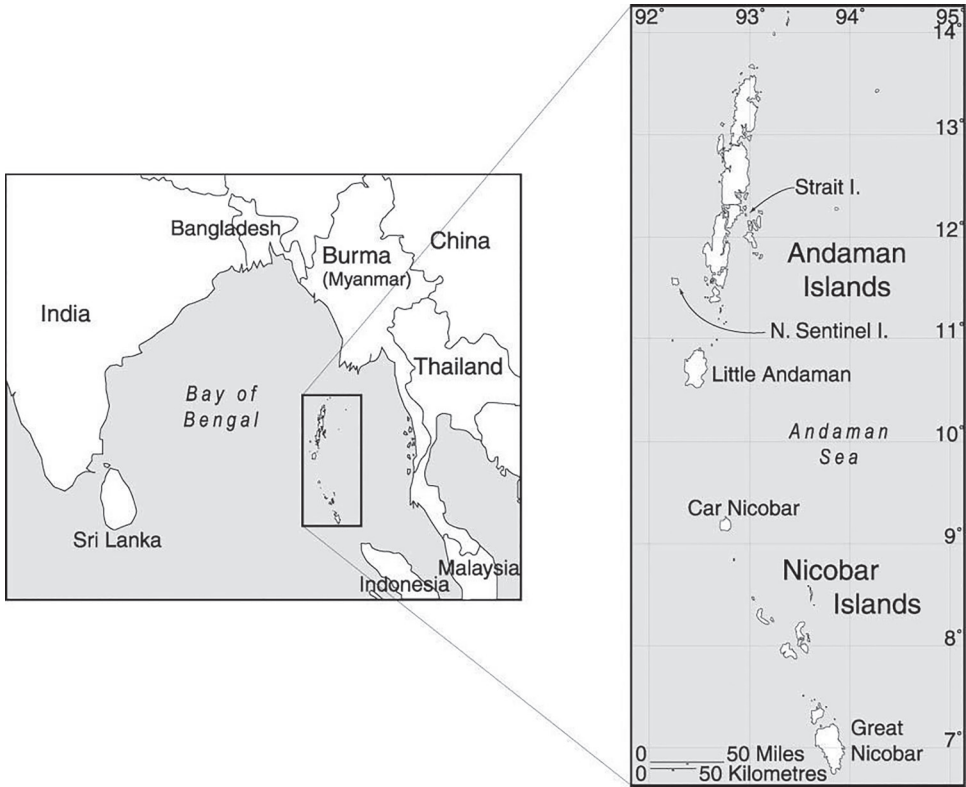


Figure 9.1: Southeast Asia and location of the Andaman Islands.

All living non-African human populations in South, Southeast Asia, New Guinea and Australia are derived from a single dispersal of modern humans out of Africa, followed by subsequent serial founder effects (Ruhlen 1994; Cavalli-Sforza 2001).

Research by geneticists indicates that the Andamanese are survivors of the first migration from Africa that took place 70 000 years before the present. They are the last representatives of pre-Neolithic Southeast Asia (Weber 2006). Linguistic research undertaken by Abbi (2003; 2006; 2009) established for the first time that there were two distinct language families in the Andaman Islands.³ This was made possible by drawing first-hand data from three accessible languages of the Andamans, viz. Onge, Jarawa, and Great Andamanese, and employing two distinct but interrelated methods from Comparative Historical Linguistics and Language Typology. The results of the research were corroborated by geneticists (Thangaraj et al. 2005: 996).

Earlier, Greenberg (1971) proposed an Indo-Pacific macrofamily, which groups together the Papuan languages of New Guinea and Melanesia with the languages of

³ Blevins later (2007) confirmed my results of two independent language families in the area, however, named: the second family Austronesian consisting of Onge and Jarawa—which has been disputed by scientists.

the Andaman Islands and Tasmania but excludes languages of the Austronesian family. His proposal has not been accepted by linguists. The linguistic evidence that Greenberg adduced for Indo-Pacific is unconvincing because of the paucity of lexical similarities and superficial typological similarities.

Present Great Andamanese (PGA) is an endangered and moribund language spoken by the Great Andamanese tribes living in Strait Island and Port Blair, Andaman and Nicobar, who were hunters and gathers till the middle of the 20th century. The development of the Great Andamanese linguistic structures followed a completely different trajectory from the languages of agrarian and pastoral societies. Indigenous tribes of the Andaman Islands are hunter-gatherers of the Negrito⁴ ethnic group (Kashyap et al. 2003). The tribes residing in Great Andaman and their various languages are known as Great Andamanese. Another tribe that lives on the western coast of Great Andaman is known as Jarawa and speaks a language of the same name. Little Andaman is home to the Onge who speak the language of the same name. Both Jarawa and Onge call themselves as *əŋ* and hence, I will refer to their languages as Angan languages (see Figure 9.2).

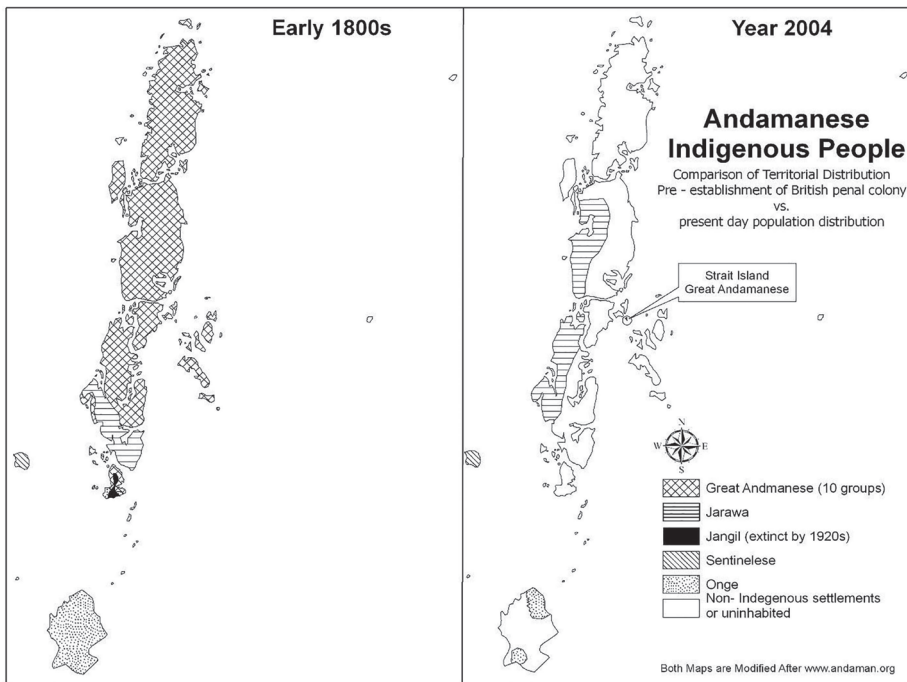


Figure 9.2: Geographical distribution of Andaman Islanders in the present times and in the early 19th century.

4 It had been customary to refer to a member of any various small-statured, indigenous peoples of Africa, the Philippines, the Malay Peninsula, the Andaman Islands and southern India by the term ‘Negrito’ in the disciplines of genetics and anthropology. They are believed to represent an early split from the southern coast migrants from Africa.

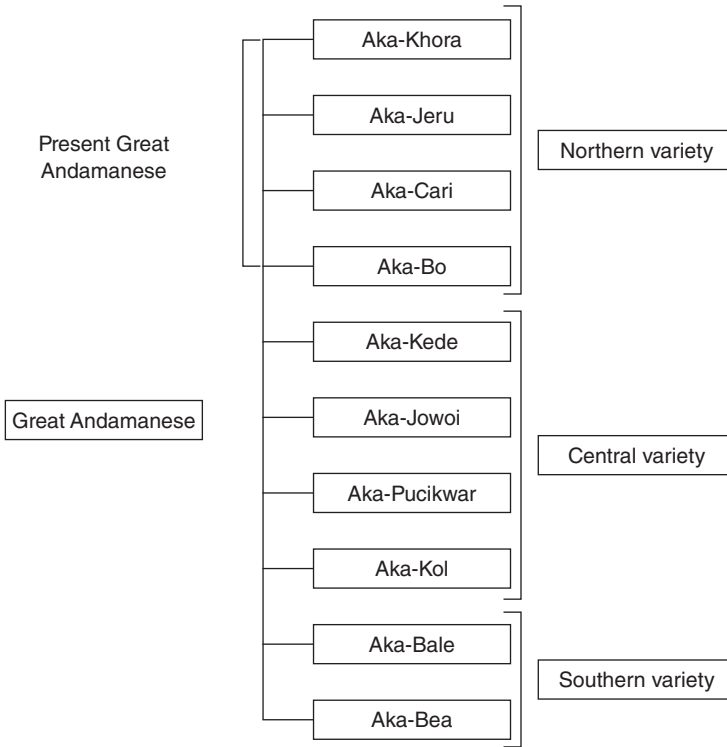


Figure 9.3: Great Andamanese and its regional varieties.

Great Andamanese constitutes the sixth language family of India (Abbi 2006; 2008–2009), the other five being Indo-Aryan, Dravidian, Tibeto-Burman, Austroasiatic, and Tai-Kadai,⁵ all spoken on the mainland of India. Initially, Great Andamanese was considered an ‘isolate’ (Basu 1952; 1955; Manoharan 1980; 1983). Categorisation of Onge-Jarawa as ‘Ongan’, within Austronesian argued for by Blevins (2007) may have its merits but has proved controversial and far from universally accepted (see Blust 2014).⁶ Although it is not conclusively established whether the group Jarawa-Onge belongs to Austronesian, its typological and genealogical distinction from Great Andamanese has been established by Abbi (2003), who finds corroboration in

5 Although the Tai group of languages were considered to be the members of the Siamese-Chinese family of the Indo-Chinese forms of speech (Grierson 1904: 59–61), subsequent researchers establish that these languages spoken in India belong to the ‘Southwestern branch of the Tai family and some, maybe all, have been in the area since the 13th century AD’. (Hock 2016: 155). Also refer to Edmondson and Solnit (1997), Blust (2014: 304) and Sharma (2014). Tai languages are found in Assam and the adjacent areas of Arunachal Pradesh. Out of seven languages, only five survive now. These are Khanti, Aiton, Khamyang, Phake and Turung. Nora and Ahom became extinct recently.

6 Blust (2014: 329) after investigating all the pieces of evidence given by Blevins comes out very strongly against her hypothesis. To quote him: ‘To put it bluntly, the AON hypothesis is a castle built on sand, an elaborate illusion fostered by the misplaced hope that a major discovery has been made which somehow eluded the investigations of all other scholars’ (Ibid: 33).

geneticists' findings that the speakers of these languages belong to two separate haplogroups, M31 and M32, respectively (Thangaraj et al. 2005). Their research indicates that Andamanese are the descendants of early Palaeolithic colonisers of South-east Asia and are the survivors of the first migration from Africa that took place 70 000 years ago.

3. The languages of the Andaman Islands

The two language groups that I am going to discuss here are Angan, which includes Onge as well as Jarawa and Present Great Andamanese belonging to the Great Andamanese language family that once had 10 languages in its fold. I will briefly summarise the phonological features of the Angan languages and then go on to discuss in detail the characteristic features of the Present Great Andamanese language.

3.1 The sound system

3.1.1 Angan languages

Jarawa and Onge share their systemic inventory of seven vowels. Jarawa vowels are tabulated as follows (Kumar 2012).

Table 9.1: Vowels of Jarawa.

	Front	Central	Back
High	i		u
High-mid		ɨ	
Mid	e	ə	o
Low		a	

As far as the consonants are concerned, Jarawa and Onge differ from each other in the inventory as well as in the types of consonants. While Jarawa has 28 consonants at the phonemic level, Onge has only 19. While Jarawa offers a contrast at the level of voicing as well as of aspiration, Onge is marked by the absence of any aspirated obstruents. Moreover, it seems to have lost /p/, the unaspirated voiceless bilabial obstruent (Abbi 2006). Thus, the Jarawa consonant inventory contains voiceless plosives /p, t, t̚, č, k/ and voiced plosives /b, d, d̚, ʝ, g/. For aspirated voiceless plosives, only four places of articulation are used: dental, retroflex, palatal, and velar /tʰ, t̚ʰ, čʰ, kʰ/. In contrast Onge has voiceless plosives /t, t̚, č, k/ and voiced plosives /b, d, d̚, ʝ, g/ and no aspirates. Retroflex sounds are commonly attested in the Angan languages. Languages of this family are marked by the presence of a labialised voiceless velar obstruent /kʷ/. Jarawa offers the variation /kʰʷ/ and another labialised pharyngeal fricative /hʷ/. Nasals offer four series /m, n, ɲ, ŋ/ in both Onge and Jarawa. Bilabial /w/ and palatal /j/ are the only two semivowels that exist in Angan languages. Diphthongs occur at all tongue positions and at three heights. Thus, Onge and Jarawa share their sound system to a large extent and any difference that exists today is due to an individual process of change in each language, such as the loss of /p/ in Onge.

3.1.2 Great Andamanese

Unfortunately, while Jarawa and Onge are thriving languages being passed on to the younger generation, the Great Andamanese language family is endangered, as its lone surviving language PGA is on the brink of extinction. The speech of the last few speakers capable of using the language is marked by enormous variation, a characteristic feature of a dying language. The variation is due to the mixed nature of the language (Manoharan 1986; 1989; Abbi 2011) as well as because the language is not in use by all the speakers on a daily basis (Abbi et al. 2007). The published material on this family is very scanty, mainly available in the writings of British anthropologists who were deputed to the Andaman Islands when the penal colony was established in 1868. They brought with them Hindi and Bengali ‘officialise’ registers. More detailed research was undertaken in post-independence India by, for example, Manoharan (1980; 1983; 1989), Basu (1952; 1955) and Zide and Pandya (1989). However, intensive research on the present form of PGA (Abbi 2006; 2011; 2013) gives us a better assessment of the linguistic picture. Comparing the results of Abbi (2013) with the late 19th-century works of Man (1923) and Portman (1887), the following conclusions can be made about the sound system of the language family in general, and PGA in particular.

PGA has a seven-vowel system distributed in the front and the back part of the tongue, as shown in Table 9.2. The language has no central vowel, a rather striking feature as compared to other languages of the Andaman Islands.

Table 9.2: Vowels of Great Andamanese (Abbi 2013).

	Front	Central	Back
Close	i		u
Half close	e		o
Half open	ɛ		ɔ
Open			ɑ

A variety of combinatory possibilities of vowel clusters in all positions is a rather striking feature of the language family. A three-vowel cluster at the end of a word such as [maia] ‘sir’ or [e-boio] ‘ripen’ is not uncommon. Other languages of the Andaman Islands, namely Onge and Jarawa do not show such a pattern (Abbi 2006).

As far as consonants are concerned, there are 13 oral stops, most occurring in contrasting pairs. The language has ample examples of voiced and voiceless dental and retroflex stops. Only the voiceless sounds are aspirated. Thus, /t/ : /t^h/ : /t̪/ : /t̪^h/ : /d/ : /d̪/ , /p/ , /b/ , /c/⁷ , /j/ , /k/ , /k^h/ exist; though /g/ is noticeably absent in PGA. A voiceless bilabial fricative /ɸ/, a voiced bilabial fricative /β/ which occur only in the speech of one person (hence in parenthesis in Table 9.4), and a labialised /l^w/ are unique features (occurs in one male speech) of this language family. However, due to

7 Its variant /c^h/ exists in some varieties as in the speech of Khora and Bo. For details on variation refer to Abbi (2013: 47).

contact with Hindi and other Indo-Aryan languages these sounds are being replaced by /p^h/, /b/ and /l/ respectively across speakers. Some of the examples for /l^w/ in all positions from Jeru, one of the North Great Andamanese languages, are: /l^wec/ ‘arrow’, /bi:l^wu/ ‘ship’, and /bol^w/ ‘rope’. This labialised lateral is a unique feature of one of the terminal speakers and cannot be considered a characteristic feature of the PGA language family in the absence of substantial evidence from other speakers.

Four distinct nasals /m, n, ɲ, ŋ/ exist in all positions. Two liquids /l, r/ and two sibilants /s, ʃ/ are commonly found in all Great Andamanese languages. Retroflex [ɽ] was observed in Khora in all positions. Thus, /εɽɽulu/ ‘eye’, /εɽla/ ‘alone’ and /bɔɽɽɛɽ/ ‘storm’ in the speech of the last speaker of Khora was attested.

Languages of this family are rich in consonant clusters existing both initially and medially in a word. The medial consonant clusters offer a large variety unparalleled by other languages of the Andaman Islands.

A word can be as long as seven syllables in PGA. The names of body parts, birds, fish, insects, reptiles and other jungle creatures provide most of the complex words with long syllable structures, e.g. *araɔomotolɔcoŋ* ‘skin of scrotum’.

4. Comparative grammatical systems

A consolidated comparative table of the sound system of the three languages gives us some indication of the distinctness of the two groups—the Angan (comprising Onge and Jarawa) and Great Andamanese. PGA differs from Jarawa and Onge in eleven features, however not the identical ones. Although both PGA and Angan share the inventory of the vowels, i.e., seven, it is in the realm of nature of vowels and diphthongs that Great Andamanese is distinguished most from other languages. Consider tables 9.3 and 9.4.

A small inventory of body parts in three languages reveals the absence of any cognate relationship between the Angan and Great Andamanese language families in the basic vocabulary (see Table 9.5). For details on body parts on Great Andamanese readers may consult Abbi (2011). The prefixes in the Angan languages before the body part represents ‘inalienable human possessor’, while the proclitics (symbolised by the = sign) attached in the beginning of the words represent body division classes discussed in detail later in the paper.

In addition to the distinct phonological systems and non-cognate relationship in basic vocabulary such as body parts, there are several other features that set Great Andamanese as a family apart both typologically and historically. These are:

1. A complex verb system of Great Andamanese.
2. Distinct morphology, with heavy use of proclitics in Great Andamanese.
3. Distinct and unique genitive constructions, i.e. alienable possession is dependent marked, while inalienable possession is head marked in Great Andamanese, but not in Angan languages.
4. Non-sharing of cognates with the Angan family in kinship terms and other terms used for flora and fauna as well as the basic word list for Indian languages (Abbi 2001).
5. Presence of pervasive body division markers in Great Andamanese.

Table 9.3: Comparative sound features in three languages of the Andaman Islands (based on Abbi 2006 and Kumar 2012).

No.	The Sound System	PGA	Jarawa	Onge
1	Aspiration	Yes	Yes	No
2	Retroflex	Yes	Yes	Yes
3	Bilabial fricative	Yes	Yes	No
4	Four-way nasal contrast	Yes	Yes	Yes
5	Labialised velar	No	Yes	Yes
6	Labialised aspirated velar	No	Yes	No
7	Labialised pharyngeal	No	Yes	No
8	Labialised lateral	Yes	No	No
9	Retroflex lateral	No	Yes	Yes
10	Number of vowels	7	7	7
11	Vowel length	Yes	Yes	No
12	Back mid lax vowel	Yes	No	Yes
13	Front mid lax vowel	Yes	No	No
14	Central mid vowel	No	Yes	Yes
15	Central mid high unrounded vowel	No	Yes	Yes
16	Central low vowel	No	Yes	Yes
17	Majority of words end in open syllables	No	Yes	Yes

Table 9.4: Comparative sounds in three languages of the Andaman Islands.

Sounds	PGA	Jarawa	Onge
i	-	+	+
f	-	+	+
ə	-	+	+
g	-	+	+
h	-	+	+
l	-	+	+
c ^h	-	+	+
k ^w	-	-	+
β	+	-	-
Φ	(+)	+	-
l ^w	+	-	-

For reasons of time I must refer the reader to the grammar of the Great Andamanese language (Abbi 2013). I will, instead, highlight the use of proclitics in Great Andamanese and show how the language family is unique in such a way that the body division markers that appear as proclitics pervade the entire grammatical system of the language, a fact not shared by any other known language of the world so far. In

Table 9.5: Comparative lexicon in body part terms in three languages of the Andaman Islands.

No	Gloss	PGA	Onge	Jarawa
1	'forehead'	<i>er=be:ŋ</i>	<i>ine-ɟale</i>	<i>ən- eč'emug</i>
2	'eye'	<i>er=ulu</i>	<i>ine-bo</i>	<i>ən-epo</i>
3	'ear'	<i>er=boa</i>	<i>ine-ik^həwə</i>	<i>ən- ik^hwa</i>
4	'elbow'	<i>bala-tara-ɟole</i>	<i>ine-it^hoha</i>	<i>ən-itoge</i>
5	'thumb'	<i>oŋ=kenap</i>	<i>ine-obot^ha</i>	<i>ən-oboɟage</i>
6	'thigh'	<i>o=buco</i>	<i>ine-ibe</i>	<i>ən-ibo</i>
7	'knee'	<i>o=curok</i>	<i>ine-ola</i>	<i>ən-olage</i>

this respect, this is not only a distinct language family of India, but also a unique one. It has some raras, as described by Wohlgemuth and Cysouw (2010).

5. More on Present Great Andamanese (PGA)

PGA is agglutinative in terms of its treatment of morpheme boundaries, but polysynthetic in word morphology. See page 143, *δ*fro examples 1–9 for sentence structure. A large number of morphemes, affixes, phonological words, clitics, and incorporated elements can constitute a single word (1). The incorporation of reflexives (6) and nouns (7) is seen in verb complexes. These verb complexes may constitute a verb phrase. Thus, verbs are much more versatile and elaborate than nouns.

PGA is a prototypical 'double-marking' language where the head or possessed noun is obligatorily marked in inalienable possession, but it is the possessor, the dependent noun, which is marked in alienable possession (sentence 5). While the genitive phrase precedes the head noun (as is typical of verb-final languages), other modifiers follow the modified elements (9). Moreover, animacy determines the phonetic shape of the base form of the class marker. If the possessor noun is non-animate, the class marker is prefixed by a dental consonant *t-* otherwise with all animate possessors, both human and non-human, class markers begin with a vowel. Thus, possessive class markers *ara=*, *ot=*, etc., which are indicators of animate possessors, will be rendered as *tara=*, *tot=* respectively, if the possessors are inanimate beings. Thus, live animals and their body parts will be marked by a class marker without the initial */t-/* as is the case with human body parts. However, when the part is cut and separated from the body the associated marker will be prefixed with */t-/*. Thus, not *ra er=co* 'pig's head' but *ra ter=co* 'pig's head' [cut off]. Part-to-component relationships follow the same principle as the two parts are inherent and inalienable but non-animate (8).

In addition, case markings are suffixed to the nouns. The verb complex includes a large amount of information in multi-morphemic strings that include object clitics, incorporated nominals in causative constructions, reflexive and reciprocal prefixes, as well as suffixes expressing tense, aspect, and mood. Overt external NPs are present in addition to the verb complex. However, these are optional and often dropped in discourse. PGA is a verb-final language. Refer to examples 1–9 given later in this paper.

The grammar of the language represents important cognitive aspects of the community. The conceptualisation by Great Andamanese is anthropocentric. They

use human categorisation to describe and understand non-human concepts. The human body provides the most important model for expressing concepts, not only of spatial orientation but also of relational nouns, attributive categories, and inherently related objects of actions and events, which are conceptually dependent upon each other. The conceptual dependency is represented by the appropriate clitic that attaches to various grammatical categories. Thus, a marker for organs inside the body is attached to the verb ‘think’ as in *e-biŋe* as thinking is an internal activity. The same marker can be used for a person who is internally beautiful (English ‘nice’) as in *e=buŋoi* but it is *er=buŋoi* for an externally beautiful person because *er=* is reserved for external parts of the body, or *a=mu* ‘dumb’ because marker *a=* is reserved for mouth and mouth-related activities implying an inalienable relationship between the person and the modifier. Although many languages use human body part terms to represent different aspects of grammar (Majid 2010), what I am going to present here is unparalleled and possibly unique.

Many verbs are individuated by the body division class marker proclitics, in which the body part semantics shift into event-type semantic categories of various kinds. These proclitics combine with verbal roots of any valence. Although most of the verbs in the language are obligatorily preceded by these body-division class proclitics, few verbs in the language appear as free forms. Thus, PGA offers both bound and free forms of verbs. The seven body division class markers are grammaticalised to a large extent, but the original semantics of each of the body-division terms is still discernible in a few markers. For instance, class 1 *a=* refers to ‘mouth’ and is attached to verbs such as ‘abuse’, a mouth-related activity. Class 7 *o=*, on the other hand, refers to ‘lower part of the body’ or ‘rounded organs’ and is attached to resultative verbs such as ‘make a nest’ or ‘ask’. The following table represents the seven body division class markers.

Table 9.6: Seven basic zones in the partonomy of the body in PGA.

Classes	Partonomy of human body	body division markers
1	mouth and its semantic extension	<i>a=</i>
2	major external body parts	<i>er=</i>
3	extreme ends of the body like toes and fingernails	<i>oŋ=</i>
4	bodily products and part-whole relationship	<i>ut=</i>
5	organs inside the body	<i>e=</i>
6	parts designating round shape/sexual organs	<i>ara=</i>
7	parts for legs and related terms	<i>o= ~ ɔ=</i>

As noted earlier, all bound forms are obligatorily preceded by one of the seven body division class markers or object clitics (see sentences 2 and 3). In addition, verbs may optionally be preceded by a valency-indicating morpheme, such as the causative or applicative (sentence 4), or by a reflexive morpheme indicating self-directed action (sentence 6). If the verbal root morpheme ends in an open syllable, a formative affixal consonant *-b-* or *-k-* or *-l-* is infixated between the verb root and the following mood or tense marker (as in sentence 1). This can be illustrated in the schema below. Aspect markers are added directly to the verb root without the formative affix. Hence, verb morphology is complex but transparent. It may be schematised as follows:

Schema 1: (PROCLITIC) (VALENCY) (REFLEXIVE) **verb root** ([FORMATIVE AFFIX])
(MOOD/ASPECT) [TENSE]

Here are a few sentences from PGA to exemplify the verb complex and pervasive body division class markers (symbolised as CL). One can see that body class markers are attached to both transitive and intransitive verbs.

1. *a=joe* *a=tɔŋnu* *taracɔr-e* *eole-incik-o*
CL1=Joe CL1=Tong-PL spring-ABS see-go-FA-PST
'Joe and Tong went to see the spring.'
2. *a=Ilphe* *er=nolom*
CL7=Ilphe CL2=write-NPST
'Ilphe writes.'
3. *t^h=a=mai* *k-a=t^hi-t=bɔl-o*
1SG=CL1.POSS=father OBJ-CL1=search-OBJ=went off-PST
'(They) went off to search my father.'
4. *u* *k^hider-e* *ta-ut=phay-om*
3SG coconut-ABS APPL-CL4=dry-NPST
'He is drying a coconut (jointly with other people).'
5. *nu* *ifo* *julu*
NU GEN dress
'Nu's dress.'
6. *t^ha* *(ɛ)m-et^h-om*
1SG REFL-recline-NPST
'I am reclining.'
7. *t^h=ut=qiu-birate-k-ɔm*
1SG=CL 4=sun set-FA- NPST
'It will take me the whole day (to finish the job).'

8. *fɛc* *ta=p^hoŋ*
 vessel CL1=cavity
 ‘The mouth of the vessel.’
9. *julu* *tɛr=ɖi^h-(bi)* /*k^huro/* *be*
 dress CL2=hole-ABS big COP
 ‘There is a big hole in the dress.’

Interestingly, these verbal clitics are intertwined with the manner of action and thus, each of the seven clitics represents the distinct manner of an action when attached to verbs. Consider verbs related to ‘to cut’.

<i>ara=p^ho</i>	[CLASS 6] ‘cut down’, ‘fell’ (tree)
<i>ɛr=p^ho</i>	[CLASS 2] ‘hit with a stick’ (from front)
<i>ut=p^ho</i>	[CLASS 4] ‘cut from the source’ (betel nut or coconut)

Nouns in general are poor in affixation compared to verbs. Cross referencing proclitics occur on verbs as well as on temporal adverbs.

As said earlier, the striking feature of the language is the heavy occurrence of proclitics. Most of the free personal pronouns exist in reduced form as simple proclitics and when they occur with other clitics, such as body-class proclitics, they offer the possibility of clitic sequencing. Over the years, these proclitics have fused with nouns and verbs and are no longer segmental or transparent in meaning in many words. This may be a result of grammaticalisation or of the development from concrete lexemes to abstract grammatical concepts that normally takes place during language change, but more significantly also during language evolution (Givón 2002; Heine & Kuteva 2007). The following table is exemplary.

Body division class markers occur with nouns, modifiers, and both action and state verbs, and express the relationship between (a) an action and its object, (b) between an action and its result, (c) between an action and its manner, or (d) between an object and its state. This relationship between the two grammatical categories symbolised by class markers represents the concept of inherency that is perceived by the speakers of the language. The dependency feature of various grammatical categories on the preceding body division class marker may be understood as the ‘inherency factor’. The notion of inherency further represents a conceptual dependency between the object and its possessor such as ‘house’ or ‘ornaments’ as each of these words are inalienably possessed. It is proposed here that various kinds of inherent, non-transferable, inter-dependent relations between two elements are represented by body class markers that function as proclitics to the dependent grammatical categories. The Great Andamanese conceptualise their world through these interdependencies and hence the grammar of the language encodes this important phenomenon in every class form expressing referential, attributive and predicative meaning. The author has observed that these features are at risk of getting completely lost due to current contact with Hindi.

Table 9.7: Partonomy of human body and grammaticalisation process in PGA.

Classes	Partonomy of human body	Body division markers	Verbs	Adjectives	Adverbs
1	mouth and its semantic extension	a=	mouth-related activity, origin, e.g. <i>a=jire</i> 'abuse', <i>a=kop'o</i> 'sprout'	mouth-related attributive quality of a person, e.g. <i>a=mu</i> 'mute', <i>a=tutlup</i> 'greedy'	deictic meaning of front or back, anteriority of an action, e.g. <i>a=karap</i> 'behind', <i>a=kaulu</i> 'prior to'
2	major external body parts	εr=	activity in which the front part of the body is involved. e.g. <i>er=luk</i> 'weigh'	attribute of size, external beauty, e.g. <i>er=buŋoi</i> 'beautiful'	deictic meaning of adjacency, uncontrollable actions/emotions, e.g. <i>er=betto:fo</i> 'adjacent to/near X', <i>er=achil</i> 'surprised'
3	extreme ends of the body like toe and fingernails	oŋ=	hand-related activity, action to do with extremities of body, e.g. <i>oŋ=c'o</i> 'stitch', <i>oŋ=tuyuro</i> 'trembling of hands'	attributes related to limbs, e.g. <i>oŋ=karacay</i> 'lame', 'handicapped', <i>oŋ=toplo</i> 'alone'	Indicating manner, <i>oŋ=kocil</i> 'fast', 'hurriedly'
4	bodily products and part-whole relationship	ut=	directional, away from the ego, experiential, e.g. <i>ut=cone</i> 'leave', <i>ut=t'e'e-bom</i> 'be hungry'	attributive quality of an X after a part is taken out of it, e.g. <i>ut=lile</i> 'decay', <i>ut=lok'o</i> 'bare'	emerging out of something, deictic meaning of 'towards X', e.g. <i>ot=le</i> , 'seaward' <i>ot=bo</i> 'backwards'
5	organs inside the body	e=, ε=	internalised action, when the effect of an action can be seen on the object, or experienced, e.g. <i>e=leco</i> 'suck', <i>ε=rino</i> 'tear'	inherent attribute of X, e.g. <i>e=sare</i> 'salty', <i>ε=bεn</i> 'soft'	deictic meaning of 'in the middle of X' <i>te=k'il</i> , <i>e=kotra</i> 'inside'

6	parts designating round shape	<i>ara=</i>	action that involves side or middle portion of the body, e.g. <i>ara=de/lo</i> 'be pregnant'	attribute of size, 'time' and belly-related, e.g. <i>ara=p^he/ŋk^heto</i> 'big bellied', <i>ara=ka/ŋa</i> 'stout/dwarf'	deixis of immediate vertical or horizontal space, e.g. <i>ara=ba/lo</i> 'behind X', <i>tara=ta/</i> 'right under X'
7	parts for leg and related terms	<i>o= ~o</i>	action which results in roundish object or in a definite result, e.g. <i>o=c/orno</i> 'make nest', <i>o=be/o</i> 'sting'	external attribute of an X, shape or structure, e.g. <i>o=ba/lon</i> 'round', <i>o=p^helala</i> 'slippery'	temporal deixis relating to 'sun rise' or directional deixis, <i>o=f/o:</i> 'day break', <i>o=kara</i> 'sunset'

6. Possibility of having traces of archaic structures

Languages evolve and grow in layers and at a single point of time, one can witness different layers of grammatical and lexical items superimposed on each other, like the layers of different civilisations of different times uncovered by an archaeologist in a single excavation. Linguists can reconstruct proto-forms and identify various stages of development by careful historical and comparative methods.

However, we are also aware of the fact that historical linguistics cannot help us reconstruct forms beyond 10 000 years. Linguists have tried other methods to establish grammatical processes and earlier forms of a language or languages. Recent research on language evolution (Hurford & Dediu 2009; Hurford 2011a; 2011b, among others) and evolution of grammar (Heine & Kuteva 2007), along with research on the typology of the world's languages (Haspelmath et al. 2005) lead us to present the following arguments in favour of Great Andamanese retaining one of the archaic structures of human language.

The structures discussed above, viz. body division classes and their pervading character, must have developed in stages, each superimposing itself on the previous one. To begin with we must come to terms with the fact that the culture of a community has a big role in shaping the language. This is in tune with the co-evolutionary approach adopted by Evans and Levinson in 'understanding language within the context of the interactions between culture and human biology' (2010: 2742).

The body division class markers could have originated as a culture-specific trait of the Andamanese languages. The phenomenon of body-division classes and their grammaticalised markers attached to every form-class appears to be a feature of Great Andamanese grammar that has been retained for a long time.⁸ As structural properties of language change very slowly, these structures have stayed the same through each of the descendant branches of the Great Andamanese language family, perhaps in the order of thousands of years. The basis for the antiquity of these

⁸ Man (1875–1879) also notes the pervasive character of these markers in the Great Andamanese languages of the 19th century.

structures and their gradual grammaticalisation could be established by the following observations.

It is not surprising that the world-view of an early society could be expressed through the human body. The primary and primordial reference point was the body and its divisions. Each division of the body encapsulated zones or parts (see Table 9.7). Thus Class 6 encompasses the side of the body and its extended meaning, i.e. periphery. Secondly, the extension of the body division classifier system to the rest of the word classes shows the movement from concrete to abstract. This was possibly the second or third stage of grammaticalisation of these classes. The body-division classes also demonstrate spatial dimensions, such as ‘top-bottom’ (Classes 2 and 7), ‘sides/edge inside’ (Classes 6 and 5); ‘surface-emission’ (Classes 1 and 4) and ‘extremities’ (Class 3). This stage must have followed much later as it is highly grammaticalised and abstract. It is generally seen that in the process of grammaticalisation lexical units are desemanticised and decategorialised and turn into invariable adverbial categories indicating various spatial dimensions quite late in stage (Heine & Kuteva 2007: 64).⁹

Each of the body divisions had extended meaning when employed with words belonging to various grammatical classes. In this respect, these classifiers were grammaticalised over a period as part of the evolution of the language. An intermediate stage must have arisen, when it would prove difficult to segregate these forms from the main root lexemes. During language evolution, some of the class markers became lexicalised. For instance, in words such as *iulo* ‘loose’, *ieke* ‘roast’, *i:ople* ‘light’, *ese:kke* ‘change’, *eruclo* ‘half’, *erlela* ‘intoxicated’, *ame* ‘earth’, *ale* ‘lightning’, *odaje* ‘skull’ and *okobœ* ‘answer’. It is not possible to segregate the proclitics from the root morphemes as they are embedded in the lexemes in such a way that the former are an indivisible part of the lexeme.

Although there is no documentary evidence for either confirming or refuting this hypothesis, facts such as the antiquity of the tribe, its isolation from the rest of the world for thousands of years (Kashyap et al: 2004), and the ways of thinking that lead to the anthropic system underlying the Great Andamanese grammar suggest this possibility.

7. Extra-linguistic evidence for a sixth language family

Let us consider other pieces of evidence, outside the purview of language and linguistics that support the grouping of Great Andamanese as a separate language family. Research on population genetics, anthropology, culture studies and archaeology have been used.

1. Studies have shown that the Jarawas and the Onges have distinct physiological and genetic signatures from the Great Andamanese, like a low blood pressure profile, low body temperature, low pulse rate and very low frequency to absence of the B gene in the ABO blood group (Kashyap et al. 2004: 3). Kashyap and his

⁹ Heine and Kuteva (2007: 289) discuss grammatical evolution in various layers operating in the network of pathways of grammaticalisation. According to them, in the six-layers system, temporal and spatial displacement categories appear quite late, in the fifth layer.

team (2003) explored the origins and affinities of the Andaman Islanders, and their relationship to the similar ethnic groups of India, Southeast Asia and Africa. They conclude that:

- (a) the Negrito populations of Andaman Islands have remained in isolation for a longer period, than the descendants of the founder populations of Africa,
- (b) the admixture of the Great Andamanese with the settlers and people from mainland India is more recent,
- (c) the Jarawas and the Great Andamanese form a distinct separate branch which could be due to the much earlier separation of the ancestral population of these tribal groups,
- (d) The Andaman tribes maintained a separate genetic identity among the world populations. (Abbi 2009: 810).

Thangaraj et al. (2003: 86–93) initially proposed that ‘Andamanese have closer affinities to Asian than to African populations and suggest that they are the descendants of the early Palaeolithic colonisers of Southeast Asia’. However, their later research in 2005 (308: 996) on mtDNA indicated that the two ancient maternal lineages, M31 and M32 in the Onge and the Great Andamanese, have evolved in the Andaman Islands independently from other South and Southeast Asian populations. These two haplotypes are not found among the Indian populations.

2. Evidence from archaeological studies of Andamanese kitchen middens, indicates that Andamanese used a Toalian stone technology found all over the Indonesian archipelago, which indicates that Negritos were more widespread than has been thought (Cooper 1993).
3. It has also been established culturally that the Great Andamanese differ from Jarawa and Onge in their design and construction of huts, weapons, boats and canoes, ornaments and customs. The Onge-Jarawas differ from the rest of the tribes of the Andaman Islands by an absence of the practice of tattooing (Portman 1899, reprinted 1990: 22; Temple 1903, reprinted 1994: 13).

All these studies indicate that the communities speaking Great Andamanese languages and Angan languages were genetically, historically and culturally distinct. The possibility of different communities speaking the same language due to contact is also ruled out (Abbi & Kumar 2011).

To summarise the discussion, the languages of the Great Andamanese appear to be different and distinct from the Angan languages, i.e. Jarawa and Onge as well as from other language families of mainland India. All kinds of evidence indicates that Great Andamanese constitutes a sixth language family of India.

Conclusion

To conclude, the structures discussed here, viz. body division classes and their pervasive character are culture-specific traits and developed in stages in a co-evolutionary product. This is a co-evolutionary journey of language development.

Such structures are not attested in any language of the world so far; however, they were present in other Great Andamanese languages, e.g. Aka Bea (Man 1923),

Aka Kede (Portman 1887), Khora, and Bo,¹⁰ all of which have become extinct. Despite several other internal innovations, PGA still retains these structures. This proves that the Great Andamanese languages not only shared this trait with all other languages of the same family, but that it was an inherent feature of the grammar of the entire language family.

Considering the sociohistorical aspects of the Great Andamanese, some speculation may be permitted here. Since it is believed that the Great Andamanese tribes are remnants of the first migration out of Africa from 70 000 years before present, and have lived in isolation (Kashyap et al. 2003) all along without any contact till the late 19th century, the body division markers appearing on every grammatical category of content words appear to be very archaic in nature. The system is indicative of the early times when human beings conceptualised their world through their body and its divisions. Early human beings were capable of distinguishing what is inherent and what is non-inherent or external to the entity/event which serves as its host. The concept of inherent possession or inalienability was not seen physically, but as an integral and inextricable part of its host.

The evolution of the Great Andamanese language and its structure is compelled by consciousness of the human body. The perspective that human beings are central governs the structure of the modules of the grammar. This could be the best ever evidence of the structure and evolution of the ‘possible human language’ that has become the central concern of linguistic theorising ever since Chomsky.

Abbreviations used

1 = 1st person; 2 = 2nd person; 3 = 3rd person; ABS = absolutive; APPL applicative
CL = class; FA = formative affix; GEN genitive, NPST = non past; OBJ = object clitic;
POSS possessive, PL = plural; POSS = possessive; PST = past; SG = singular;

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¹⁰ I was fortunate to study both Khora and Bo from the last speakers Boro Sr. and Boa Sr. respectively, whom I met during my field study in the Andaman Islands. Both the languages also had the occurrence of pervasive body division markers as proclitics.

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Chapter 10

Language contact research: Three challenges and opportunities

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1. Introduction

Language contact research now has a history of over 60 years, starting with the seminal publications by Weinreich (1953) and Haugen (1950), and its trajectory has been extremely successful in academic terms. It has diversified into a large number of subfields, ranging from neuro-imaging research of the multilingual brain to linguistic area studies. (I am using the term ‘multilingual’ as also including the more familiar ‘bilingual’.) The following is probably a by no means complete list of the topics in language contact research, roughly arranged in Table 10.1 in terms of their disciplinary context (this is not fully possible since some fields are at the cross-section of several disciplines). Some of the introductory books covering different facets of these diverse disciplines include: De Groot (2011), Grosjean (2008), Li Wei (2007), Matras (2009), Montrul (2016), Myers-Scotton (2006), Thomason (2001), Velupillai (2015) and Winford (2002).

Thus we can see that language contact research now affects large domains of the human experience, with important repercussions for its position in language studies. In fact, language contact research has become the multilingual version of all of language studies. Notice the role of language contact research in medical and paramedical studies, which feeds upon the work in all three other disciplines mentioned.

Its very success as a field of research (it is obviously not a discipline) also poses at least three challenges, however, which I will try to deal with in this brief position paper. The first challenge is unification, the topic of section 2. There is no need, of course, for all language contact specialists to talk to each other all the time, but extreme fragmentation makes people lose sight of common research questions and results that go beyond a sub-discipline. Furthermore, framed in terms of the need for unification, language contact research confronts us with the methodological challenge of non-reductionist research, which should be, but alas often is not, on the agenda of all of language studies.

The second challenge is addressed in section 3 and concerns the external boundaries of language contact studies. Since the notion of a language has become more and more multiplex and variable, it is sometimes hard to see where language contact studies begin and ‘non-contact’ developmental linguistic studies end.

The third challenge, addressed in section 4, comes from the fact that, as the

language sciences are discovering both the complexities of and the regularities underlying multilingual practices, in many social and political constellations all over the world monolingual models of language behaviour are taken as the norm, with old nationalisms blending with new mono-ethnic conceptions of the human space. Rather than making this a programmatic ‘call for further action’ section, I want to briefly point to a number of ‘frames’ involving multilingualism that could be developed.

Table 10.1: Schematic overview of some of the topics in language contact research.

Psycholinguistic and neurolinguistic	Sociological and anthropological
Multilingual language processing The multilingual lexicon The multilingual brain Multilingual child language development Multilingual convergence and cross-linguistic priming Second and third language acquisition Multilingual cognition Translation and interpreting	Political discourse analysis in multilingual settings Language attitudes Language choice and diglossia Language maintenance and shift Language policies Language ideology and purism Multilingual ethnography of speaking Foreigner talk and interethnic communication Linguistic landscapes Intercultural communication and pragmatics
Medical and paramedical	Linguistic
Multilingual Alzheimer and dementia studies Multilingual aphasia Multilingual language disorders Multilingual language development disorders	Pidgins and Creoles Code-switching Mixed languages Language determination of origin of asylum seekers (LADO) Linguistic borrowing Substrate in language change Language death and attrition Multilingualism in deaf communities Linguistic areas Multilingual forensic linguistics

2. Unification

One of the perennial problems in the study of language contact is how to link psychological, linguistic and social factors. There have been debates in the past where proponents of social factors have claimed those as the only relevant ones, while proponents of linguistic structural factors have written as if those were the only relevant ones, and psychologists have reported on experiments where neither social nor linguistic factors were taken into account. To me, it is obvious that in all circumstances all three factors play a role. After all, it is human beings (psychological), who simultaneously handle different languages or language varieties (structural) in different circumstances (social).

In the psycholinguistic domain, we are dealing with the real time constraints of the processing system, which is confronted with different degrees of linguistic competence and levels of activation in the languages involved. In the linguistic domain, we are dealing with variable diversity of coexisting symbolic systems (Putnam et al. 2018). There are degrees of difference or similarity in the lexicon (e.g. cognate versus non-cognate), phonology (e.g. vowel inventories, syllable structure, stress patterns), morphology (e.g. type of inflections, complex versus simple words), syntax (case marking or not, word order, type of embedding), pragmatics and information structure. In the social domain we find status differences between languages, purism and ideology, in-group versus inter-group communication, and the temporal dimension and social implication of different discourse patterns.

Given that these three factors are always present, how do we conceptualise their interaction? The best way, I think, is to conceptualise it from three equivalent vantage points. We can take as the starting point, the individual who has options that are realised in certain language combinations and actualised in specific social domains. We can also take the situation of interaction as the starting point, in which the different languages differ in status and the interaction itself posits constraints on the choice of languages and sequencing in the choices made. Finally the similarity or diversity of the languages used, on various levels, confronts the speaker with specific possibilities. Simplifying a lot, this leads to a triangle as in Figure 10.1 (see also the triangle in Muysken 1994 and further elaborations in Muysken 2013).

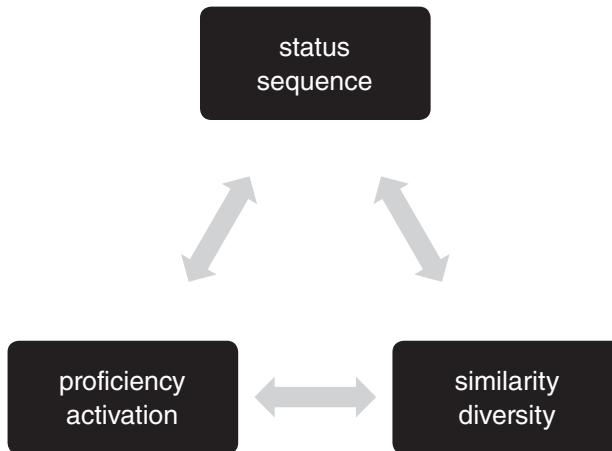


Figure 10.1: Basic factors operating in language contact.

A perspective such as this one is obviously non-reductionist. There is no single privileged vantage point. None of the three angles in the triangle can be reduced to any other and we always need to take all three into account. This perspective is exciting, but also challenging, and as said above, could serve as a model for monolingual language studies as well.

There are promising developments in the field which integrate these three perspectives. One that colleagues in my group have been pursuing is the potential link between cross-linguistic priming and contact-induced language change (Kootstra & Muysken 2017; Kootstra & Şahin, submitted).

3. External boundaries

The second challenge to be addressed concerns external boundaries. Since the notion of a language has become more and more multiplex and variable, it is sometimes hard to see where language contact studies begin and ‘non-contact’ developmental linguistic studies end. While languages show remarkable internal coherence, they need to function in real time communication, so they are at the same time bundles of separate features, bits of information, many of which also appear in other languages. This means that the distinction between variation within languages and variation between languages, the crucial distinction between multilingualism and language contact studies and variation studies, is a relative one.

The boundary issues come from very different perspectives. One is the Universal Bilingualism approach proposed by Roper (1999), inspired by work in the diachronic development of English syntax by Kroch (1989). Roper studies child language development from a grammatical perspective, and hypothesises that we should think of the different stages of development in child grammar as a series of separate grammars. Hence the idea of universal bilingualism came up. Seemingly monolingual people are thus multilingual in this perspective. Kroch hypothesises that language change should be thought of not so much as the change in the grammar of a speech community, but rather as the replacement of one grammar by another one in that speech community.

A second perspective comes from work on the similarities of code-switching to variation and style shifting, as suggested by e.g. in Woolard (1999), Muysken (2000), and further developed in Guy and Lim (2005), Milroy and Gordon (2008), and Lim (2010). In this approach, switching between closely related varieties, such as a dialect and a standard variety, is compared to linguistic variation in a speaker’s language production. In this case, the distinction between intra-sentential code-switching, a sequence of language fragments from different languages within the clause and stylistic variation, a sequence of differently realised linguistic variants within the clause, is considered a variable one. This is schematically presented in Table 10.2.

Obviously, this only makes sense if indeed the two ‘languages’ in the code-switching perspective are conceptualised as partly overlapping, and to make this perspective viable, considerably overlapping, as with two ‘styles’ of the same language, a dialect and a closely related and similar standard language, or accented versus non-accented English.

A third perspective involves areal linguistics and linguistic typology, with offshoots in structural phylogenetics research. Without necessarily adopting a radical ‘meme’ approach, as in the work of Dawkins (1976), researchers in this field have been exploring the possibility of tracing the distribution and development of individual linguistic features separately from the particular language that they belong to. A good example of this approach is Dunn et al. (2011), who argue that the most famous Greenbergian word order correlations are in fact lineage specific and not

Table 10.2: The utterance in code-switching versus variation studies.

Code-switching	fragment language _a ... fragment language _b ... fragment language _a
Variation	[_{single language} ... variant _a ... variant _b ... variant _a]

necessarily the result of random ‘natural tendencies’. Taken to its extreme, this approach means that languages are accidental and historically determined feature bundles, and thus the distinction between two languages and two varieties of the same language is only a gradual, quantitative one. Language typology, in this approach, is not the study of ‘types’ of languages, as in the traditional perspective which gave it its name, but the study of the distribution of individual features across geographical areas and language families, in terms of their dynamics and history.¹

In the approach advocated by Roeper (1999), which is characteristic of the generative tradition, a series of coexisting grammars, differing minimally, is postulated. In the other approaches, the notion of grammar is put into question since what distinguish the varieties are separate features. Ultimately, however, this apparent distinction does not really matter: both approaches blur the difference between variation and bilingualism.

What makes linguistics unique among the various approaches to language and communication, and what I think is its main selling point, are the tools it has developed to study differences between languages. Since, as I have argued, similarities and differences between languages are a key factor in understanding language contact, this research domain has much to contribute to the cluster of linguistic disciplines as a whole.

4. The political context

At the same time that the language sciences are discovering both the complexities of and the regularities underlying multilingual practices, in many social and political constellations all over the world monolingual models of language behaviour are taken as the norm, with old nationalisms blending with new mono-ethnic conceptions of the human space. The response of language contact specialists to the broader political context is a complicated issue, since this political context itself cannot be changed by linguists, no matter how socially committed they are. The debate about language contact and multilingualism has thus been hijacked by identity politics and nationalism. Thus the challenges multilingualism researchers face in informing the general public about their findings resemble those of climate researchers in trying to convince climate sceptics. The message that multilingualism and language contact are pervasive and not a bad thing goes against not only what most people believe but also what they want to believe (see the illuminating discussion in Mishra (2017) *Age of Anger*, on global trends towards mono-ethnic conceptions). Thus discussions about

¹ One reviewer suggests that all typologists have adopted a historical perspective rather than the traditional ‘language type’ perspective. My own impression is that this issue is hotly debated at present, and that probably some middle ground will be found.

multilingualism are an example of the engagement of science and scholarship with the general public at a time when the values of the academic world and of scientific research are openly questioned.

Identity politics departs from monolingual models introduced in the nineteenth century in response to Romanticism in the post-Napoleonic era, when the European nation states were reinventing themselves. A typical example of what these monolingual models may lead to is the notion of ‘normalisation’, introduced in Catalan legislation in 1983. This notion takes the 19th century idea of the nation state, and then localises it in a regional or ethnic context. How to make Catalan the ‘normal’ language in Catalunya? Normalisation has two dimensions: one is normative, in that a ‘normal’ language has fixed norms, and one is political, in that a ‘normal’ language is the language used by the state in communicating with its citizens. Of course, the Catalan normalisation process should be seen in reaction to the policies of the Spanish state, which has an equally monolingual perception of Spanish as THE language of the Spanish state. My point here is simply that the notion of ‘normal’ is a monolingual one, while in fact multilingualism is the most frequent situation in many places.

The first natural response to public worries about multilingualism and language contact, and the response of most concerned linguists, is to provide information — departing from the Enlightenment notion of the informed citizenry. If we can simply inform people about the properties and even the cognitive advantages of multilingualism, in many countries, people’s resistance to multilingualism in their midst may vanish. An attractive example of this approach is a series of short but systematic folders provided by the *Berliner Interdisziplinärer Verbund für Mehrsprachigkeit* (Berlin Interdisciplinary Association for Multilingualism 2017). Folder (1) gives a number of suggestions on how to raise children bilingually and allow the best language of the parents to play a crucial role here. Folder (2) discusses the many prejudices surrounding multilinguals and the various advantages of multilingualism. Folder (3) discusses what to do with a multilingual child who shows some language developmental disorder and suggests not putting the blame on multilingualism itself. Folder (4) discusses the advantages of reading out loud to children in their home language and in German.

There have been many excellent examples of this type of approach but I wonder how effective they are and will be. They convince the people who are already convinced, but often fail to reach those who fear the effects of multilingualism and see them as a symptom of a larger threat, a multi-ethnic society without a clear identity and clear boundaries.

Is it possible to consider reframing the issue? Rather than once again adducing the evidence about the naturalness and advantages of multilingualism, one may try to think of values that are supported by, but not directly linked to, multilingual practices. A common frame that has been brought forward in this respect is competitiveness in a global economy: countries with large numbers of multilingual citizens may have an advantage in a world consisting of ever more complex production chains and trading relations. This argument is certainly appealing, and is likely to be embraced by the business world. The problem for the purposes of gathering support for, or at least acceptance of, multilingual practices is that many people would consider globalisation to be part of the problem rather than the way forward.

A second possibility would be a frame in terms of democracy and citizen participation. Thus multilingualism would be the basis for people, citizens, to participate more fully in public life. The problem with this frame is that multilingualism is often perceived or presented as a barrier to full democracy. If only speakers of minority languages would shift towards the monolingual dominant structure, their access to full democratic processes would be guaranteed, in this line of reasoning. Since this frame presupposes the presence of different languages in the public sphere, it becomes less than ideal as a starting point.

A third possibility would be to develop a liberalist notion of optimal development of the individual. Since in most, if not all, countries of the world there is multilingualism in the sense that different languages are used by substantial groups of people in their daily lives (North Korea and officially the Vatican being the apparent exceptions),² acceptance of this would be the basis for optimising the chances for individual multilinguals to fully develop and contribute to the common good. This frame may be an option in specific political constellations. It is better than nothing, but requires further working out.

Another promising possibility would be to focus on children and stress that multilingual class rooms are actually the most efficient and the fastest ways of ensuring school success, and the integration of newcomers into a society (e.g. Hornberger 2002).

The reader may have noticed that I have skipped the very obvious human rights frame (e.g. Skutnabb-Kangas & Phillipson, 2017), which would hold that speaking one's language is a basic human right. One of the problems with this frame is that linguistic rights have not been accepted by the United Nations as basic rights, and countries and continents differ among each other in their acceptance of these rights, and in implementation of laws to guarantee that these rights are put into actual practice.³

Language contact studies are flourishing, but face three challenges, I have argued. These may lead to new opportunities for research and conceptualisation: unification of the field across disciplines, boundaries with other approaches, and the wider political context. In all three domains, I think, this line of research can play a pioneering role to bring language studies as a whole forward.

2 One of the editors notes that the Vatican is probably highly multilingual in actual practice, and not Italian- or Latin-speaking. In private, the Swiss Guards probably speak to each other in the language of the Canton, an Anglophone cardinal may speak to another Anglophone cardinal in English, and the Pope possibly speaks to another Latin American colleague in Spanish. The last Popes have sent tweets in a number of languages, but the previous Pope abdicated in Latin. A reviewer suggests that North Korea is not monolingual in the sense that many people will know some English there. However, it is not clear they will use this in their daily lives.

3 One reviewer points out that I have not discussed the type of multilingualism found in a country: often a distinction is made between traditional versus immigrant minorities. This is true, but negative attitudes towards multilingualism may involve both types. One type of multilingualism that is often not regarded negatively is elite or additive multilingualism, e.g. educated Germans learning French as an additional language. This phenomenon requires more research, but is not very common.

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Chapter 11

Variation and change in a changing world: New perspectives on classic questions

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1. Introduction

The *Journal of Sociolinguistics* recently marked a half-century since William Labov's seminal work, *The Social Stratification of English in New York City* (1966), with a special issue devoted to the origins and development of the variationist approach to the study of language, variation and change (Bell et al. 2016). The issue reviewed major new developments in theory and method, but also highlighted how lasting some of the foundational ideas and practices of the field have been.

In this paper I focus more closely on the past decade in the study of language variation and change in sociolinguistics. What innovations have we seen in the field? And to what extent do they challenge classic models, even classic questions?

In the first part I briefly review notable developments in variationist scholarship in recent years. Methodological advances include the advent of big data, automated sociophonetic analysis and new approaches to tracking social structure. Advances in theory include an increase in comparative studies, facilitated in part by these methodological innovations, new models of language perception, and new understandings of how social and linguistic constraints relate to each other. Most interesting, perhaps, is that the very terrain of our research object has been shifting under our feet. The field is now faced with the challenge of responding to fundamental changes in social structure itself, such as a new scale of human mobility in a globalised world and the changing role of technology and social media in language change.

In the second part, I pull together a few of these developments to examine a theme at the heart of our field, and resurgent in recent work: new perspectives on the classic social sciences puzzle of how structure and agency bear on language variation and change. The section examines variation and change in London in different communities, providing an opportunity to reflect on new social structures, new methods, new empirical observations, and the question of whether highly mobile and multicultural urban contexts undermine a variationist tradition that originally set aside such contexts from its core focus.

2. Advances in the field

In the variationist tradition, the study of how language varies and changes is associated with a set of core methodological and theoretical principles (from Labov 1966 and Weinreich et al. 1968 onwards). The continued use of many of the earliest methodologies and the continued investigation of early principles is a testament to

the power and originality of these founding ideas. Method and theory in variationist sociolinguistics have generally continued to be refined rather than replaced, one possible exception being an increase in rhetoric around paradigm shifts in sociolinguistic theory due to migration. This is discussed in the next section.

For reasons of space, the present section touches only briefly on a number of exciting developments in the field in the last decade. The summary focuses on three broad areas of innovation: improvements in our sociophonetic and statistical toolkits; new linguistic, cognitive and social concepts; and expansion of the empirical base.

The last decade has seen some of the most transformative changes in the technicalities of how variationist research is conducted. Analysis of phonetic variation has become semi-automated with the advent of such computational tools as Forced Alignment and Vowel Extraction (FAVE) (Rosenfelder et al. 2011). With the reliable automated alignment of phonemes to the acoustic signal and formant measurement that can be achieved (Labov et al. 2013), token numbers in sociophonetic analyses have increased by an order of magnitude, and researchers are now exploring fully automated vowel extraction (e.g. DARLA) (Reddy & Stanford 2015). This major shift towards big data means much more reliable outcomes of inferential statistics, another domain that has seen a mini paradigm shift in the last decade. Critiques of shortcomings in the traditional approaches to multivariate analysis in variationist research have led to a wholesale shift towards mixed effects modelling (Johnson 2009) and exploration of other statistical modelling approaches better suited to the nature of linguistic data (e.g. Tagliamonte & Baayen 2012). Together, these changes in phonetic and statistical analysis have given rise to large-scale results that were previously impossible in the field (e.g. Hay & Foulkes 2016).

On a theoretical level, we have also seen major advances in how linguistic, cognitive and social dynamics are modelled and conceptualised. I list just a few examples here. The study of perception in sociolinguistics has grown into a substantial subfield in the last decade, with intensive development of new methods for experimental testing of implicit attitudes, processing, and perception (Babel 2016; Drager 2018). In the study of sociophonetic change, recent work has begun to move beyond individual variables and chain shifts, and also to consider fundamental changes in articulatory setting as the basis for some observed sets of changes (e.g. Pratt & D'Onofrio 2017; Sóskuthy et al. 2017). Other work has advanced our conceptualisation of the interaction of language processing with the level of linguistic and social factors (Labov 2010: 283; Tamminga et al. 2016). (An interesting tension that arises is that this line of work has argued in favour of the independence of social/external and linguistic/internal factors, while exemplar theoretic work cited above has argued for increasing degrees of integration of linguistic and social representation.) Other work continues to update the social side of our approaches to variation and change with substantial insights from sociology, e.g. in social network modelling (Dodsworth & Benton 2017).

Finally, the field has seen major developments in expanding the empirical base of variation studies. Once again, space limitations prevent a detailed summary, but this expansion is reviewed in several recent works. Smakman and Heinrich (2015; 2018) bring together a wide range of recent empirical studies from around the world to challenge and expand sociolinguistic theory. Stanford (2016) and Sharma (2016a)

specifically review how non-English, non-Western, or lesser-studied communities confirm or challenge Labovian principles of language variation and change.

This final theme in particular — expansion of the empirical base and implications for the field — is explored further in the next section.

3. Structure and agency: Social and linguistic change in London

Refining and expanding our methodological toolkit and theoretical principles allows us to better address some of the more intangible and elusive, yet most profound, questions of social scientific research. One of the most fundamental of these is the relationship between structure and agency, between the system and the individual (Giddens 1984; Bourdieu 1991).

Early urban dialect studies have been critiqued for favouring etic rather than emic explanations of variation and change (Eckert 2012), and in recent years we have seen the pendulum swing in the other direction, with some studies starting to favour what Rampton (2013: 377) describes as ‘the romantic celebration of difference or creative agency’. Critics of etically based early studies point to these frameworks as being too static in their assumptions regarding linguistic structure too, not just social structure:

Scholars have during the past decade expressed their uneasiness with the classic — call it Newtonian, or, by proxy, Fishmanian — sociolinguistic framework, and terms such as ‘crossing’, ‘languaging’, ‘translanguaging’, ‘polylanguaging’, ‘truncated multilingualism’, ‘metrolingualism’, ‘transidioma’, or ‘heritaging’ all signal an epistemological rupture with past approaches. (Blommaert 2013: 614)

Here ‘Newtonian’ invokes a classical, categorical approach to speech varieties, with the implication that such descriptions may no longer apply to language variation in many contexts. These critiques have been fruitfully applied to ‘Fishmanian’ approaches to language boundaries in the code-switching literature, but their applicability to variationist research, which from its inception focused on features rather than languages, remains less clear and is explored in the closing discussion of this paper.

In this section, I examine a set of recent studies that have examined intense inter-ethnic contact in London and the types of changes in English use that have resulted.¹ The case illustrates how complex new social settings have forced us to refine our methodologies and complicate our theoretical claims. The discussion ultimately returns to the question Blommaert raises above of an ‘epistemological rupture with past approaches’: As the world changes, do our theories, methods, and questions need to change too?

3.1. Ethnicity and urban dynamics in London

London has one of the highest proportions of foreign-born residents across cities globally: over 3 million of its estimated population of 8.6 million are foreign-born,

¹ Section 3 is largely based on Fox and Sharma (2017), collaborative work with Sue Fox.

with inner London boroughs having some of the highest proportions (Migration Observatory 2016). These patterns of migration have fostered rich ethnic and cultural diversity in London where, unlike the rest of the UK, less than half (44.9 per cent, ONS 2011) of the city's population is Anglo-British, i.e. white with no recent migration history.

Of course, migration is hardly new to a town that was established by migrants — Romans, in the first century AD — and that has seen continuous waves of migration ever since. In the post-World War II era, from the 1950s onwards, London attracted, indeed actively encouraged, large-scale immigration to fill labour shortages. These were the first large non-white² populations in London, including diaspora from former British colonies such as Jamaica, Trinidad, Guyana, India and Pakistan (including what is now Bangladesh), as well as double migration of South Asians fleeing East Africa. Since the 1990s there has been further in-migration from more diverse places of origin outside of Europe, such as Nigeria, Somalia and Turkey, and from newer EU members in Eastern Europe. At present, more than half of London's school children are known or believed to have a first language other than English (Department for Education 2015) and well over 300 languages are spoken within the Greater London area.

While the overall picture of London is one of great diversity and multiculturalism, this is not uniform across the Greater London area. London is divided into 33 boroughs (see Figure 11.1), and the demography of populations within boroughs can differ dramatically.

Some boroughs have a predominantly White British³ population, e.g. 83 per cent in Havering in East London. Other boroughs are much more ethnically diverse and the diversity is spread more evenly. In Newham, for example, also in East London, the top four demographic groups are White British (17 per cent), Indian or British Indian (14 per cent), African (13 per cent) and Bangladeshi or British Bangladeshi (12 per cent). Within more ethnically diverse boroughs, neighbourhoods can once again either be very mono-ethnic, with a single ethnic group dominating (not necessarily white), or multi-ethnic.

Here I compare the sociolinguistic dynamics of two South Asian-dominant 'micro-ecologies' within the metropolis.⁴ The first is Tower Hamlets, an Inner London borough in East London; the data taken from this borough come from a working-class, multi-ethnic neighbourhood (Fox 2015). The second case is Ealing, an Outer London borough in West London; the data taken from this borough come from a lower-middle-class, mono-ethnic neighbourhood (Sharma et al. 2010).

2 I use this term advisedly: It runs the risk of reinforcing whiteness as an unmarked norm, but in this case the 'non-white' status of migrants was the basis of much of the political conflict and oppositional identity-formation that ensued. Earlier white migrants, e.g. Americans, had not been the target of similar levels of hostility (though comparable to the expulsion of Jews from Britain between the 13th and 17th centuries).

3 In this article, demographic statistics for boroughs are taken from the 2011 UK Census and are therefore reported using census labels for racial and ethnic groups. As with all census terminology, they simplify and erase many dimensions of cultural complexity within the populations. For example, they draw ethnical-national distinctions within the numerically larger racial category of 'South Asian' (Bangladeshi, Indian and Pakistani) but not within the numerically smaller category of 'African'.

4 The term 'South Asian' throughout this article refers to only the racial/cultural category, not whether or not the individual was born in the UK.

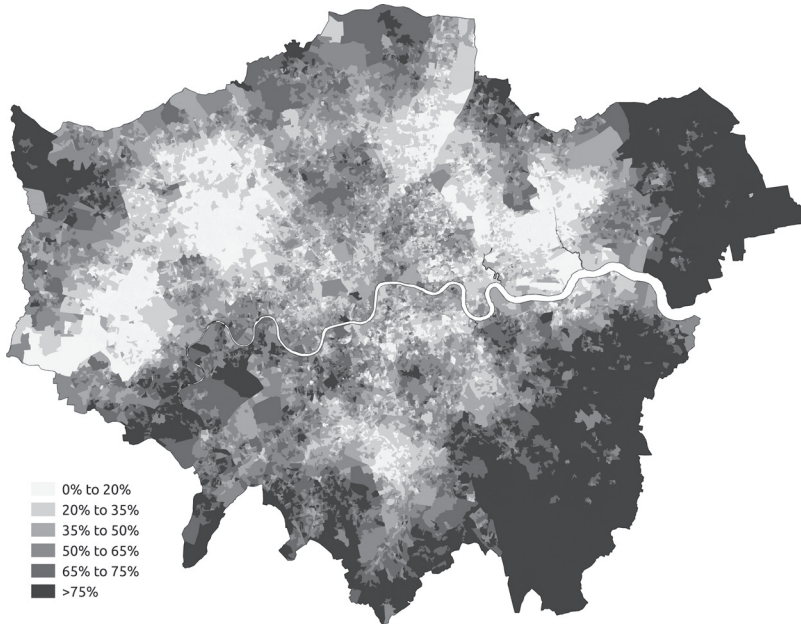


Figure 11.1: Proportion of individuals claiming white English/Welsh/Scottish/Northern Irish/British status in Greater London (2011 UK Census)⁵.

The two cases are demographically similar: the largest demographic group in both neighbourhoods is South Asian. But the neighbourhoods differ in how ethnically diverse their residents' social networks are, due to class differences. As we will see, this dramatically influences how the dialects have developed. I first outline overall dialect change in the two areas, and then look at what individuals do.

3.2. Dialect outcomes in Tower Hamlets (East London) and Southall (West London)

The largest ethnic group in the East London borough of Tower Hamlets is Bangladeshi or British Bangladeshi (32 per cent), followed by White British (31 per cent). In the west of the borough, where Fox's research was conducted, the Bangladeshi population accounts for over 75 per cent of the total in some neighbourhoods (Fox 2015). The area is working class, with large multi-ethnic public housing estates providing housing for most of the participants. Youngsters from different ethnic groups therefore interact on a daily basis in housing estates, schools and youth clubs, unlike the lower middle-class Punjabis in the other case examined shortly.

Fox (2015) reports that in her data young urban Bangladeshi men are leading language change in this neighbourhood. They had not acquired the traditional Cockney variety of London English and were instead leading in innovative variants

⁵ Attribution for image: SkateTier CC BY-SA 3.0. <https://commons.wikimedia.org/w/index.php?curid=33424521>.

of PRICE and FACE vowels, not previously documented for London. Figure 11.2 shows realisations of the PRICE vowel, with non-Anglo-British groups leading in the use of innovative variants; other phonetic and syntactic variables in her research showed similar distributions.

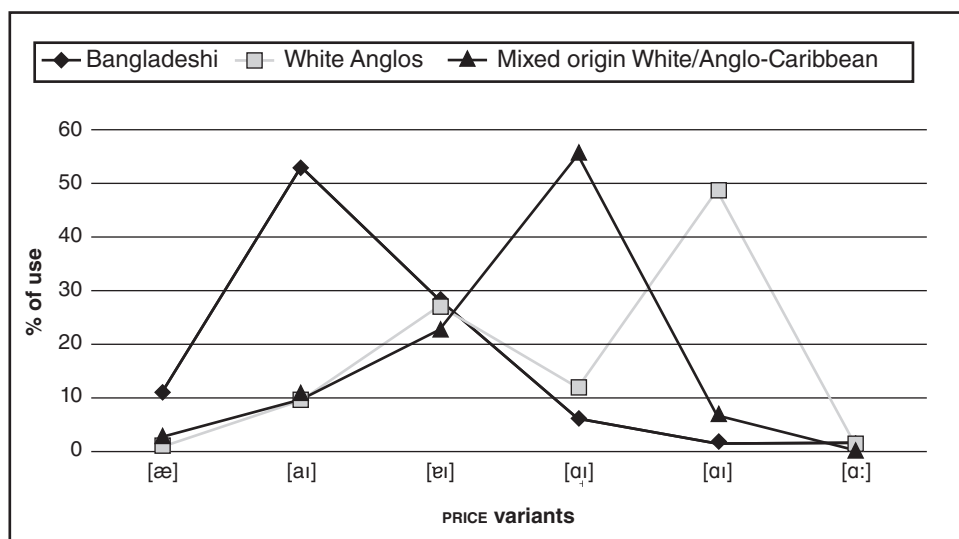


Figure 11.2: Distribution of PRICE variants among different ethnic groups of East London adolescents (Fox 2015: 87).

Across dense multi-ethnic enclaves in East London, these processes have given rise over the last two decades to Multicultural London English (MLE), a new multi-ethnolect that is rapidly displacing the original working-class vernacular, Cockney. Though led by non-Anglo-British speakers, MLE has diffused via friendship networks to speakers of all ethnicities in East London, and is now defined more by class than ethnicity. Notably, its phonetic, grammatical, discourse and lexical features stem from a very rich feature pool combining numerous heritage languages, L2 speech, creoles, postcolonial Englishes and vernacular British forms (Cheshire et al. 2011). Another hallmark of the variety is that many of its features are innovations rather than instances of direct transfer from a heritage language.

Let us turn next to Southall in West London. Like Tower Hamlets, the overall composition of the borough of Ealing is multi-ethnic and the largest ethnic minority group is Indian or British Indian (14 per cent). In the neighbourhood of Southall, over 75 per cent of Southall residents are of South Asian heritage (Office of National Statistics [ONS] 2011). So the demographics are comparable to those of Fox (2015) in terms of a local South Asian majority. But the two cases differ in terms of class. The data for the Southall study come from lower-middle-class Punjabi-heritage British Asians.

Lower-middle-class South Asians in Southall are just affluent enough to buy or rent their homes, and they often choose to live very close to their families and Punjabi-heritage friends (80 per cent of housing in Ealing is private sector stock, in

contrast to 62 per cent in Tower Hamlets [ONS 2011]; this difference is greatly magnified in the neighbourhoods where our studies were conducted. Tower Hamlets is the fourth highest of 348 areas in all of England and Wales for government-subsidised rent, and the second lowest for owner-occupied housing). This individual control over housing, which also affects the ethnic composition of neighbourhood schools, greatly increases the mono-ethnicity of neighbourhoods and social networks in the Southall data, as compared to those of Fox (2015) or Cheshire et al. (2011).

The linguistic consequence is that Southall, like many other South Asian areas in Britain, has developed a variety of British Asian English. The main distinctive dialect features derive directly from North Indian heritage language influence, and is well-known as being a distinctively ethnic variety.

The contrast to Tower Hamlets is dramatic. In the East, a new multi-ethnolect has emerged that is distinctively class-linked, but no longer tied to any specific ethnicity. In the West, an equally established and well-recognised ‘mono-ethnolect’ has emerged, one that is distinctively ethnic and not as clearly class-linked. This difference shows that demographics alone do not drive dialect outcomes. Rather, ethnic diversity and class interact in a very specific way. Class-linked housing practices and policies directly influence interaction and social networks, which in turn drives dialect outcomes.⁶

Although these cases involve complex migration and multicultural interaction, typical of late-modern Western metropolises, it is notable that the powerful role of class and social networks persists here, as in older variationist studies. A change in social landscape does not necessarily mean a change in underlying drivers of change.

3.3. The agent in the system

How do individuals fit in to this story? Do they conform to or diverge from these ‘predicted’ ethnic and class behaviours? Are divergences exceptions that prove the rule, or genuine challenges to macro-social analysis, engendered by the high social flux in contemporary cities? Although more visible in late modern society, this puzzle of structure and agency has always been fundamental in sociolinguistics: How can we reconcile the fine, fleeting acts of agency we see constantly in the individual with the highly uniform progression of change we see at the community level?

Here, I focus specifically on the Southall case, and examine versatile individual language use in order to highlight some of the limits of macro-sociolinguistic generalisations, but also — under closer scrutiny — their considerable power, even at the level of the individual.

I present three examples: the first is an ‘exception that proves the rule’, and the second two are more challenging, pushing us to recognise the need for amended methodologies to understand how macro-dialectal systems interface with the deep well of lived experience at the individual level. Rather than undermining the enterprise of understanding large group dynamics in cities, the unique experience of each individual is the raw material, sometimes even the trigger, for language change.

⁶ Support for this analysis comes from the fact that, in Southall, we see very limited presence of MLE: at the time of the study, MLE arose only in those contexts that resemble Tower Hamlets, namely multi-ethnic, working-class housing estates.

3.3.1. *Nimmi* — change in networks

The Southall project examined 75 individuals across generations (Sharma & Sankaran 2011; Sharma 2011; Sharma & Rampton 2015). Focusing on four representative individuals, Figure 11.3 shows a change that took place in this dialect over time, not just in interview speech but across the repertoires of older and younger second-generation Southall residents.

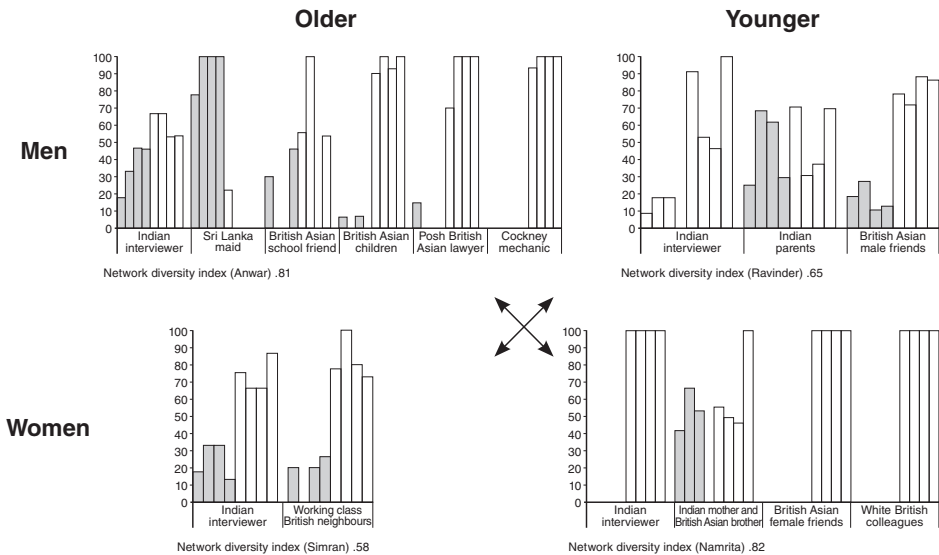


Figure 11.3: Repertoires of South Asian heritage language features by gender and age. Grey bars: Asian variants [t], [e], [o], [l]. White bars: British variants [t], [eɪ], [əʊ], [ʃ] (from Sharma, 2016c, by permission of Oxford University Press).

Figure 11.3 shows that, among the second generation, older British Asian men had broader style repertoires than older women and, conversely, younger women had broader repertoires than younger men. This reversal is accounted for by a change from implicitly Punjabi social (and gendered) roles in the older generation. Despite their being born and raised in Southall, the women tended to remain on the inside of the community through social practices such as local work, early marriage and a family focus, while the men interfaced with other communities through work (Indian business ties) and political activism (engaging with the Anglo-British community), and so had wider social networks, leading to a wider linguistic repertoire. By the younger generation, it was the women who had wider social networks, following a well-recognised British (cf. Milroy 1987), not Indian, gendered class model. (See Sharma 2011 for full details.)

At the individual level there was considerable conformity to this pattern. But one older woman, Nimmi, had a broad style repertoire, akin to that of men of her generation. Is she choosing to use a repertoire that is particularly ‘masculine’ for her generation? Has she simply made different personal choices that contradict the community pattern? In this case, her apparent exceptional behaviour in fact turns out to confirm the macro pattern. As her class status is slightly higher than the other women of her generation in the data set, she has more active transnational family ties, local business ties, and marginally more non-Asian, Anglo-British connections too. So, according to the underlying factor of network diversity (life-worlds that derive from class and community stage, see Sharma 2011), she *does* conform to the predicted pattern: her network more closely resembles those of men of her generation and her repertoire reflects this.⁷

3.3.2. *Anwar and Ravinder — change in indexicalities*

The analysis so far has dealt in frequencies, with the common interpretation of shared frequency of use as indicating similarity across individuals. However, Sharma and Rampton (2015) showed that similar overall rates do not always correspond to similar social or indexical *meanings* in use. Using a method for quantitative tracking of real-time use of lects in discourse — Lectal Focusing in Interaction — they compared individuals’ shifts towards Indian English, Standard British English, and Vernacular British English in the course of interactions.⁸

Figure 11.4 shows a narrative that was produced by Anwar, an older second-generation man whose wider repertoire was given in section 2. Here, we see him using a dramatic range of variation across the three ethnic and class styles; although details are not provided here (see Sharma & Rampton 2015), these fluctuations are very closely tied to such interactional work such as footing, stance, voicing, and topic. Anwar uses his ethnolectal variants to do very fine-tuned indexical work.

Crucially, not all individuals in the Southall dataset do this. In particular, although younger men often have similar overall rates of use of heritage language-derived features such as retracted /t/, the indexical values they ascribe to these forms are limited, with a correspondingly limited degree of lectal focusing.

Figure 11.5 comes from one of the most engaged narratives in the younger men’s data, yet Ravinder, a younger British Asian man, maintains a relatively ‘flat’ distribution compared to Anwar. His use of ethnolinguistic features varies less than his use of class- and formality-linked British vernacular features, which he varies like his Anglo-British peers (compare the solid and dashed lines). Ravinder shows much less evidence of fine-tuned links to interactional moments.

7 In fact, the Indian accent Nimmi adopts sometimes is modelled on a very current, transnational elite Indian female style, highlighting the contemporary importance of transnational social contacts (Sharma 2016b).

8 In this approach, an interaction or narrative is broken down into chunks based on clausal boundaries and footing shifts, and then, for each chunk, the percentage of use of the three dialect styles is calculated. The calculation is based on coding only those accent features that contrast for the three dialect styles. For instance, word-final /t/ would be pronounced in different ways in each of the three dialect styles. The analysis generates a graph of how much the speaker fluctuates in their use of dialect styles in real time during discourse. (See Sharma & Rampton 2015 for full details.)

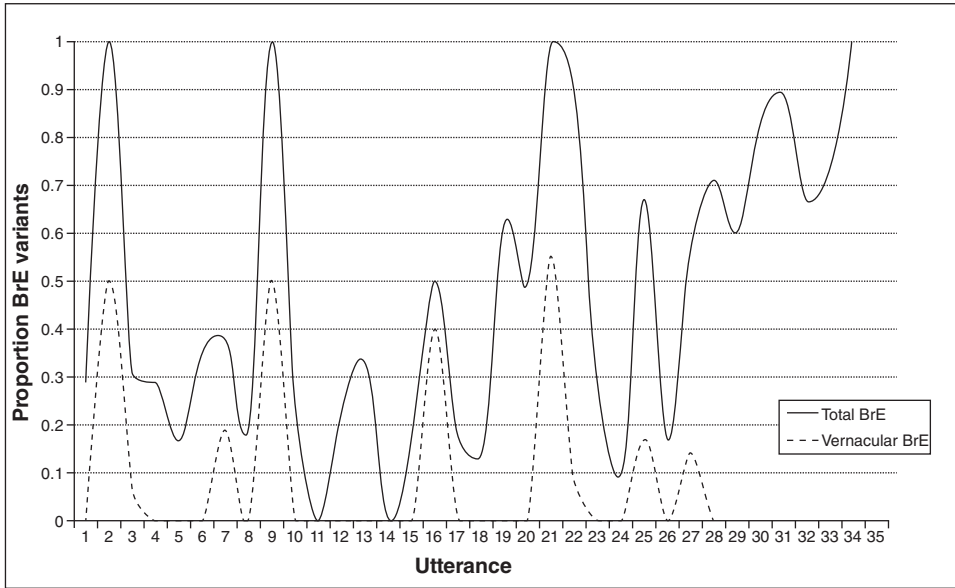


Figure 11.4: High lectal focusing in a narrative told by Anwar (from Sharma 2016c, by permission of Oxford University Press).

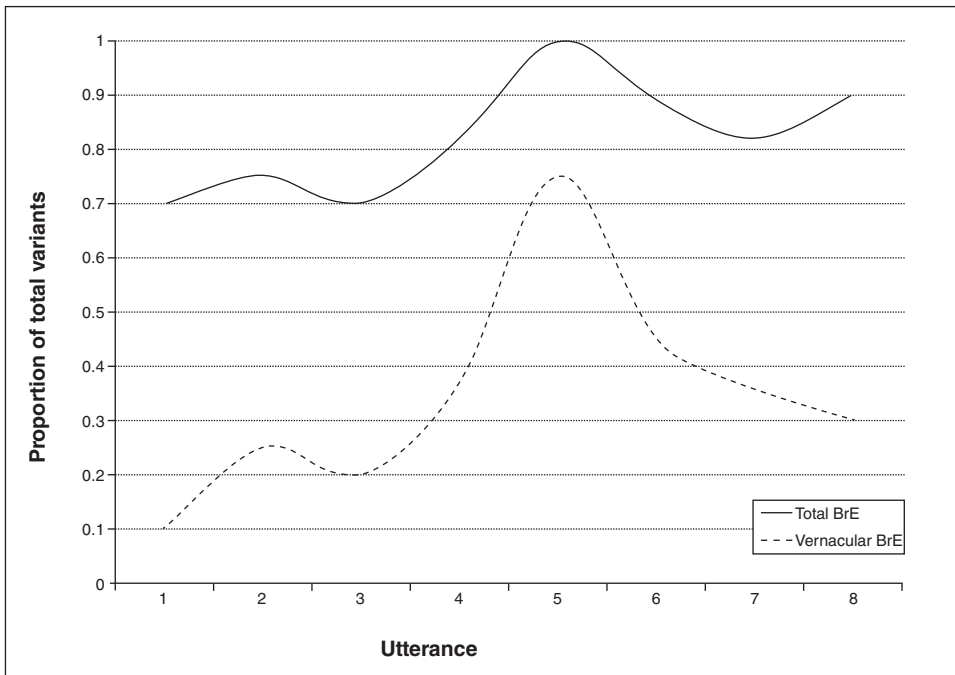


Figure 11.5: Low lectal focusing in a narrative told by Ravinder (from Sharma 2016c, by permission of Oxford University Press).

This difference is characteristic across men in the two age groups, with older British Asian men continually re-inscribing ethno-political stances in their speech, a practice that arises out of their early life experiences of racial conflict, hostility and a bicultural existence in the early phase of the community. The younger men, by contrast, experienced a much less conflicted and marginalised status, growing up during a later stage of the community. They still use ethnic pronunciations as an integral part of their British Asian accent, but hardly signal anything beyond community membership. Indeed, one volunteered that ‘it happens unintentionally ... I’ll speak an English word but it’ll come out with an Indian accent’ (Sharma & Rampton 2015: 25).

In this case, a focus on diaspora brings to light a dynamic that requires us to move beyond the variationist focus on frequencies and additionally consider indexical meanings and their place in ongoing change. These meanings can still be systematic at the group level, in this instance at the level of community time depth.

However, even within his cohort of similar older men, Anwar exhibited the most dramatic range of all. This poses a second challenge to ‘macro’ accounts: why was he the *leader* in this sort of speech repertoire and style?

3.3.3. *Anwar and Naseem — change in lived experience*

Anwar’s striking range of style performance can be attributed in large part to his position within the macro-social system — his class, ethnicity, age and the stage of his community. But he is also a stylistic *leader* within this intersectional group. In this final example, I briefly turn to the role of personality as well as lived experience in dialect outcomes, through a comparison of siblings.

Anwar has a brother, Naseem, seven years older than him. The two men are identical in many ways, which ‘controls’ for many other factors — the type of school they attended, the level of education they achieved, their occupation (they took over their father’s restaurant business), their housing (they live within minutes of each other) and their families (both married wives who moved from Pakistan and with whom they do not speak English).

However, they contrast quite clearly in terms of personality. Anwar dresses rather casually and slightly showily, while Naseem wears suits and shirts of muted colours. Anwar is a confident extrovert who loves to perform and to engage with community outsiders and the media. He uses his bilectal range constantly while speaking, with a very hybrid ‘resting’ or default setting. Naseem is much more shy and introverted. He has the *same* bilectal range because of their shared social experiences (*habitus*), but fluctuates less while speaking and favours a slightly more traditional British vernacular default setting in his speech.

Clearly their individual personality differences give rise to different stylistic and performative choices. However, there is also a notable difference in lived experience that may have exacerbated this basic personality difference.

The two men grew up during the 1970s and 1980s, at the peak of ethnic hostility as the proportion of South Asians was increasing amid a violent backlash from far right political groups. Southall was the site of famous violent clashes between Anglo-British fascist groups and South Asian community activists. Here is how Anwar and Naseem describe these childhood experiences:

Anwar (second generation man, age 41 years at time of research):

We had extreme tensions. We had big problems with them. Whenever we would go to the park ... they would hurl abuse at you and ... even you know like even spit at you. But um because we, you know, we had our pride. There was absolutely no way we were going to be abused like this ... We are Asians, we're Pakistanis, we're Indians, you know, we're proud of this. And the fact is that we had to stick together. Southall was a little cluster that had its own identity and its own ideologies. And if some fascist organisation wants to come into Southall er town hall and to have a meeting, then not over our dead bodies as they say. As then we rebelled.

Naseem (second generation man, age 48 years at time of research):

We had to be very very careful. I still remember those days. It was quite frightening ... We used to be bussed ... When I went to B___ I used to go by [bus] 200 then. So then that was quite difficult travelling, when you're about twelve thirteen ... You'd be scared to get picked on you know ... We did feel intimidated ... It's changed now due to race relations laws and everything. It's changed now a hell of a lot.

Although the brothers are describing the same life of ethnic tension in Southall, the affective quality of their reports differs visibly. Anwar speaks of pride, resistance, fighting back and rebellion. Naseem speaks of fear, difficulty, intimidation and being careful. They differ audibly too, with Naseem employing a markedly 'safer', more typically class-appropriate British vernacular, despite controlling a full bidialectal range, and Anwar exploiting the full range of his repertoire for ethnopolitical stance work, as we saw in Figure 11.4.

Poignantly, one detail of political policy that Naseem mentions may have played a part in their individual differences. From 1969–1975, Southall implemented a highly controversial policy of bussing, whereby children of immigrants were bussed out to distant schools in order to keep their proportions in local schools below one-third. The adverse effects were so apparent that the policy was abandoned within six years, and the controversial 'Dispersal Policy' even appears as an example in the national curriculum for British History (BBC 2009). During these six years, Anwar was aged 3 to 9 years but Naseem was aged 10 to 16 so he experienced what was a brutally frightening experience throughout his secondary schooling. This might account not only for the tone of his narrative, but possibly also his 'safer' use of British dialect and less active ethnopolitical styling.

4. A new sociolinguistics?

Millions of urban-dwellers now experience migration within their lifetimes or their recent family history, and live in diaspora or mixed communities. Do individuals like Nimmi, Ravinder, Anwar and Naseem force us to rethink the founding assumptions and methods of the variationist study of change? In closing, I comment briefly on principles such as the speech community, peer-based acquisition, the sociolinguistic interview as a source of data and recent claims around superdiversity.

I start with the last of these. The presence of a ‘superdiverse’ feature pool in much of our London data does not—*yet*—seem to lead to ‘an epistemological rupture with past approaches’ (Blommaert 2013: 621) where dialect change is concerned. London has long been the site of radical fluidity in individual interactional practices, which disrupt modern European ideologies of code boundaries and values (Otsuji & Pennycook 2010; Garcia & Li Wei 2014). These practices present us with highly complex combinations of form that challenge us to look deeper in order to find the emic factors that drive internal coherence in the systems. But our studies find that continual focusing in dialect use towards local group norms (only for these to change again, of course!) appears to be as deep and lasting a social imperative as individual creativity in language use.

Indeed, similarly super-diverse processes underpinned Middle English in London, as it emerged out of the influence of Norman contact—nearly creole-like and with elaborate translanguaging routinely found in the highest registers (Schendel & Wright 2011)—or Cockney in earlier centuries, as it voraciously absorbed Hindi, Yiddish, French, Romani and many other codes through artful, new performances by individual Londoners. In each case, the outcome was a set of enregistered, focused dialects embedded within elaborate and unique repertoires formed by each Londoner’s personal social world. We see the same processes alive in London today.

The research reviewed here has nevertheless proposed numerous amendments to existing sociolinguistic theory. Group second-language acquisition has been shown to be a major source of change in new urban dialects (Cheshire et al. 2011) and minority groups a source of change for majority groups (Fox 2015). The research in West London (Sharma 2011; Sharma & Sankaran 2011) has noted the limitations of assuming a unified speech community, of relying on interview data alone and of assuming a determining role for peer influence and nativeness in gradual dialect change across generations. This work has also argued for the importance of analysing repertoires, particularly in complex urban settings today, for understanding change. It has also begun to explore methods for tracking not just change in frequency of use of forms but changes in their socio-indexical value, which can in turn be a possible clue to related changes in frequency and rates of change (Sharma & Rampton 2015).

But our studies confirm many deep principles of urban sociolinguistics too. Londoners continue to have vernaculars, however diverse their use of them may be. They acquire systems, not scattered forms, and their acquisition closely reflects such distinctions as transmission and diffusion (Labov 2007). The individuals in Sharma (2011), for instance, may exhibit complex cross-situational shifting, but they also acquire the precise linguistic systems of their British peers (e.g. constraints on glottal replacement of /t/; Sharma & Sankaran 2011). Practices of bricolage observed in our data exploit refined knowledge of these macro-cultural indexicalities (Eckert 2000). And the gender and age patterns found across our studies conform to established findings relating to political economy, network exposure and class (e.g. Gal 1978; Milroy 1978; Chambers 1995).

The focus on individuals tests the strength of these generalisations and reminds us that aggregate group patterns can never fully capture the individual. But even here, a study of the individual can illuminate, rather than obscure, large-scale processes at the community level. Cheshire et al. (2011: 186) comment on Abigail, a 13-year-old

Albanian immigrant who is a hyper-user of phonetic and grammatical forms of Multicultural London English. Her individual usage may reflect a heightened social need (perhaps due to her age, friendship group and migration history) to signal belonging and authenticity. But individuals like Abigail are not exceptions: high users like her systematically accelerate the processes of change.

Individuals in today's globalised world show a wealth of diversity in their speech patterns. Their fluid, agentive and ideologically shaped practices force us to see processes that might otherwise remain hidden. But they do not, so far, fundamentally overturn large-scale sociolinguistic models. The combinations of linguistic forms we see in these varieties are often spectacular and push us to devise new methods and techniques, but the processes underpinning their use can nevertheless confirm and help to refine many long-standing theoretical claims.

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Chapter 12

Individual and community level variation in phonetics and phonology

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1. Speech communities and their members

Simplifying considerably, over the past six to seven decades phonology and, to a lesser extent, phonetics were characterised by the study of languages as spoken by communities, abstracting away from variation between individual members of these communities.¹ In phonetics, the series called ‘Illustrations of the IPA’ is illustrative of this focus on languages as mostly non-individually differentiated abstractions. This series was inaugurated by the International Phonetic Association at its 1989 Kiel Convention and in the notice about the series published in the journal of the Association in 1990, we find statements such as the following: ‘each illustration should include consonant and vowel charts showing the contrastive phonological units ... that appear in the language’ (IPA 1990: 41). This injunction seems certain, or minimally implies, that there is one definitive version of ‘the language’ spoken by all members of its speech community. In phonology, this approach is exemplified, for instance, by Oxford University Press’s series *The Phonology of the World’s Languages*, published since 1993 and described as follows on the website for this series: ‘Each volume in the series is devoted to the phonology of a single language.’² Again, at least implicitly, assuming that there is a definitive version of a language whose phonology can be described.

This focus on the whole (the speech community) rather than its parts (individual members of the community) of course did not arise in a vacuum, but rather had antecedents in the intellectual traditions from which it developed. Saussure, for instance, placed much of his focus on the *masse parlante*, rendered as the ‘community of speakers’ in the classic translation of *Cours de linguistique générale* by Baskin (Saussure 1966: 77). Summarising the Saussurian notion of the *masse parlante*, Irvine states that it ‘is neither structured nor internally differentiated, and it has no social properties that would lead to differentiation in its participants’ language ... All representations of language in individual brains are essentially alike, so that a

1 The research reported here was made possible by a grant from the National Science Foundation to Patrice Speeter Beddor and Andries W. Coetsee (NSF #134150).

2 <https://global.oup.com/academic/content/series/p/the-phonology-of-the-worlds-languages-pwl> [accessed 20 December 2017].

language is like a book whose (virtually) identical copies are deposited in the minds of its speakers' (Irvine 2006: 690).

This understanding of language, and the relationship between speech communities and their individual members, is also echoed by Chomsky in his famous reference to the ideal speaker-listener as the primary object of study in linguistics: 'Linguistic theory is concerned primarily with an ideal speaker-listener, in a completely homogeneous speech-community, who knows its language perfectly' (Chomsky 1965: 3). Like the Saussurian *masse parlante*, Chomsky's speech community is homogeneous, so that there is no principled difference between studying an individual member of the community or the community as a collective. In the foundational work of generative phonology, *The Sound Pattern of English*, Chomsky and Halle similarly define the object of study as 'an idealized speaker-hearer who is unaffected by ... grammatically irrelevant factors' (Chomsky & Halle 1968: 3). Although the generative tradition focused on studying the linguistic competence of individuals, there was no room for differences between individuals as they were assumed to be representatives of idealised, homogeneous, invariant speech communities.

The variationist approach, associated most closely with Labov, developed concurrently with, even if mostly independently from, the mainstream generative approach. What most clearly differentiates these two approaches, is that the variationist approach rejects the notion of a homogeneous, invariant speech community. In one of the foundational writings from the variationist tradition, Labov says of variation that it 'is an integral part of the linguistic system' (1966: 3), and in a 2004 review, he calls it 'the central problem of linguistics' (2004: 6). In this tradition, variation is also assumed not to be random, but rather to be intricately structured by both grammatical and social factors. The speech community is therefore no longer seen as homogeneous, but rather as displaying 'orderly heterogeneity', to borrow a term from another classic in this research tradition (Weinreich et al. 1968). Initially, the structure in the speech community was mostly seen along broadly defined social categories such as sex, age, education, etc. More recently we have also seen consideration of factors such as the age of migration in immigrant communities, degrees of multilingualism, the role of so-called substrate and heritage languages, etc. Within a speech community, individuals that differed along these dimensions (and their various intersections) could also be expected to differ in their speech patterns.

The field of sociolinguistics, in dialogue with other disciplines, has developed both practical and theoretical tools for incorporating these factors into the study of phonetics and phonology. Although some of the earlier research in this tradition focused on sub-communities defined along the lines of the social categories mentioned above, there was a realisation from the very inception of the variationist approach that individuals, and how they relate to the various (sub-)communities in which they participate, matter (for specific early discussion of the role of individuals see, e.g., Cedergren & Sankoff 1974: 353 and Sankoff & Labov 1979: 206–210). This realisation that individuals matter also has antecedents in earlier intellectual traditions. In a 1934 paper in the *Journal of Social Psychology*, Sapir defined 'grammar' (what we would today call 'linguistics') as the prime example of a 'cultural discipline' (for him a discipline that focuses on the community rather than the individual). He then goes on to state that '[t]here is a very real hurt done our understanding of culture

when we systematically ignore the individual and his types of interrelationship with other individuals' (Sapir 1934: 411).

In later developments in the sociolinguistic research tradition, and in particular in the so-called 'third wave' of variationism (Eckert 2012), individuals, and how they navigate the social landscape and speech communities in which they participate, became even more central to the study of variation. Focus shifted from more statically defined social categories towards the micro-creation and management of the indexicalities of variation, with the resulting production of gender fluidities (Eckert & McConnell-Ginet 1999), ethnic crossing (Rampton 1995; Cutler 1999), and so forth. Similarly, more dynamic conceptions of style (Bell 1984) and stylisation (Coupland 1980; 1985; 2001) emerged as challenges to static notions of identity that highlighted interaction over social belonging. All of these approaches tie in with post-modern theories that stress flux over stasis and call into question the social categories once believed to be relatively stable.

With increased dialogue between more formally oriented phonology and variationist sociolinguistics (see Coetzee & Pater 2011 for a review of this history), focus has increasingly shifted to individuals and their agency, how they differ from each other, the extent to which they can differ from their speech communities, explanations for individual differences, etc. The reasons for this shift towards focus on the individual are complex and multifaceted. On the one hand, even in the earlier research traditions, there was a realisation that individuals matter. Chomsky (1965: 4), for instance, states that 'observed use of language' (which, by default, will be by individuals) does constitute evidence for the nature of the assumed invariant linguistic competence. The variationist tradition, of course, explicitly relied on this observation of individual language usage as data. An increased realisation that understanding the properties of a community depends on understanding the contribution of individual members to the community undoubtedly also contributed to the increased focus on individuals.

In addition to these more intellectual reasons for increased focus on individuals, there are also very real practical reasons. Generalising requires fairly large quantities of data. Since meaningful generalisation over individuals requires proportionally more data than generalisation over groups, the costs and time involved in individual level generalisation have often in the past, by necessity, resulted in a group level focus. It is only with 'the ready availability of what used to be highly specialized and expensive acoustic analysis hardware and software' (Scobbie 2007: 19; see also Coetzee 2012: 62) that it has become practically possible to collect and analyse large enough sets of data to investigate individual differences. Another practical matter that contributed towards the increased individual focus is the development of statistical techniques that are better capable of modelling individual level variation in relation to group level patterns (Baayen 2008: 275–278).

In the rest of this chapter, I will review results from one completed and one ongoing study on variation in Afrikaans phonetics and phonology, conducted by members of the Phonetics Laboratory at the University of Michigan, showing in both instances that a deeper understanding of the linguistic system can be gleaned if we consider how individuals in a community differ from each other. I will also review some of the reasons suggested in the recent literature for why individual members of a speech community may differ from each other. I will conclude with a call towards

broadening the Chomskyan notion of ‘competence’ to include both grammatical competence (the sole content of the Chomskyan notion), and other aspects of language users’ knowledge that also contribute towards how individuals perform linguistically (see also Hymes 1972). A fuller understanding of the human linguistic capacity is possible if our focus is this broader communicative competence, rather than the narrower Chomskyan grammatical competence.

2. Individual variation in Afrikaans plosive voicing

Afrikaans is traditionally described as having a voice onset time (VOT) contrast between pre-voiced /b d/ and voiceless unaspirated /p t/ plosives (Le Roux & Pienaar 1927; Van Wyk 1977; Wissing 1982). In a recent study, however, Coetzee et al. (2018) showed that this VOT contrast is currently collapsing (at least word-initially), with the pre-voiced plosives merging with voiceless unaspirated plosives. Lexical contrasts that used to be signalled by this VOT contrast, however, are not being lost, but are instead transferred onto the following vowel as a contrast in fundamental frequency (f₀). Vowels after historically voiced plosives are being realised with a low f₀ (or low tone) and those after historically voiceless plosives with a high f₀ (or high tone). The examples below show how the lexical contrast between members of a minimal pair is realised phonetically in the older voicing-based system, and in the newly developing tonal system.

	<i>bak</i> ‘bake’	<i>pak</i> ‘pack’
Traditional (voicing)	[bak]	[pak]
New (f ₀)	[pàk]	[pák]

This study also documents variation in the speech community both for the rate of devoicing in production and for the reliance on VOT vs f₀ in perceptual differentiation between word pairs such as that shown above.³ Coetzee et al. find this variation to be generationally structured with older speakers being more likely than younger speakers to use VOT to differentiate words like *bak* and *pak* in production and also being more likely to rely on VOT rather than f₀ in perceptual differentiation of such word pairs. Figure 12.1 shows the devoicing rate for older and younger speakers (average age 60 vs 22 years), and Figure 12.2 how these speakers perceptually rely on f₀ vs VOT.⁴ In the perception study, listeners were presented with tokens that either started with prevoiced (i.e., [b] or [d])⁵ or voiceless unaspirated plosives (i.e. [p] or [t]), and that had f₀ on the following vowel ranging in seven equal steps from the low values typical after historically voiced plosives to the high values found after historically voiceless plosives. These stimuli therefore traded the two primary cues for this contrast (VOT and f₀) against each other so that it can be determined how listeners weight these two cues in perceptual differentiation.

3 This study is reviewed here only in broad terms. Refer to Coetzee et al. (2018) for details about experimental design and confirmation of all the patterns discussed here through statistical modeling.

4 Figure 12.2 is based on Figure 9 from Coetzee et al. (2018:199), and is presented here with permission from Elsevier, the publisher of the *Journal of Phonetics*.

5 The original study had two degrees of voicing, ‘full’ and ‘reduced’ (Coetzee et al. 2018). Since the results for these two degrees of voicing differed only in degree, I report only the ‘full’ voicing condition here.

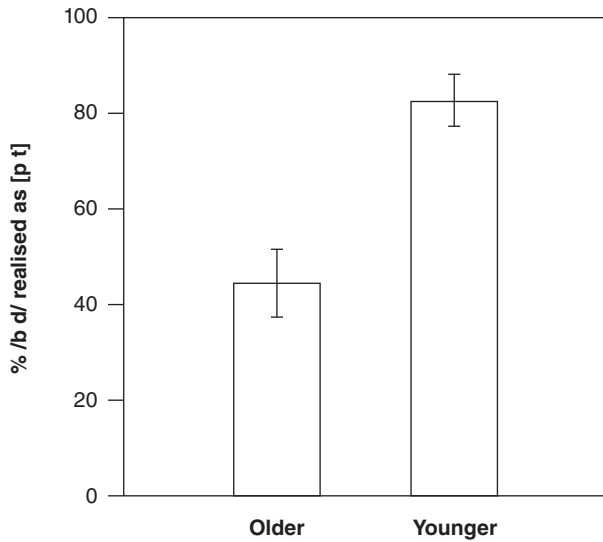


Figure 12.1: Devoicing rates of historical /b d/ in word-initial position in Afrikaans for older and younger speakers. (Error bars represent one standard error above and below the mean.)

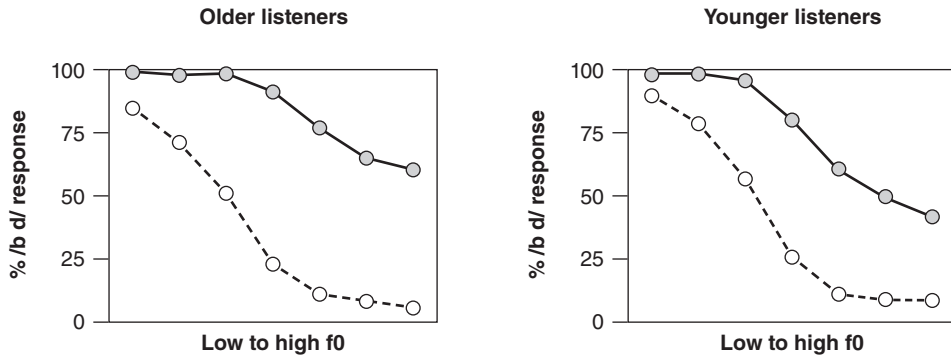


Figure 12.2: Per cent tokens identified as starting on /b d/ by older and younger listeners. (Filled circles represent tokens starting phonetically on prevoiced plosives, and open circles tokens starting phonetically on voiceless unaspirated plosives. The x-axis represents a 7-step f₀-continuum from low to high f₀, that is prototypically voiced to prototypically voiceless.)

Inspection of Figure 12.1 shows that younger speakers are more likely than older speakers to produce historically voiced /b d/ as voiceless [p t] (82 per cent vs 44 per cent). Figure 12.2 shows that older and younger listeners alike rely on f₀ to differentiate historically voiced /b d/ from voiceless /p t/ in the absence of plosive voicing (unfilled circles) — all listeners identify such tokens as voiced /b d/ when the vowel has low f₀ and as voiceless /p t/ when the vowel has high f₀. As for tokens with voiced plosives (filled circles), listeners are more likely to identify such tokens as voiced even when f₀ on the following vowel is high (i.e. when the f₀ and VOT cues

give conflicting evidence for phonological voicing). In this condition, however, we also see evidence for a difference between age cohorts. For those tokens where VOT and f_0 conflict (high f_0 and pre-voicing, filled circles at right end of the plot) older listeners are more likely than younger listeners to identify the tokens as voiced /b d/, in agreement with the actual voicing of the plosive and contrary to the f_0 on the vowel.

What we have here is therefore a perfect example of the ‘orderly heterogeneity’ of the variationist tradition. There is variation in the speech community, but this variation is structured along the social division of age/generation. The results as presented here, although representative of the community as a whole, obscure potentially meaningful variation between individuals, even within each of the two generational cohorts. Looking at the results at the level of the individual reveals an even more intricate structure to the variation. Figure 12.3 shows how individuals pattern in both perception and production with regard to this contrast.⁶ The production measure used here (represented on the x -axis) is the per cent tokens starting on historically voiced /b d/ that is realised as voiced [b d] by each individual (the inverse of the devoicing rate shown in Figure 12.1). The perception measure is based on the ambiguous middle region of the f_0 -continuum (steps 3 to 5 on the 7-step continuum where the f_0 on the vowel is intermediate between the values typically found after historically voiced and voiceless plosives). For each participant, the average per cent voiced responses for these three steps on the continuum without voicing (unfilled circles in Figure 12.2) was subtracted from the average per cent voiced responses for the same three steps on the continuum with voicing (filled circles in Figure 12.2). The larger this difference, the more likely an individual is to have a different response based on the presence vs absence of voicing in the plosive, and hence the more that individual relies on VOT (or actual voicing rather than f_0) as a cue to differentiate between historically voiced and voiceless plosives.

The patterns in Figure 12.3 agree broadly with the age-based generalisations that were observed in Figures 12.1 and 12.2. Older individuals (here indicated by filled circles) are more likely than younger individuals to produce /b d/ as voiced (filled circles are more likely than open circles to appear on the right-hand side of the plot). Older individuals are also more likely than younger individuals to rely on voicing in perception (filled circles are more likely than open circles to appear in the upper half of the plot). Younger speakers, however, show a different pattern. They are generally less likely to rely on voicing in production (unfilled circles are all found in the left half of the plot). They are also less likely than older speakers to rely on voicing perceptually (unfilled circles are more likely than filled circles to appear in the lower half of the plot). However, the figure also shows that even within each age cohort, individuals can differ quite drastically from each other. In terms of production, the older speaker with the lowest voicing rate voices /b d/ only 6 per cent of the time, while the older speaker with the highest voicing rate voices these plosives 94 per cent of the time. For younger speakers, voicing rates range from 1 to 43 per cent. Similarly,

⁶ Figure 12.3 is based on Figure 15 from Coetzee et al. (2018: 202), and is presented here with permission from Elsevier, the publisher of the *Journal of Phonetics*.

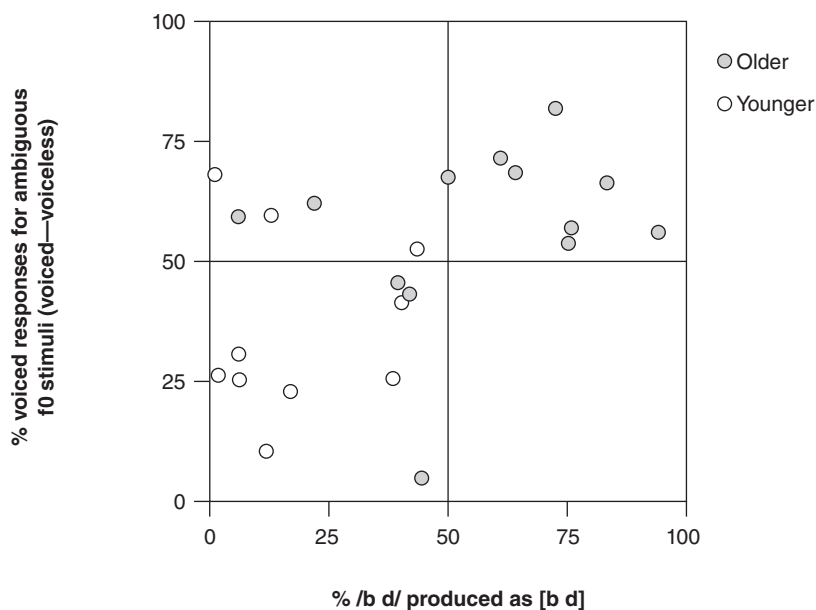


Figure 12.3: Reliance on voicing in production (x-axis) and perception (y-axis) (see text for explanation of measures).

on the perception measure, older speakers range from an index of 42 to 82 per cent, and younger speakers from 11 to 68 per cent.

When the focus remains at the level of the group, a lot of information about the actual structure of the variation in the community is lost. Specifically, what is hidden in the group level plots in Figures 12.1 and 12.2 are the ways in which individuals can diverge from the groups to which they belong. As we see in Figure 12.3, younger speakers are more homogeneous in their production (all fall on the left half of the plot) than in their perception (they are spread out between the top and bottom halves of the plot). This shows that, although all younger speakers tend to rely less on voicing in production, some younger speakers do rely on voicing in perception. For older speakers, the pattern is different—they tend to show more homogeneity in perception (all of them fall in the upper half of the plot) and more heterogeneity in production (they are found in the left and right halves of the plot). Although all older speakers tend to rely on voicing in perception, only some rely on voicing in production. Most striking in Figure 12.3 is that the lower right quadrant is completely unpopulated—there are no individuals who rely on voicing in production but not in perception. This leads to a possible conclusion that an individual cannot use a cue in production without also using it in perception, while the opposite pattern of using a cue in perception but not production is possible. This potential limit on the structure of variation in a speech community could not have been discovered had focus remained at the level of the group. By drilling down to the individual level a better understanding of the system is gained and potential limits on the structure of variation in the community are discovered.

This situation also makes for an interesting comparison with the research on so-called ‘near mergers’ in the variationist tradition. Labov et al. (1972) investigates a series of vowel mergers and splits in the history of English and explain some of the previously problematic aspects of this history by suggesting that perception and production may not always be aligned. In a follow-up study, Labov et al. (1991) documents through careful acoustic study and perception experiments multiple cases of a mismatch between perception and production operative in near mergers. The general outcome of these experiments is that some individuals may produce a particular contrast that they are unable to perceive. Although the process described in Coetzee et al. (2018) is not a merger in the classic sense (the historically plosive contrast is maintained, even if on a neighbouring vowel), it is interesting to note the difference between the cases discussed in Labov et al. and Coetzee et al. While Labov et al. report on individuals who produce but do not perceive a contrast, Coetzee et al. found that some individuals rely perceptually on an acoustic cue that they do not produce themselves. Only through drilling down to the level of the individual, however, can these patterns be uncovered, and can we hope to develop an understanding of (and explanation for) such different patterns of mismatch between perception and production.

3. Individual variation in anticipatory nasalisation in two varieties of Afrikaans

In Afrikaans, vowels followed by tautosyllabic nasal consonants are subject to a variable degree of anticipatory nasalisation. A word like *kans* ‘chance’ is therefore typically produced with some amount of nasalisation on the vowel, i.e. as [kãns].⁷ Impressionistic dialectal descriptions of Afrikaans have claimed that the extent of nasalisation differs between the two major socio-ethnic varieties of the language, with so-called ‘White Afrikaans’ showing more extensive nasalisation than so-called ‘Kleurling Afrikaans’ (Coetzee 1981; Coetzee & Van Reenen 1995; Coetzee 1985; Van Reenen & Coetzee 1996).⁸ A study conducted by members of the Phonetics Laboratory, University of Michigan, in collaboration with researchers from the North-West University, Potchefstroom, represents the first non-impressionistic investigation of patterns of anticipatory nasalisation in these two varieties of

7 In this transcription, the repetition of the vowel symbol [a] is used to indicate that this vowel is phonemically long in Afrikaans. Marking nasalisation on the second of the [a] is not intended to indicate that exactly half of the vowel’s duration is realised with nasalisation, but is rather a schematic representation intended to show that nasalisation is typically limited only to the latter part of the vowel.

8 I acknowledge the problematic nature of the terms ‘White Afrikaans’ and ‘Kleurling Afrikaans’. The socio-ethnic groupings indicated by the terms ‘White’ and ‘Kleurling’ are problematic constructs that grossly oversimplify the realities of Afrikaans-speaking individuals, so that not all speakers will associate with one of these two terms. Similarly, not everyone who may self-identify as belonging to one of these two socio-ethnic groups necessarily speaks the variety of Afrikaans traditionally associated with that particular group. The terms are used here as convenient labels only to refer to two parts on what is more likely a dialect continuum, rather than two distinct varieties of the language. Participants in the study completed a survey at the end of their participation in which they were asked to self-identify their affiliation with different parts of the Afrikaans speech community. Participants considered as speakers of Kleurling Afrikaans for the purposes of this study typically self-identified as ‘kleurling’, ‘coloured’ or ‘brown’, while those considered here as speakers of White Afrikaans, typically self-identified as ‘white’.

Afrikaans.⁹ As will be shown, the simple hypothesis of a difference between the two varieties of Afrikaans belies the intricate structure of the actually observed variation in the speech community. Although there are significant differences between the two varieties of Afrikaans, individual speakers can diverge in meaningful ways from the sub-community with which they identify. Identity, as signalled through specific speech patterns, is fluid, so that taking socially constructed categories such as ‘white’ and ‘kleurling’ too rigidly will result in a misrepresentation of the variation in the speech community.

In total, 48 speakers each of White and Kleurling Afrikaans participated in this study. All participants were native speakers of Afrikaans, between 18 and 30 years old, and were students at the North-West University, Potchefstroom. Speakers participated in a larger study that also investigated how they use anticipatory nasalisation to perceptually differentiate between word pairs like *kat* [kat] ‘cat’ vs *kant* [kant] ‘lace/side’. In this chapter, however, I will focus only on the production part of the study. For this part of the study, participants produced a randomised list of Afrikaans words with the structure CVC (*kat* [kat] ‘cat’, *bos* [bɔs] ‘forest’, etc.) and CVN(C) (*kant* [kant] ‘side/lace’, *bons* [bɔns] ‘bounce’, etc.). There were 10 words of each kind, and participants produced the randomised list 10 times, giving 100 tokens with potential anticipatory nasalisation per participant. While reading, participants held tightly against their faces a soft silicone, split oral-nasal mask. The mask was connected to a Glottal Enterprises Oral-Nasal Airflow system, enabling the capture of separate oral and nasal airflow volumes. I will report here only on the nasal airflow as measured for the CVN(C) words; that is, for words where anticipatory nasalisation is expected.

Figure 12.4 shows the average nasal airflow during the vowel, time-normalised to control for durational differences between vowels, for White and Kleurling Afrikaans. As seen in this figure, nasal airflow starts earlier in the vowel in White Afrikaans (at about the 20 per cent mark) than in Kleurling Afrikaans (at about the 50 per cent mark) indicating that the anticipatory velum lowering gesture (anticipation of the upcoming nasal consonant resulting in nasal airflow during the articulation of the vowel) happens on average earlier in White than in Kleurling Afrikaans. The figure also shows that nasal airflow during the vowel is of higher volume in White than in Kleurling Afrikaans, perhaps indicating a larger velum opening on average in White Afrikaans.¹⁰ These results, therefore, provide the first non-impressionistic confirmation for the observations from the dialectological literature cited above.

As with the plosive voicing data from the previous section, these group averages

9 The collaborators on this project include, from the University of Michigan, Andries Coetzee, Pam Beddor and Will Styler, and from the North-West University, Ian Bekker and Daan Wissing. Data collection and analysis on this study have been completed, but a final report on the project is still under preparation.

10 A linear mixed effect model was fit to these data with the interaction of nasal airflow and time modelled using basis splines (B-splines; De Boor 1978: 87–106), which use a piecewise polynomial function to simplify curvilinear data. The B-splines model the change in airflow over time with five degrees of freedom; that is, they model the airflow curve using five different control points that dominate, very roughly, consecutive 20 per cent intervals of the vowel. The results of this analysis confirm that there is a significant difference in nasal airflow between White and Kleurling Afrikaans throughout the vowel, and that the difference is particularly pronounced later in the vowel.

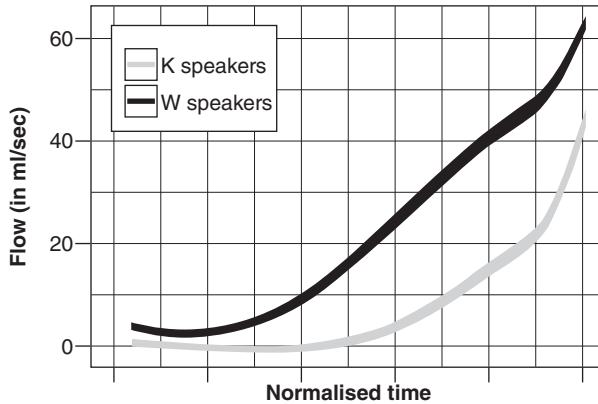


Figure 12.4: Average nasal airflow during the vowel for the two speaker groups. The x -axis represents time-normalised vowel duration to control for durational differences between vowels. The black line marks the nasal flow for White Afrikaans, and the grey line that for Kleurling Afrikaans.

hide interesting individual differences both between and within groups. In order to investigate the differences between individual speakers, the nasal airflow measures were subjected to a functional Principal Component Analysis (fPCA), using the `prcomp()` function in R (R Core Team 2013). The first principal component (PC1) found by the fPCA accounts for the majority of the variance in the individual speaker airflow patterns (91.6 per cent), and captures the difference between individuals with earlier onset and overall higher volumes of nasal airflow (i.e. heavy anticipatory nasalisation), and individuals with late onset and overall lower volumes of nasal airflow (i.e. light anticipatory nasalisation). Figure 12.5 shows the mean normalised

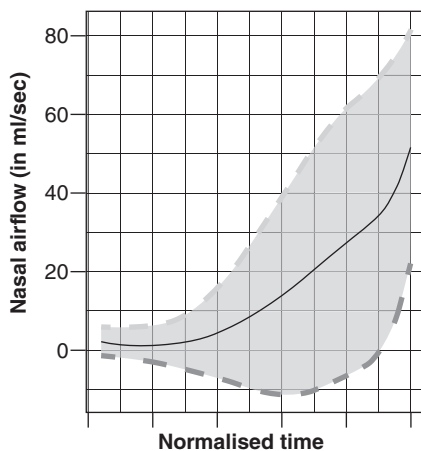


Figure 12.5: Mean normalised nasal airflow (solid black line) with predicted flow for an individual with a PC1 score one standard deviation above and below the PC1 mean (upper and lower dashed grey lines).

nasal flow (solid black line), with the airflow predicted by the tPCA for an individual with a PC1 value one standard deviation above the mean PC1 value (upper grey dashed line) and one standard deviation below the mean PC1 value (lower grey dashed line). As this plot shows, an individual with a higher PC1 score has both earlier onset and overall higher volume of nasal airflow — i.e. the higher a PC1 score an individual has, the more extensive the anticipatory nasalisation is for that individual.

With the PC1 as a measure of individual levels of nasalisation it is possible to investigate individual differences in the community. Figure 12.6 represents the PC1 scores for all the participants in the study, ordered from highest (heaviest nasalisation) to lowest (lightest nasalisation).

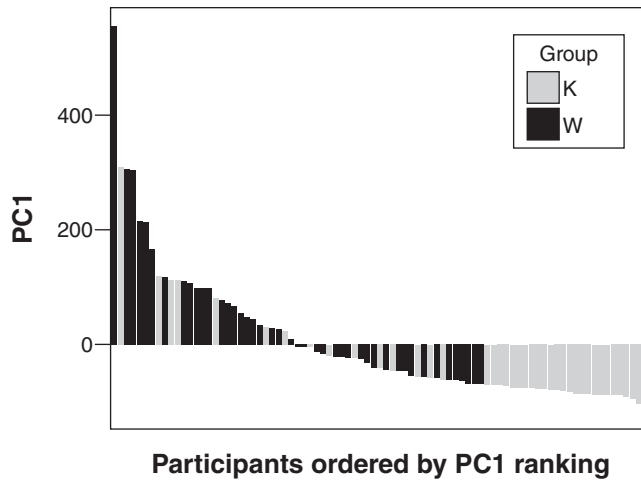


Figure 12.6: Individual participants ordered by their PC1 scores from high (heavy nasalisation) to low (light nasalisation). Speakers of White Afrikaans are represented with black bars, and speakers of Kleurling Afrikaans with grey bars.

to lowest (least nasalisation). This figure confirms the community pattern seen in Figure 12.4. The lower end of the PC1 values are all affiliated with speakers of Kleurling Afrikaans, confirming that this variety on average shows less anticipatory nasalisation. However, the figure also shows that there are several speakers of Kleurling Afrikaans with PC1 values that are much more comparable to the values typically associated with speakers of White Afrikaans. Not all individuals therefore pattern with other speakers of the socio-ethnic group with which they identify. Figure 12.7 shows the average nasal airflow for a speaker of Kleurling Afrikaans with a low and high PC1 score, respectively.

The individual speaker represented in the left panel of Figure 12.7 is the speaker of Kleurling Afrikaans with the highest PC1 score (and also the individual with the second highest PC1 score among all participants in this study, i.e. the bar second from left in Figure 12.6). As can be seen, this individual shows very early onset of nasal airflow (as early as 5 or 10 per cent into the vowel) with an especially sharp rise by about vowel midpoint. This pattern is much more similar to the average flow pattern

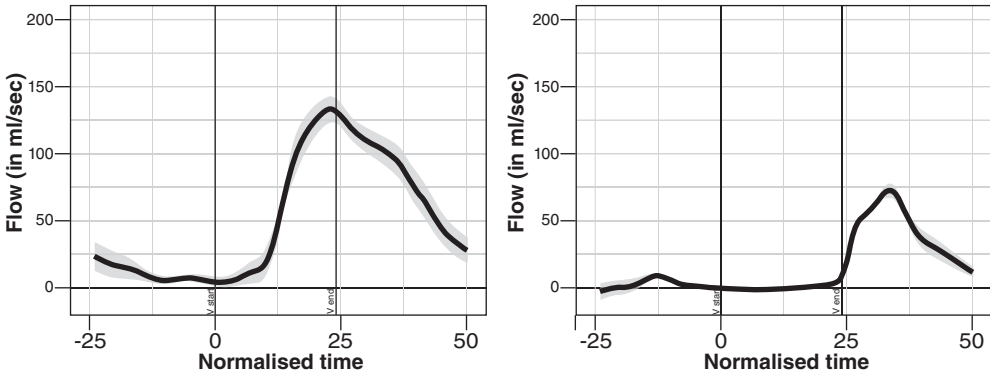


Figure 12.7: Average nasal airflow for a speaker of Kleurling Afrikaans with a high (left) and low (right) PC1 score. Nasal airflow is shown for the whole word, including the onset and coda. The vertical grey lines in each plot demarcate the vowel portion of the word.

for White Afrikaans than that for Kleurling Afrikaans (see Figure 12.4). The individual in the right panel of Figure 12.7, however, has a low PC1 score (one of the individuals to the far right in Figure 12.6). This individual has virtually no nasal airflow during the vowel, and therefore virtually no anticipatory nasalisation. The average airflow pattern for speakers of Kleurling Afrikaans represented in Figure 12.4, therefore, does not capture the actual variation that is observed within this group of speakers. Many speakers of Kleurling Afrikaans have little to no anticipatory nasalisation while some have patterns more typical of that found for White Afrikaans. The intermediate level of nasalisation represented in Figure 12.4 is therefore the result of averaging between heavy nasalisers (like the individual in the left panel in Figure 12.7) and speakers with virtually no nasalisation (like the individual in the right panel in Figure 12.7).

Looking at the PC1 scores for the speakers of White Afrikaans, we also observe variation within this group. However, there are no speakers of this variety with PC1 scores in the lowest third of PC1 scores (the right-hand end of Figure 12.6). There are therefore speakers of Kleurling Afrikaans with nasalisation patterns more typical of White Afrikaans, but there are no speakers of White Afrikaans with nasalisation patterns that are typical of Kleurling Afrikaans. This more nuanced structure of the variation in the speech community would have been missed had the analysis remained at the level of the group.

This result can be taken as support for the approach, typical in variationist studies, not to reduce the identity of participants to a single factor (e.g. White vs Kleurling). Individuals simultaneously participate in multiple crossing identities and sub-communities defined by, in addition to socio-ethnic identity, factors such as age, gender, education, attitudes towards language varieties, etc. Some of the variation observed among the speakers of Kleurling Afrikaans may result from differences among these speakers that transcend their affiliation with the Kleurling Afrikaans speech community.

In agreement with the earlier dialectological literature, we can therefore conclude that White Afrikaans on average has heavier anticipatory nasalisation than Kleurling

Afrikaans. However, the results also show that some speakers of Kleurling Afrikaans have nasalisation patterns more typical of White Afrikaans. A possible explanation for this pattern is the difference in prestige associated with these two varieties of the language. White Afrikaans tends to be the variety associated with professional and academic settings. Given that data collection for this study was conducted on a university campus in a prototypical academic setting and by a speaker of White Afrikaans, some speakers of Kleurling Afrikaans could have ‘style-switched’ into a variety of the language more typical of the social setting in which data collection took place. Alternatively, especially given that all participants were students at the North-West University (an institution that is closely affiliated with White Afrikaans linguistic norms), it is also possible that some of the speakers of Kleurling Afrikaans may have shifted their production norms more generally to the language variety associated with academic and professional domains. For similar results about African American English, see Scanlon and Wassink (2010) and Britt and Weldon (2015).

4. Sources of individual variation

As shown in the previous two sections, even when variation in a speech community shows the typical traits of social ‘structured heterogeneity’ (Weinreich et al. 1968), there can still be individual deviations from this social structuredness. To fully understand variability in a speech community, it is therefore necessary to also understand the reasons for such individual differences. Why would some individuals diverge in their usage patterns (whether in production, perception, or both) from the other members of the (sub)groups in which they participate? Recent years have seen more research exploring this question (see Yu 2013a for a recent review). Suggested explanations for such differences range from an individual’s social sensitivity (or ‘sociolinguistic awareness, Garrett & Johnson 2013; also Babel 2012; Lawrence 2013; Babel et al. 2014, etc.), differences in linguistic and social experience (Labov & Ash 1997; Flanigan & Norris 2000; Clopper 2014, etc.), differences in cognitive processing styles (Yu 2010, 2013a; 2013b; Yu et al. 2011, etc.) and more. In spite of this growing research literature, our understanding of the reasons behind individual differences is still fairly limited. One reason for this is that most research into phonetic and phonological variation has focused on the level of the group rather than the individual (see section 2). Additionally, those studies that do also explore individual variation often note the variation, but lack sufficient information, about differences between the individuals’ social sensitivity, social and linguistic experiences, cognitive traits, etc. to arrive at more than speculation for the explanation of the observed differences. Collecting information about the social background of individuals, the social networks in which they participate, their linguistic attitudes, their language usage patterns, etc., is already a fairly standard part of the research protocol in sociolinguistics, a practice that needs to be adopted more widely in phonetics and laboratory phonology. Additionally, in both sociolinguistics and phonetics/laboratory phonology, gathering data on the relevant cognitive traits of participants needs to become more standard. Only with this broader understanding of the social and cognitive identities of the participants in our studies will we be able to make significant progress in our understanding of individual differences.

5. Radically individualised linguistic competence

As a field, phonetics and phonology have come a long way towards understanding the human capacity for the production and perception of speech. Unlike in the early decades of the generative era, variation is now standardly assumed as part of grammar, and formal models of the phonological competence of speakers are evaluated also in terms of their ability to account for variation (see Coetzee & Pater 2011 for a review of how the valuation of variation has changed in the generative phonology tradition over the past three to four decades). In the theoretical phonology tradition, however, most of the recent models developed to account for variation have remained largely true to the original Chomskyan notion of ‘competence’, and have eschewed inclusion of factors other than grammar in the model of this competence. Coetzee (2009a; 2009b; 2016) and Coetzee and Kawahara (2013) review current models of phonological competence for this property, and then develop an alternative model that formally allows for the inclusion of non-grammatical factors. Inclusion of non-grammatical factors, however, requires a broadening of the original Chomskyan concept of ‘competence’ which explicitly excluded everything but grammar proper (Chomsky 1965: 3–4).

What we need is a broader concept of linguistic competence that includes the grammatical competence *a la* Chomsky, but also all the other aspects of an individual’s cognitive and social competencies that, together with the individual’s knowledge of their grammar, controls their actual linguistic performance. There is obvious overlap between the broader linguistic competence argued for here and the notion of ‘communicative competence’ proposed by Hymes (1972). Like the linguistic competence argued for here, Hymes’s communicative competence, included grammatical competence in the Chomskyan sense and what is indicated as ‘social competence’ in Figure 12.8. Hymes’ communicative competence, however, did not

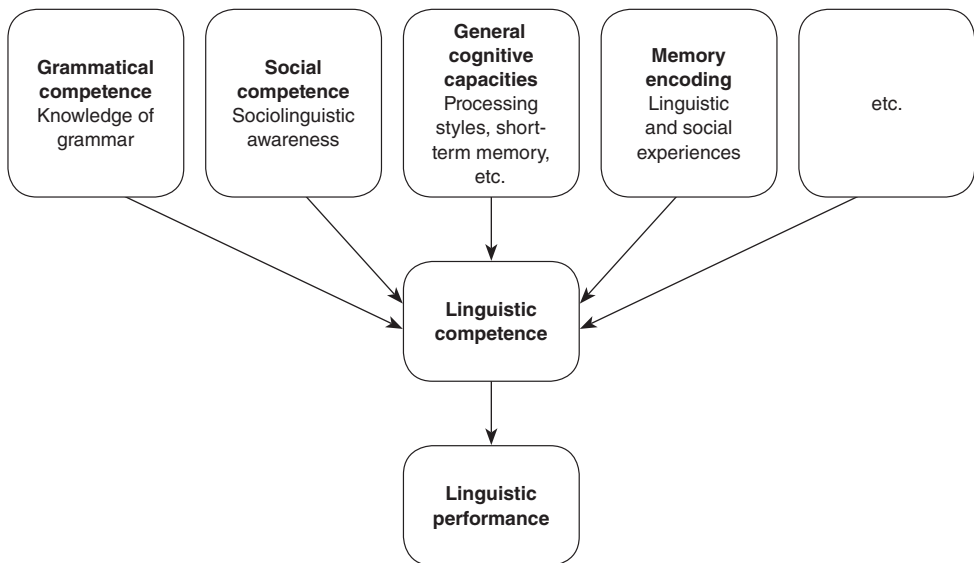


Figure 12.8: A broader understanding of competence.

expand meaningfully beyond these two sub-competencies, and in particular did not explicitly include general cognitive capacities, memory encoding, etc. Linguistic competence, as understood here, is hence an even broader concept than Hymes' communicative competence. An individual's use of language is determined and controlled not only by knowledge of the grammar of their language, but also by their knowledge of the appropriate social deployment of language, their cognitive processing styles, the memory encoding of their social and linguistic experiences, etc. Relegating the non-grammatical factors to the domain of performance therefore fails to account for how these factors co-determine linguistic performance rather than merely being a part of linguistic performance. Figure 12.8 represents schematically the broader concept of linguistic competence that includes grammatical competence (akin to the original Chomskyan notion) as only one aspect. Once competence is conceptualised in this manner, the focus of research shifts away from trying to factor out non-grammatical factors from our understanding of language towards trying to understand how the different components of linguistic competence interact to co-determine linguistic performance—that is, focus shifts away from the box representing grammatical competence towards the central executive box that integrates the contribution of the different subcomponents of linguistic competence. Under this conceptualisation of competence, our task as linguists becomes more interesting, even if more complicated. Not only do we have to understand the various subcomponents of linguistic competence, but we also have to understand how they interact.

Given that individuals can differ in terms of each of the subcomponents of linguistic competence, and presumably also in how they integrate these different subcomponents, it follows that every individual will have a uniquely different linguistic competence. In order to fully understand linguistic competence and performance, we therefore need to adopt an approach based on radically individualised linguistic competence. We need models that can account for individual linguistic performance by relating such performance patterns to individual linguistic competence. Ultimately, we then need a model of not only individual differences, but also of how individuals relate to and create the communities in which they participate.

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Chapter 13

Dynamic perspectives in language processing

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1. Introduction

The 20th International Congress of Linguists takes as its theme *The Dynamics of Language*. An area in which the dynamic nature of language is most evident is language variation and change. In this chapter I consider the implications of some examples of such variation and change for language processing, as part of a broader consideration of the dynamics of psycholinguistics.

Let me start anecdotally. New Zealand English (NZE) is famously known amongst sociolinguists for its vowel system and for features of its intonation. While there are many distinctive features of this variety (Gordon et al. 2004), particular attention has been paid to the short front vowels TRAP, DRESS and KIT, and the centring diphthongs NEAR and SQUARE.¹ The short front vowels are raised, relative to their position in many varieties of English, with KIT centralising. NEAR and SQUARE have for 30 years or so been undergoing a merger towards NEAR, i.e., the first target of SQUARE is moving towards the closer onset of NEAR. In terms of intonation, a characteristic feature of NZE (but also of Australian, Californian and Canadian, and to a lesser extent South African and other English varieties) is the final rise on declarative utterances, variously known as high rising terminal, upspeak or uptalk (Warren 2016).

One consequence of such changes is that New Zealanders are increasingly familiar with anecdotes of visitors asking what is meant by an ‘online chicken’ [check-in], or wondering why the national airline declares that it has ‘fears to suit every traveller’ [fares]. The complaint tradition of letters to newspapers is rich with grumbles about young speakers not being able to speak clearly or properly, moans about television advertisements featuring the number of ‘ear bags’ in a new model of car, and objections that young people are so wracked with self-doubt that they are continually asking questions? rather than making statements?, using what has been termed in the New Zealand press an ‘imbecilic interrogative’ (Bennett 2010). While such and similar experiences are unique neither to New Zealanders nor to NZE, they are symptomatic of how variation resulting from the changeable or dynamic nature of language can result in issues for language processing.

Importantly though, while visitors to New Zealand may continue to notice such phenomena, they rarely cause lasting confusion, and over time they become less intrusive as listeners adapt to the accents around them. So on the one hand they

¹ Words in small capitals are lexical set labels used to refer to vowels across varieties of English (Wells 1982).

illustrate an undisputed truism, namely that language changes. But on the other hand, they also show that, although we can at first be thrown by unfamiliar accents, for the most part we can rapidly adjust our perceptual system to what we hear. That is, we show accommodation in our perception for speech just as we do in our production — not only do we start to sound more like the people we engage with, but we also start to listen like them.

Research in many areas of linguistics has shown that languages and language users are fundamentally adaptive and evolving systems. Linguistic variation affects all types of representation: sounds, words, sentence structures, meanings. There are many factors behind such variation, and behind the more durable changes that frequently emerge from variation. These include speaker-related factors such as age, sex, sexuality, educational and social backgrounds, as well as contextual factors such as the setting in which language is being used, the nature of the interaction, and so on. However, much of our understanding in the area of psycholinguistics, that is our understanding of how we produce and comprehend language, is based on an assumption of relative stability. That is, researchers have investigated phenomena in language production and comprehension as though they were static objects, rather than the moving targets that they really are. As stated in the introduction to a recent special issue of *Linguistics Vanguard*: ‘It is somewhat surprising [...] that psycholinguistics, the field that seeks to understand how language is processed in and acquired by the human mind, have [sic] neglected variation phenomena’ (Boland et al. 2016: 1).

2. Variation and language processing

Some variation in language is of course predictable on linguistic grounds and has long featured in psycholinguistic research. For example, early research by Nakatani and Dukes (1977) demonstrated that when native-speaking listeners parse continuous speech into words they exploit positionally conditioned variation in stop bursts, such as aspiration. More recently, Altenberg (2005) has shown that sensitivity to such cues appears to be language-specific; Spanish learners of English as a second language are less well able than native speakers of English to determine from the level of aspiration of the /t/ in the string *keepsticking* whether the word boundary is before or after the /s/ (*keep sticking* vs *keeps ticking*).

Other examples of predictable variation include the effects of connected speech processes, such as assimilations. For instance, the final alveolar [n] in *run* assimilates to [ŋ] because of the velar articulation of the following consonant in *run quickly* (rendering *run* confusable with *rung*), but to [m] before the bilabial in *run briskly* (resulting in *rum*). Building on a tradition of research in this area, Gaskell (2003) develops a computational model for how the perceptual system compensates for such assimilations. Importantly, this model employs both contextual knowledge and prior experience of connected speech processes.

More recently, increasing attention is being paid to the consequences for language processing of variation that might have non-linguistic origins, especially sociolinguistic variation. In addition to the special issue of *Linguistics Vanguard* mentioned above, the 19th International Congress of Linguists featured a workshop on ‘Language variation at the interface of psycholinguistics and sociolinguistics’

(Vorweg 2013), *Variation and Language Processing* conferences have been held in Chester, England (2011) and Christchurch, New Zealand (2013), a conference on *Sociolinguistic Variation and Language Processing* was held at Virginia Tech (2016), and the 2016 CUNY *Sentence Processing* conference included a special session on ‘Language variation within and across speakers’.

3. Sensitivity to sociophonetic variation

Socio-phonetic variation in language, i.e. variation in features of pronunciation that can be linked to the social characteristics of speakers or speaker groups, becomes particularly salient at times of language change. At such times, listeners are regularly exposed to multiple variants of the sounds in question and will have to determine how to interpret what they are hearing. To do this, it is not sufficient to make reference to linguistic determinants of variation, such as position in the word. Rather, either listeners will have to cope with additional levels of ambiguity (or object to it, as in the complaint tradition referred to earlier), or they will have to use information about speaker characteristics to assess how the variants are distributed, with regard to that speaker.

In the context of the NZE merger of the NEAR and SQUARE diphthongs, acoustic analyses highlight the significance of the age and social class of the speaker, with younger working-class speakers more likely to merge words like *cheer* and *chair* on a single pronunciation than older middle-class speakers (Warren et al. 2007). A range of psycholinguistic techniques has been used to investigate listener sensitivity to such speaker characteristics in the interpretation of phonetic forms. The simplest is a forced-choice identification task—participants hear a word and have to indicate which word it is they have heard. In one such study (Hay et al. 2006), all participants heard a female voice and a male voice. Stimuli were preceded by photographs, purportedly of the speaker, under the guise of a warning to participants of the sex of the next voice that they would hear. Unknown to the participants, however, the photographs included variation in the age and implied social class of the depicted person. The results showed listener sensitivity to age and social class, as suggested by the photographs: participants ‘switched off’ their discrimination when they thought they were listening to a younger or working-class speaker, who was more likely to merge the vowels, but not for an older or middle-class speaker. Other studies have shown that interpretation of phonetic cues can be affected by expectations based on other social characteristics of the speaker, including their perceived race (Babel & Russell 2015) and occupation (Pexman & Olineck 2002).

Shifting phonetic interpretation in response to the social characteristics of the speaker has consequences for lexical processing. This has been demonstrated in a more complex task, using auditory lexical decision with semantic priming. A pair of experiments showed listener sensitivity to speaker age differences (Warren & Hay 2006; Warren et al. 2007). The stimuli included a large number of sequences such as *cheer* [tʃiə] (the prime) followed by *shout* (the target) or *chair* [tʃeə] followed by *sit*, and crossed pairs such as *cheer* followed by *sit*, as well as unprimed control

conditions.² In the first study, young NZE-speaking participants heard a speaker from their own age group, but who maintained a distinction between the *NEAR* and *SQUARE* words. (As this is a change-in-progress, there is some variation in the extent of the merger, even amongst younger speakers.) These participants showed an asymmetry in priming that reflected their experience as listeners. This experience is that they predominantly hear [ʃiə] from younger, merging speakers as realisations of both *cheer* and *chair*, but they also hear [ʃeə] from speakers who do not merge the two vowels, though only as *chair*. In the experiment, [ʃiə] primed both *shout* and *sit*, but [ʃeə] primed only *sit* and not *shout*. The second study was a replication of the first, with a similarly aged group of listeners, but with an older speaker. This time the asymmetry disappeared, [ʃiə] again primed *shout* and [ʃeə] primed *sit*, but [ʃiə] did not strongly prime *sit*. This is just what we would expect in the context of an older speaker: the pronunciation [ʃiə] is a more typical pronunciation of the shouting word, and the pronunciation [ʃeə] is more typical of the piece of furniture.

One way of characterising these results is in terms of the triggering of a set of exemplars (Johnson 1996; Pierrehumbert 2001, 2016) associated with either conservative or innovative speakers. Interestingly, NZE participants who claim not to distinguish *NEAR* and *SQUARE* words in their own speech are less well able to hear the difference in the speech of others (Hay et al. 2006); these participants have probably had less exposure to speakers who still distinguish the vowels. Similar experience-based accounts have been suggested for the difficulties of second language learners in hearing distinctions that are ‘foreign’ to them (Hazan 2007).

Experiential learning can be expected to be dependent on the frequency of listeners’ exposure to particular words, structures, etc. Rather than dismissing variation in this input as ‘noise’ that has to be compensated for or somehow filtered out, both acquisition research (Maye et al. 2002; Rost & McMurray 2009) and research in adult speech perception (Bradlow & Bent 2008; Lev-Ari 2016) has shown that variability can enhance performance. For instance, children who hear a phonological contrast produced by multiple speakers learn the relevant distinction more effectively than those who hear the same contrast produced an equivalent number of times by a single speaker, and adults who have broader social networks and therefore interact with a wider variety of other speakers are better at understanding speech presented in noise, even when the overall amount of input is controlled for.

In addition to long-term effects of learning and adaptation as reflexes of previous experiences, perceptual studies also show dynamic adaptation of listeners’ linguistic behaviour over the short term, e.g. as accommodation to a new interlocutor. It is well known that we adapt our behaviours in response to those of others around us and there is plenty of evidence of convergence in language production. For example, we may converge with our interlocutors in terms of the details of the speech sounds we produce (Babel 2010; Kim et al. 2011), in our choice of vocabulary (Fusaroli et al. 2012), and even in terms of the sentence structures we use (Lev-Ari 2015). It has been shown that dynamic changes in sentence structures are especially marked when we listen to heavily accented speech, probably reflecting the extra attention that we

2 These words are examples of a larger set of prime-target combinations involving these vowels.

need to pay to such speakers (Chun et al. 2016). A common interpretation of convergence between speakers is that it helps to strengthen interpersonal connection and thus facilitate interaction (Lakin et al. 2003). It is not surprising therefore that convergence is stronger when rapport is also stronger (Hove & Risen 2009) nor that linguistic divergence is inversely related to rapport (Babel 2010).

Just as we show adaptive behaviour in our speech production, so too our expectations as listeners may change dynamically over the short term. In one study (Van Berkum et al. 2008) participants listened to pseudo-randomised sentences spoken by a number of different speakers, and displayed electrophysiological responses (measured on the scalp) that indicated rapid detection of anomalies between the sex, age or social class indicated by the speaker's voice and aspects of the sentence content (e.g. a male voice declaring 'I recently had a check-up at the gynaecologist ...', or a lower-class voice stating 'My wife works as a judge ...').

In the NZE research mentioned earlier, an interesting instance of adaptation in both production and perception arose as an unexpected finding (Hay et al. 2009). In one of the experiments, two research assistants met participants and administered the tasks. One was a speaker of American English (AmE) and the other a speaker of NZE. It only became apparent during data analysis that participants who had been met by the AmE experimenter made a more consistent difference between the vowels in their own speech in a production task than those met by the NZE experimenter. The experimenters' instructions did not include the NEAR and SQUARE vowels, so this effect seems to be an indirect influence of the likely pattern for these vowels in the dialect of the experimenters. This is an interesting accommodation effect in that it occurs in the absence of any genuine interaction with the experimenter and in the absence of the particular vowels being modelled by the experimenter.

In the perceptual task, however, the direction of the effect was reversed: participants who were met by the AmE experimenter were less well able to discriminate the NZE vowels in their listening. The conjecture is that this pattern of results came about because the effect of the AmE experimenter on these participants was to set up an expectation of a strong separation between the two vowels. This shows in clear differences in participants' productions. However, both the NZE NEAR and the NZE SQUARE vowels that they heard in the experiment would have been better examples of an AmE NEAR vowel than of an AmE SQUARE vowel, and so these NZE vowels were difficult to tell apart, in the context of an AmE expectation.

4. Interpretation of variation in intonation

Most research on socio-phonetic variation has focused on segmental variables such as the realisations of vowels and consonants. Less attention has been paid to prosodic variables such as intonation. (Though see the 2017 *Laboratory Phonology* special collection on prosodic variability: <https://www.journal-labphon.org/collections/special/prosodic-variability/>.) However, it is clear that there is both inter-speaker and intra-speaker variation in intonation. Such variation reflects differences in information and discourse structure, but importantly also speaker attributes such as age, sex and ethnicity (Jespersen 2016). It has been argued that listeners normalise for speaker differences and that they interpret intonational cues against the patterns they have learned to expect from individual speakers (Mo 2010).

Phonetic aspects of intonation such as the alignment of pitch events with segmental material can vary between languages and between language varieties. For instance, intonational rises in Greek, English and two German varieties have similar shapes, but line up differently with the segmental material over which they are realised (Atterer & Ladd 2004). These kinds of cross-linguistic phonetic differences in the realisation of intonation are similar to phonetic differences in the properties of segments. Like these differences, they are also acquired early; children as young as two show heightened sensitivity to the specific alignment parameters of their native language (Astruc et al. 2009).

In addition to geographic variation, recent intonation research has considered historical and social variation. In English varieties that use uptalk, for instance, this use of a final rise on statements is most typically associated with younger speakers and with females, although there is plenty of evidence that it is now used by older speakers and by males. Sociolinguists have long observed that innovative forms of language are frequently first used by young female speakers, who are often the initiators of language change. So it is no surprise to the linguistic community at least that young women may have introduced this way of speaking. Uptalk thus provides a good example of a recent change in intonation. One of the implications of the change is a potential ambiguity between questions (with which rising intonation is more typically associated) and statements (which otherwise tend to have falling intonation). As one commentator noted: ‘Language isn’t static; the rules change. Researchers taught machines that when the pitch of a voice rises at the end of a sentence it usually means a question, only to have their work spoiled by the emergence of what linguists call “uptalk”’ (Seabrook 2008).

The difference between statement and question is a basic distinction that would seem fundamental to communication. Psycholinguistic studies of uptalk therefore furnish another opportunity to examine processing issues related to phonetic variation, in the context of language change. Production studies, for instance, show that final question rises in NZE start earlier in the accent unit in the speech of younger speakers than in that of older speakers. Uptalk rises have similarly late starting points for both speaker groups. This means that there is a clearer distinction between question rises and uptalk rises for younger than for older speakers (Warren 2005; 2016). The results of perceptual tasks, in which participants simply have to indicate whether a recorded utterance they are listening to was intended as a question or as a statement, show that listeners are also sensitive to the differences in the timing of the rise (Warren 2005). More recent work (Warren et al. in prep) suggests that there may be categorical perception in the interpretation of differently aligned rises as statements or questions, with a sudden shift in responses between the categories at a particular point on an alignment continuum, similar to the categorical perception of voice-onset-time as a cue to stop voicing (Liberman et al. 1957; Repp 1984). It also provides evidence that such categorisation can be learned across the course of an experiment without any direct intervention. That is, participants received no feedback that might have encouraged them to associate early and late rises with questions and statements respectively. It seems rather that a latent distinction between the types of rise became strengthened on the basis of repeated exposure to stimuli from within each category. Changes in responses across the experiment are shown in Figure 13.1.

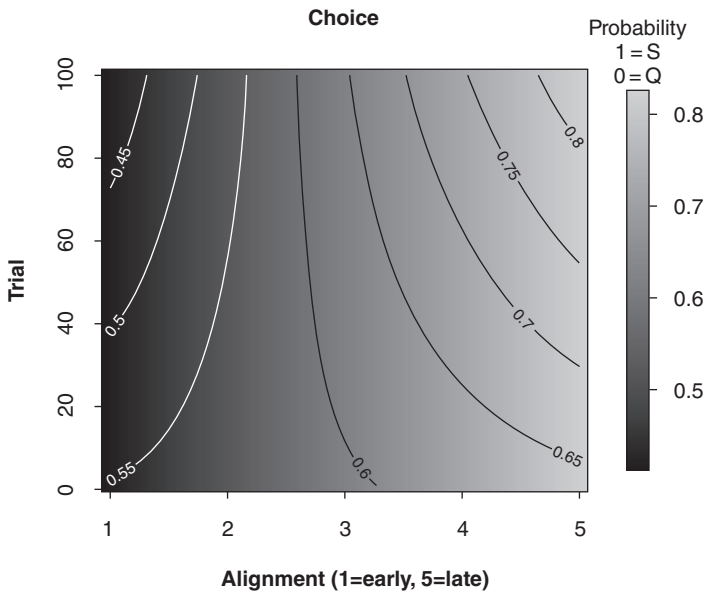


Figure 13.1: Response choice by alignment and trial, as predicted by logistic regression. The x-axis shows rise alignment points (1 = rise starts at 20% through the accent unit; 5 = 80%; 15% steps). The y-axis indicates sequential position of a stimulus in the experiment (trial 1 through trial 100). The greyscale indicates the probability of Question vs Statement responses, where 0 = Question and 1 = Statement, and shows increasing categorical distinction between early and late alignment as the experiment progresses.

Both the merger of NZE_{NEAR} and SQUARE discussed earlier and the use of uptalk intonation patterns have been strongly associated with younger speakers and with young women as initiators of change in particular. A recent study considers the question of whether variability in intonation patterns is constrained, in perception at least, by the social indexing of the speaker producing the patterns, with such social indexing resulting from other phonetic variables in the signal, namely the realisation of SQUARE diphthongs (Warren 2017). That is, as well as finding that speaker characteristics influence our perception of speech sounds, it was predicted that hearing certain speech sounds should help us characterise the speaker, which will in turn influence our interpretation of other speech features. More specifically, if listeners believe that a speaker is the type of speaker who shows more innovative use of language, then they should be more inclined to interpret the same speaker's use of intonation along the lines illustrated in the studies reviewed above.

To examine this, a new set of participants was also asked to decide whether each of a set of utterances with rising intonation was likely to have been intended as a question or as a statement. Two rise alignments were used, corresponding to the early and late rises typically found with questions and statements in earlier acoustic analyses of NZE (Warren 2005; Warren & Fletcher 2016). This time, rather than using voices with global age-related characteristics or prompting participants with

photographs of speakers of different ages, the social indexing of the speaker was more subtle and indirect, through the manipulation of a single vowel in a word early in the utterance, before the rising intonation. This was a SQUARE vowel, in a word that (for non-merging speakers) had no corresponding word with the vowel NEAR. For example, the word *prepared*, in the utterance *Jonathan was prepared to see the manager*. The utterances were recorded by a young female NZE speaker. They were then resynthesised so that the vowel in the word had the characteristics of either a NEAR or a SQUARE vowel, based on acoustic analyses of such vowels as produced by New Zealand speakers who maintain a distinction between the two vowels.

In order to get a measure of participants' confidence in their decisions and of the strength of the attraction of the two different response options ('question' or 'statement') the experiment employed a mouse-tracking paradigm (Freeman & Ambady 2010; Hehman et al. 2014). As well as measuring the participant's decision and response time, this paradigm also records the movement of the computer mouse from a 'start' button that they click at the centre of the bottom of the screen to one of the two response boxes that are positioned top left and top right. This mouse-track gives an indication of the attraction strength of the competing response.

In summary, the study showed effects in three measures: response choice, response speed and the directness of the response as revealed by the mouse-track. In terms of response choice, rises with an early starting point were more likely to be interpreted as indicating a question than those with a late starting point, in agreement with earlier studies. Response speeds also reflected this pattern. Interestingly, there was also an effect of the vowel manipulation—that is, 'question' responses were faster when the vowel had the SQUARE pronunciation than when it had the NEAR pronunciation. The SQUARE version of the vowel indicates a conservative speaker, i.e. one who is less likely to exhibit the innovative use of rises on statements. This means that 'question' is therefore a more obvious response choice and this choice is therefore made more quickly.

The directness of the response revealed by the mouse-tracks also showed an interesting result. As noted above, innovative, usually younger, speakers are likely to use NEAR rather than SQUARE in words like *prepared* and are also likely to be the kind of speakers who distinguish questions from uptalk by having early rise starts for questions. The results showed that when an utterance containing a NEAR vowel also has an early rise, then 'question' responses showed less attraction towards the alternative 'statement' response than was found for corresponding utterances that had the more conservative vowel (and vice versa for late rises). That is, an innovative vowel signals the type of speaker who is likely to distinguish between questions and statements by having early rises for the former and late rises for the latter. This mouse-tracking study suggests that listener expectations about the form and use of intonation patterns align with the socio-phonetic cues given by the segmental phonetic information.

Conclusion

Over 20 years ago, Applebaum (1996: 1541) commented that research in speech perception had, at that time, spent 'half a century of sustained effort' seeking a solution to the problem of the lack of invariance, i.e. to the fact that the high level of

intra- and inter-individual variation in the speech signal renders very difficult the process of determining what (and where in the speech stream) the underlying units of phonetic structure might be. Despite this sustained effort, no clear solution had been found. Her suggestion was that the research in this area had been based on a misguided background assumption that solving the invariance problem would be the key to explaining speech perception. She concluded by proposing that the central problem needed redefinition. Since then, and contributing to such a redefinition of the problem, considerable work, particularly in the burgeoning field of laboratory phonology (Pierrehumbert et al. 2000; Pierrehumbert & Clopper 2010; Cohn et al. 2011), has considered the question of how variation in the speech signal is interpreted. Informed by insights from both sociophonetics and psycholinguistics, this research has embraced the notion of variation not as an intractable problem but as something to be explored in its own right, as a phenomenon that has social relevance and that can, as a consequence, be best understood in its social context.

Importantly, social contexts are neither permanent nor static. We interact with other speakers from a wide range of backgrounds and these interactions contribute dynamically to our experience of the multiple patternings of language. Our linguistic repertoire is being continually updated by our experiences. Even potentially negative experiences such as mishearings or misunderstandings have the potential to alert us to the connections we need to forge between features of pronunciation and the characteristics of speakers. It is a natural consequence of our experience as listeners that we dynamically adapt to variation in speech features, and exploit this variation to make sense of what and who we are listening to.

In this chapter I have focused on a sample of recent studies that have investigated the interpretation of phonetic cues which vary in line with social factors. It is clear that listeners are sensitive to the social indexing carried by these phonetic cues. This is reflected in how the same tokens are categorised differently, depending on social indexing that might be signalled by something as simple as the age of the purported speaker. It is apparent also in how recent experience of a voice, in the case in point the voice of the experimenter, can influence subsequent performance in both the perception and the production of contrasts. It is evident too in the shift in interpretative bias for an intonational tune that is related to the difference in the (conservative vs innovative) realisation of a segmental contrast.

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Chapter 14

Derivations or constraints? Core aspects of syntax and morphology in competing grammatical frameworks

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1. Introduction¹

This chapter has two objectives. The first is to provide an overview of some of the main theoretical assumptions and ideas that characterise contemporary versions of the so-called Principles-and-Parameters theory (Chomsky 1981), also referred to — usually by its opponents — as ‘mainstream generative grammar’ (MGG). I focus specifically on the current version of the MGG, known as the Minimalist Program (MP) (Chomsky 1995), and its associated morphological framework, Distributed Morphology (DM) (Halle & Marantz 1993). The second objective is to compare current MGG treatments of core syntactic and morphological phenomena to the analyses offered by alternative, constraint-based models of generative grammar, specifically Construction Grammar (CxG) (Fillmore 1988; Fillmore & Kay 1993; Goldberg 1995; 2006), Head-Driven Phrase Structure Grammar (HPSG) (Pollard & Sag 1987; 1994; Müller 2015; 2016), and Simpler Syntax (Culicover & Jackendoff 2005).²

It is not possible, within the limits of one book chapter, to provide an overview of the MP and DM as well as a complete summary of alternative syntactic and morphological theories (but see Kiss & Alexiadou (2015, Vol. II) and Müller (2016)

1 I wish to thank the editors of this volume and the reviewers of my chapter for their valuable feedback. A special thanks goes to Andrew van der Spuy for numerous discussions of the material I present here. I am fully responsible for all errors that remain. This work is based on the research supported in part by the National Research Foundation of South Africa. Any opinion, finding and conclusion or recommendation expressed in this material is that of the author and the NRF does not accept any liability in this regard.

2 CxG and HPSG belong to what is sometimes called ‘West Coast’ linguistics, as their conceptual foundations were established at the University of California, Berkeley, and the Hewlett-Packard Research Laboratories in Palo Alto. I had to be selective regarding the choice of theories I picked as representatives of West Coast linguistics in this chapter. My choice of CxG and HPSG was determined by my familiarity with these frameworks, but also by the fact that there is some overlap between these theories. For example, a recent version of CxG, ‘Sign-based Construction Grammar’ (Sag 2010; 2012; Michaelis 2013), combines ideas of both Berkeley CxG and HPSG. I have added Culicover and Jackendoff’s (2005) Simpler Syntax model to my discussion of these theories, since it is based on the ‘tripartite parallel architecture’ model of grammar developed in Jackendoff (1997, 2002), which incorporates many insights of CxG (see Jackendoff 2011; 2013). Another West Coast framework which shares some of the core assumptions about the organisation of grammar with CxG, HPSG and Simpler Syntax is LFG (Bresnan 2001), but unfortunately, space constraints prevented me from including a discussion of LFG and other alternative theories in this chapter.

for excellent recent book-length overviews of competing grammatical frameworks). Given these limitations, I have organised the chapter around five core grammatical themes, discussed in sections 2 to 6: structure building, nonlocal dependencies, argument structure, linear order, and morphology. For each theme, I first provide a discussion of representative treatments offered by MGG, and then contrast these derivational analyses with constraint-based approaches.

Given my own research expertise, the focus of this chapter is on MGG. But my intention is also to provide readers with a general overview of how MGG differs from alternative, non-transformational frameworks, and to show where there are parallels. I believe that even broad descriptions of these alternatives serve to highlight the distinguishing features of MGG (including some of its problematic aspects) in ways which would not be possible in an overview without a comparative focus.

2. Building structure

The Minimalist Program (MP) advocates a *derivational* theory of syntax. The basic syntactic operation is *Merge*, a recursive, binary operation which takes two syntactic objects and combines them to form a new one. The outcome of Merge of α and β can be represented as the set $\{\alpha, \beta\}$.³ For this newly formed syntactic object to be interpretable at the interfaces with sound and meaning, it needs a *label*, which determines which of the two merged elements *projects*. According to the labelling algorithm of Chomsky (2013), when a head merges with a phrase, the head is the label. For example, the syntactic object *paint the house* is derived by merging the verb *paint* and the determiner phrase (DP) *the house*. The verb is the label of the newly derived object and projects, and the resulting object is a VP:⁴

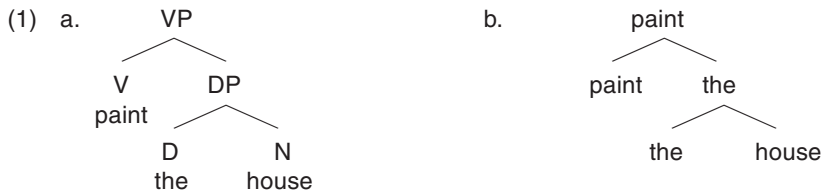


Figure 14.1: a. MGG tree notation and b. Bare Phrase Structure.

(1a) shows the more traditional MGG tree notation, which is still commonly used in most studies, but minimalist considerations about structure building are more faithfully captured by the tree diagram in (1b), which is the ‘Bare Phrase Structure’ (BPS) representation of the VP *paint the house*. According to BPS, there are no syntactic nodes and no projections independent of the lexical items that combine via

3 This applies to the merger of heads, complements and specifiers. The syntactic object created by adjunction of α to β is not a set, but an ordered pair $\langle \alpha, \beta \rangle$ (Chomsky 2004).

4 The structures in (1) raise the question of how the head/label of the DP is determined, given that both D and N are terminal nodes. The answer provided in Chomsky (2013) is that N is in fact a phrase consisting of a root and a nominalising head, as assumed in Distributed Morphology (see section 6).

Merge (Richards 2015: 813). A complement is the syntactic object that is first merged with a head; further applications of Merge may produce specifiers (potentially more than one), but X-bar theoretical principles have been abandoned in the MP. Since every complex syntactic object is the outcome of binary Merge, there are no unary (non-branching) or n-ary (with $n > 2$) projections in BPS.

Two types of Merge are distinguished, depending on whether an element α that is merged with β originates inside β (*internal Merge*) or whether it is taken from an external workspace or the lexicon (*external Merge*). Internal Merge corresponds to movement in earlier forms of MGG (see section 3). When α is a part of β and then re-merged at the root of β , it leaves an identical copy inside β (the copy theory of movement).⁵

(2) shows the outcome of the derivation of the transitive sentence *we paint the house*:

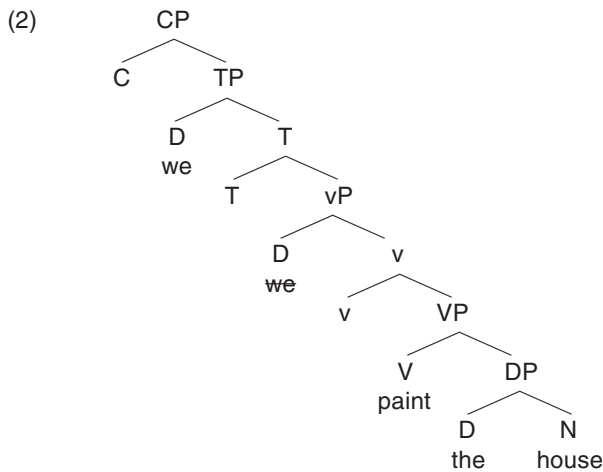


Figure 14.2: Outcome of the derivation of a transitive sentence.

The syntax of this sentence is derived bottom-up in a step-by-step fashion via successive applications of external and internal Merge. The VP in (2) is externally merged with a light verb *v* (also known as ‘little *v*’), which projects *vP* and which hosts the external argument in its specifier ([Spec, *v*]) (the ‘VP-internal-subject hypothesis’); see section 4. The complex *vP* is merged with the functional head *T* (tense), and in a next step, the subject pronoun is internally merged with TP, i.e. the subject moves from [Spec, *v*] to [Spec, *T*]. To complete the derivation, TP merges with a functional head *C* (complementiser), which projects a CP.

Not shown in (2) is *head movement* of the verb to *v*. The status of head movement in MGG is controversial, and it is sometimes suggested that it may not be part of narrow syntax (e.g. Chomsky 1995; 2001; Boeckx & Stjepanovic 2001). However,

⁵ A third type of Merge, called *parallel Merge*, is proposed in Citko (2005), and briefly discussed in section 3.

Matushansky (2006) and Roberts (2010) provide evidence that head movement is a syntactic operation; this is also the assumption adopted in the DM-framework discussed in section 6 below.

The representation in (2) includes various abstract elements, i.e. material with no phonetic content. The functional heads *v*, *T* and *C* in (2) are not pronounced, and neither is the copy of the moved subject (the silent copy is represented by strikethrough). The postulation of invisible material is a prominent characteristic of the MGG, especially in so-called ‘cartographic’ approaches, which assume large amounts of mostly abstract functional structure (cf. Cinque & Rizzi 2010).

According to the MP, derivations proceed in cycles, with each cycle corresponding to a subsection of the derivation called a *phase* (Chomsky 2000; 2001; 2008). At specific points in the derivation, the syntactic object generated by Merge is transferred to the interfaces with the sensory-motor and the conceptual-intentional system (the PF and LF components) for interpretation. Dedicated functional heads are classified as phase heads; when they are merged, their complements undergo the operation *Transfer* and are ‘evaluated by the interfaces’ (Richards 2015: 829). Material that has undergone Transfer is therefore no longer accessible for operations triggered by material outside the phase (the *Phase Impenetrability Condition* (PIC); Chomsky 2000, 2001). According to Chomsky (2000; 2001; 2007), little *v*, *C* and possibly *D* are phase heads (but see Bošković (2014) and the references cited therein for a more dynamic view of phasehood; see also section 6).

The derivational, or ‘proof-theoretic’, model of the MP stands in sharp contrast to the alternative computational formalism of *constraint-based* grammars, which is characteristic of monostratal grammatical frameworks such as Lexical-Functional Grammar (LFG; Bresnan 2001), Head-Driven Phrase Structure Grammar (HPSG; Pollard & Sag 1994), Construction Grammar (CxG; Fillmore 1988, Fillmore & Kay 1993; Goldberg 1995; 2006), or Simpler Syntax (Culicover & Jackendoff 2005; Jackendoff 2011). In these frameworks, structures are not derived by grammatical rules, but *licensed* by static grammatical constraints. A linguistic structure is well-formed if all applicable constraints are satisfied.

In HPSG, for example, constraints are expressed through *feature descriptions*, which specify the properties of linguistic objects in the form of attribute-value matrices (AVM). HPSG is a lexical theory, that is, most constraints are formulated as feature descriptions in the lexical entries of words and roots. The lexical entry of a head provides information about its phonological form, its meaning and its syntactic features, including detailed descriptions of the arguments with which the head can combine. For example, the abbreviated AVM in Figure 14.3 represents (part of) the lexical entry of the finite verb *sees* (Pollard & Sag 1994: 29):

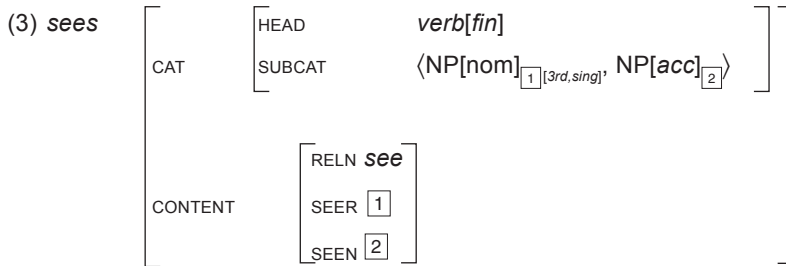


Figure 14.3: Feature description of the verb *sees*.

The syntactic properties of the head *sees* (its category and its subcategorisation frame) are expressed as values of the feature *CAT*(EGORY); semantic information is expressed under *CONTENT*.⁶ The semantic roles assigned by the verb are identified with its two syntactic arguments via *structure sharing*, represented by the boxed number tags.

If the feature description of an item is compatible with the feature description of an element in the valence list of a head, the two linguistic objects can be *unified* to form a phrase. The properties of the phrase are determined by the feature descriptions of the head and its argument, in combination with two additional constraints, the *Head Feature Principle* and the *Head-Argument Schema*. The Head Feature Principle (HFP) ensures that the properties of a head *project*, by requiring that the *HEAD*-value of any headed phrase be identical to (= structure-shared with) the *HEAD*-value of the head daughter (see Pollard & Sag 1994: 34; Müller 2016: 266). The Head-Argument Schema licenses a phrase whose nonhead daughter satisfies a subcategorisation requirement of its head and which inherits the head's remaining valence list (Müller 2016: 263). Figure 14.4 illustrates how these constraints operate in the analysis of the sentence *Peter sees her*.

Since *her* is accusative, it can be unified with *sees* in Figure 14.3, and its feature description is structure-shared with the first argument from the verb's *SUBCAT*-list. Because of the Head-Argument Schema, the resulting phrase inherits the verb's valence list minus the argument saturated by the accusative NP. In addition, the HFP ensures that the head features of the phrase are structure-shared with the head features of the verb, making it a verb phrase. When the verb phrase is combined with the nominative NP, the result is a clause (a fully saturated verbal projection).

As in MGG, tree diagrams in HPSG visualise dominance relations and projection. However, Figure 14.4 includes fewer nodes than the Minimalist representation in (2) above; in HPSG, the sentence is a projection of the verb, not of a functional head like *C*, as in the MP. Note that the tree in Figure 14.4 is binary branching, because the Head-Argument Schema can be formulated in such a way that it licenses phrases with exactly one head daughter and one nonhead daughter (Müller 2016: 263). However,

⁶ The simplified feature descriptions in Figure 14.3 and Figure 14.4 use the *SUBCAT*-feature of early versions of HPSG. In most current versions, the *SUBCAT* feature is split into three separate valence features, namely *COMPLEMENTS* (*COMPS*), *SPECIFIER* (*SPR*) and *SUBJECT* (*SUBJ*) (see Pollard & Sag 1994; Müller 2015).

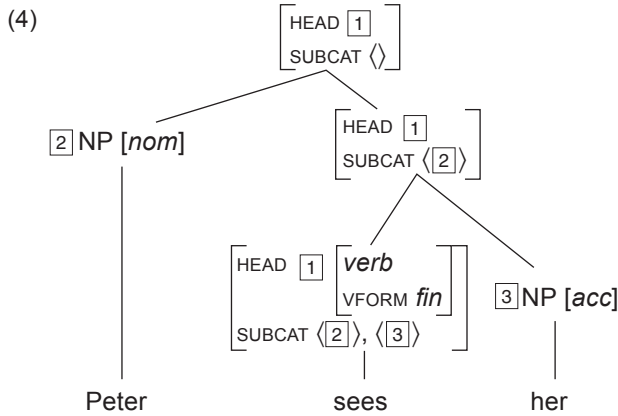


Figure 14.4: HPSG-analysis for *Peter sees her.*

binary branching is not the only possibility in HPSG and analyses with flat structures exist as well.

According to Construction Grammar (CxG), the basic units of language are *constructions*, which are defined as conventionalised, lexically listed associations between form and meaning. Therefore, all linguistic structures are licensed through constructional schemata in CxG. For example, Kay & Fillmore (1999:7) postulate a *Head plus Complements Construction* (HC), a fully schematic constraint which licenses the combination of a lexical head and one or more local ‘fillers’ (i.e. non-extracted phrasal arguments):

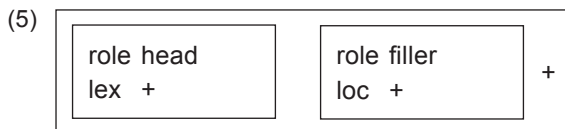


Figure 14.5: The Head plus Complements Construction (HC).

The constructional schema in Figure 14.5 is a general constraint on all types of phrasal head-argument constructs. More specific phrasal constructions inherit the general properties of the HC. For example, the VP-Construction only lists those specific properties of a VP which are not already specified by Figure 14.5, i.e. that its head is verbal and that none of its daughters has the grammatical function of subject (Kay & Fillmore 1999: 8):

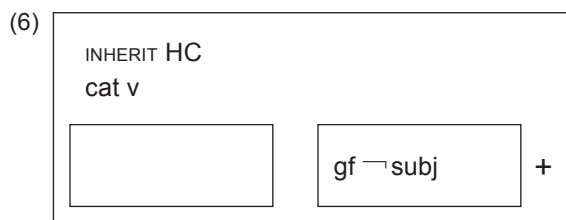


Figure 14.6: The VP-Construction.

Figure 14.5 and Figure 14.6 illustrate that schemata in CxG are organised in *inheritance hierarchies*, in which more general schemata dominate more specific ones. Since constructions lower in the hierarchy inherit all the properties of schemata from a higher level the system can express generalisations about shared properties of constructions. Properties inherited from higher schemata are predictable, and hence redundant; only the lexical information specific to the form and meaning of the lower schema produces additional informational cost. Inheritance hierarchies are also used in HPSG, to express generalisations across word classes or types of phrasal structures.

It is important to emphasise the ontological difference between the structure-building rule Merge of the MP and the licensing schemata and unification operations of constraint-based frameworks such as HPSG and CxG. In the MP, there is a categorical distinction between grammar and the lexicon. Grammatical rules such as Merge *apply* to lexical items such as words, roots, and functional heads. In contrast, HPSG's feature descriptions and CxG's constructions model both lexical items and phrasal structures, so the boundary between grammar and the lexicon is more fluid. Work in CxG often emphasises that general constructional schemata such as Figure 14.5 and Figure 14.6 represent one endpoint of a continuum of linguistic phenomena with varying degrees of specificity (see e.g. Fried 2015; Goldberg 1995; see also Culicover & Jackendoff 2005). On the other end of the spectrum are entirely idiosyncratic constructions, i.e. words and phrasal idioms such as *kick the bucket*. Between the schematic constructions and fully specified lexical items are linguistic expressions that are neither entirely regular nor entirely fixed, for example phrasal constructions that contribute special meaning beyond the meaning of their parts (e.g. resultative or ditransitive constructions; see section 4), or 'constructional idioms', which are lexical schemata with some fixed and some open parts, such as the [V X's way PP]-construction (e.g. *he elbowed his way to the front*). But regardless of the degree of specificity, all constructions are lexically stored; there is no strict separation between the lexicon and grammar.

The nature of Merge and the labelling algorithm of Chomsky (2013; 2015) imply that all phrases are projections of heads/labels. However, some linguistic objects seem to behave differently. One example is the so-called NPN-construction (*day by day, picture after picture, face to face* etc.) where it is not clear which of its constituent parts (if any) would count as the head (Jackendoff 2008). Another example are coordinate structures, which inherit the categorial features of the conjuncts and not of the conjunction (but see Chomsky (2013) for an MP-analysis of coordination within the theory of labelling; see Müller (2013) for arguments against Chomsky's analysis).

Constraint-based frameworks can straightforwardly account for these cases since their exceptional properties can be captured by allowing unheaded structures to be licensed by specific constraints (see e.g. Jackendoff's (2008) analysis of NPN-constructions as constructional idioms, or Pollard & Sag's (1994: 202) Coordination Principle, which explicitly stipulates that the category of a coordinate structure is determined by its conjunct daughters).

3. Nonlocal dependencies

In the MP, as in HPSG or CxG, linguistic objects are modelled as bundles of grammatical features. The most basic feature of a lexical item is its *edge feature* (EF), which indicates that it can be merged with another syntactic object (Chomsky 2007). Phenomena such as agreement and concord are analysed in terms of the syntactic operation *Agree* (Chomsky 2000; 2001), which applies when the uninterpretable grammatical features of a functional head F (the *Probe*) find matching valued features (the *Goal*) of another functional category in F's c-command domain. Agree ensures that the feature values of the Goal are transferred to the Probe. When an uninterpretable feature is valued, it can be erased before it reaches the LF-interface, avoiding a 'crash'. Agree is subject to *Locality*, which stipulates that a probing head must agree with the *closest* Goal in its domain (with closeness defined in terms of c-command).

In the MP, nonlocal (unbounded; 'long distance') dependencies are analysed in terms of movement, i.e. internal Merge. Internal Merge is also feature-driven and (in earlier Minimalist studies) linked to the Agree-operation. For example, the prevailing analysis of movement of the subject-DP from [Spec, v] to [Spec, T] (shown in (2) in section 2) postulates a so-called EPP-feature on T, which forces the projection of a specifier. The EPP-feature is associated with the probing agreement features of T (so-called ϕ -features), and attracts the Goal-bearing element that agrees with T (i.e. the subject-DP). Similarly, in earlier Minimalist studies, movement of wh-phrases to [Spec, C] in constituent questions was assumed to be triggered by an EPP-feature linked to an uninterpretable wh-agreement feature of C (see, e.g. Chomsky 1995; 2001; Pesetsky & Torrego 2001). Since Agree is subject to Locality, Agree-based movement accounts can explain island effects such as the superiority violation in (8b):

- (7) a) Who read what?
 b) *What did who read?

According to an Agree-based analysis, wh-movement is a consequence of agreement between a Probe in C and the wh-phrase. Since C's feature must agree with the feature of the closest wh-phrase in C's domain (Locality), it follows that only the subject wh-phrase in (7) can be attracted and moved to [Spec, C] (see Chomsky 2000:128).

However, more recent MP-analyses do not necessarily view internal Merge as a correlate of agreement between a feature of the moved element and an uninterpretable feature of the target. According to Chomsky (2007; 2008), A-bar movement operations such as topicalisation (*This book, I like*), which have information-structural effects, are solely triggered by EFs of phase heads. The EF of C can therefore attract any phrase in its domain, and the particular interpretation is established *as a result of* movement. While it is not clear if this revised account can still explain superiority

effects of the sort shown in (7b), it is an attempt to find the motivation for internal Merge solely in the conditions imposed by the LF-interface.

Furthermore, Chomsky (2013; 2015) offers an analysis of subject movement to [Spec, T] and an explanation for the ‘mysterious property EPP’ (Chomsky 2008: 156) in terms of labelling. As explained in section 2, the label of a syntactic object derived by Merge determines which of the two merged elements projects; when one of the merged objects is a head, the head is the label of the newly derived object. However, when the subject-DP merges with a projection of little *v*, the resulting set {DP, *v*P} cannot be labelled, because neither of its two members is a head. To solve this problem, Chomsky (2013) suggests that, when the subject moves to [Spec, T] its lower copy is no longer visible for the labelling algorithm, and *v*P can therefore be identified as the label of {DP, *v*P}. At the same time, Chomsky (2015) argues that T in English is too weak to act as a label. However, since T agrees with the subject, movement of the subject to [Spec, T] establishes the shared ϕ -features of T and the subject as the label of the set {DP, TP}. Labelling hence provides an independent motivation for why a subject-DP must raise to [Spec, T], which does not require the postulation of an EPP-feature.

As noted in section 2, derivations proceed in phases. When a phase head is merged, its complement undergoes Transfer, and becomes syntactically opaque (the PIC). Consequently, it should be impossible for a phrase that originates inside the complement of a phase head to be internally merged in a position outside the phase head’s domain. However, *wh*-phrases can clearly be extracted across several phase heads. In (8a), *which book* has moved to [Spec, C] across the phase head *v*; in (8b), *what* has crossed embedded *v* and C as well as matrix *v*:

- (8) a) Which book will you buy ~~which book~~?
 b) What did you say Peter likes ~~what~~?

The standard minimalist analysis of these long distance dependencies therefore postulates that a *wh*-phrase moves *successive-cyclically* through the specifier position of every phase head (the *edge* of the phase) that intervenes between the base position of the *wh*-phrase and its surface position. The derivation of (8b) is shown schematically in (9):

- (9) [_{CP} *what* [did you [_{VP} ~~what~~ [say [_{CP} ~~what~~ [Peter [_{VP} ~~what~~ [likes ~~what~~]]]]]]]]]?

Each movement step takes the *wh*-phrase to the edge of the next higher phase head, where it remains accessible when the phase head’s complement is transferred. Data from many different languages support the view that information about a nonlocal dependency is encoded locally at intermediate points along the dependency path (see, e.g. Boeckx 2008 for a summary of the empirical evidence).

In a constraint-based generative grammar such as HPSG, nonlocal dependencies are not analysed in terms of movement transformations. Instead, the HPSG-analysis of topicalisation constructions such as *This book I like* in Pollard and Sag (1994) assumes that the missing object of *like* is represented by a special lexical item (called a *trace* or a *gap*) the purpose of which is to record information about the selectional conditions imposed locally by the verb. Figure 14.7 shows the (simplified) feature description of the phonologically empty trace (Pollard & Sag 1994: 161).

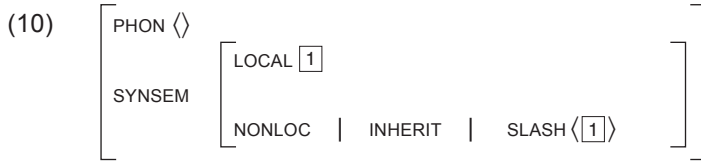


Figure 14.7: The trace element in HPSG.

The feature descriptions of lexical items in HPSG distinguish between information that is locally relevant (*LOCAL*) and information that plays a role in nonlocal dependencies (*NONLOCAL*). The *LOCAL* value of the trace is initially unconstrained, but when a verb is unified with the trace, the feature descriptions from the verb's *SUBCAT*-list (cf. the entry for *sees* in Figure 14.3 in section 2) are imposed onto the *LOCAL*-feature of the trace. As (10) shows, the *LOCAL*-value of the trace is identified via structure-sharing with the value of its so-called *SLASH*-feature, which appears under the *NONLOCAL* path in (10). The *Nonlocal Feature Principle* determines that the *NONLOCAL* features of daughter nodes are inherited by the mother node (Pollard & Sag 1994: 162). Therefore, the value of the *SLASH*-feature, which encodes the selectional constraints specified by the verb, is passed up in the tree to the node that combines with the topicalised NP (the *filler*).

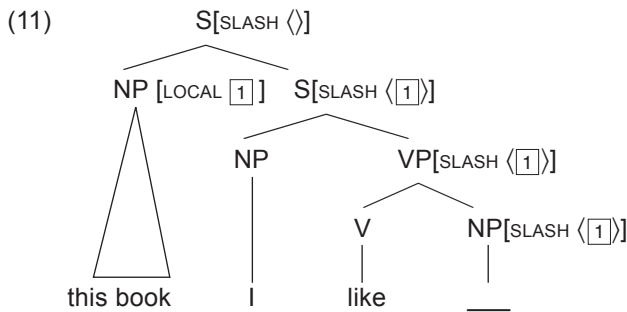


Figure 14.8: A nonlocal dependency in HPSG.

The *SLASH*-value is eventually bound off by combining the finite S-node with the topicalised filler NP. For this, HPSG postulates the *Head-Filler Schema* (Pollard & Sag 1994: 162), which licenses the combination of the filler and the finite S-node containing the trace. The *Head-Filler Schema* identifies the local feature description of the filler with the value of the *SLASH* feature of the S-node via structure-sharing. Since the *SLASH*-value is also identical to the *LOCAL*-value of the trace, the *LOCAL*-values of the filler and the trace are also identical with each other, and the verb's selectional conditions can apply to the topicalised NP as if the two had combined locally. The trace-based HPSG-analysis therefore produces the same outcome as the

cyclic movement (internal Merge) analysis of the MP, albeit with a considerable amount of formal machinery.⁷

As in HPSG, CxG-analyses of nonlocal dependencies (including those proposed in Culicover and Jackendoff's 2005 *Simpler Syntax*) are non-transformational. Since there are no mechanisms in CxG that can derive one construction from another (Fried 2015: 983), a particular instance of a nonlocal dependency is licensed by the combination of different constructions (Goldberg 2006; 2013; Sag 2010).⁸ For example, for a *wh*-question such as (8a) to be licensed, it must simultaneously satisfy a number of constraints captured by, among others, the VP- and the NP-construction, the subject-predicate construction, the subject-auxiliary inversion construction and, importantly, an unbounded dependency construction which links the *wh*-phrase to a gap in the argument position of the verb. (Examples of unbounded dependency constructions are Sag's (2010: 518) *Nonsubject Wh-interrogative Construction*, or Kay and Fillmore's (1999: 16) more general *Left Isolation Construction*.) Similarly, in Culicover and Jackendoff's (2005: 310) analysis of *wh*-movement, the position of the *wh*-phrase is licensed by a *wh*-question construction which links a question operator and a bound variable in the semantic representation to a syntactic chain consisting of the *wh*-phrase and a trace. Non-subject questions are well-formed if they simultaneously satisfy the *wh*-question construction and the subject-auxiliary inversion construction, which specifies that inversion takes place in specific semantic contexts, including questions (see Culicover & Jackendoff 2005: 173).

In constraint-based grammars, island effects are typically not analysed in terms of syntactic Locality principles, but as violations of semantic/pragmatic constraints imposed by the relevant nonlocal dependency constructions, or as the result of processing difficulties (see Goldberg 2006 and Hofmeister & Sag 2010 for discussion). However, Culicover and Jackendoff (2005) assume that both syntactic and semantic constraints are responsible for island effects.

Sag (2010) discusses various nonlocal dependency constructions whose properties cannot easily be explained by transformational accounts based on internal Merge. For example, according to Sag (2010), 'Across-the-board' (ATB) *wh*-constructions such as (12) are problematic for the MGG, because a single extracted *wh*-phrase corresponds to two gaps:

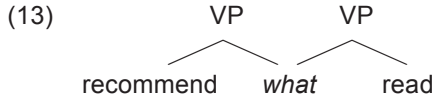
(12) What did John recommend ___ and Mary read ___?

However, cases such as (12) have been analysed in the MP in terms of accounts that allow for *multidominance* relations to be established in the syntax. Citko (2005) proposes a third type of Merge, called *parallel Merge*, which allows for an external

7 In the discussion, and in the representations in (10) and (11), I have ignored additional technical details of the HPSG-analysis. Most importantly, in order to prevent the SLASH feature from continuing to percolate after the filler has been added, it is necessary to add another nonlocal feature description (TO-BIND) as a value of NONLOCAL. For details of the analysis, as well as definitions of the Nonlocal Feature Principle and the Head-Filler Schema, see Pollard & Sag (1994) and Müller (2015, 2016). Note that HPSG-analyses without traces also exist (see Müller [2015; 2016] for references).

8 Sag's (2010) proposal is formulated in Sign-based CxG, which is a version of HPSG.

element β to merge with an element γ which is internal to α . To explain an ATB-construction such as (12), Citko assumes that the verb *read* first merges with the wh-phrase to form a VP (α). Subsequently, the verb *recommend* (β) also merges with the wh-phrase (γ):



Each of the VPs in (13) undergoes further merge operations and will eventually be dominated by its own TP. Both TPs are then coordinated, and the coordinated structure merges with C. When the wh-phrase is moved to [Spec, C], the sentence can be linearised as in (12) (see Citko 2005 for details).

4. Argument structure

In the MGG, argument structure information has traditionally been encoded in the lexical entries of theta role assigners, with the projection of arguments in the syntax established by general linking rules (Jackendoff 1990; Levin & Rappaport-Hovav 1995), or by mapping principles such as Baker's (1988) *Uniformity of Theta Assignment Hypothesis* (UTAH). According to these accounts, a lexical category such as the verb specifies information about the number and syntactic category of its arguments and the syntax has to be built in a way that reflects these properties (e.g. the UTAH requires the thematic hierarchy to be mirrored by the structural relationships between arguments in the syntax).

In the MP, arguments can also be introduced into the syntax by functional categories. A by now generally accepted view is that the external argument is not an argument of the verb, but of the functional head *v* (or Voice) (Hale & Keyser 1993; Chomsky 1995; Kratzer 1996), and first merged in the syntax as *v*'s specifier (see section 2). Pykkänen (2008) argues that the source/recipient argument of double-object constructions and the causer argument of causatives are also introduced by functional heads (Appl and Cause respectively), which are overtly realised by applicative or causative morphology in many languages.

The most radical version of the view that argument structure is determined by functional categories is Borer's (2005a; 2005b; 2013) *exo-skeletal* approach. According to Borer, lexical items do not have any grammatical properties,⁹ and do not determine the syntactic frame in which they appear. Instead, all syntactic arguments are introduced by functional structure. This means that a lexical item can in principle be combined with many different argument structures; the acceptability of a particular combination depends on extra-linguistic factors such as world knowledge and convention.

Another approach which associates the projection of syntactic arguments directly

⁹ In Borer's analysis, lexical items are inherently unspecified for syntactic category and are categorised by the functional environment in which they occur. This assumption is shared by the Distributed Morphology framework (e.g. Marantz 1997; 2001), which I discuss in section 6.

with functional structure is Ramchand's (2008) 'first-phase syntax'. In Ramchand's theory, basic event-structural relations are represented by syntactic structures freely formed by Merge. Ramchand proposes three separate functional projections, of which each denotes a core component of event structure: *res* (for result state); *proc* (for process) and *init* (for initiation). Each of these three categories can host a DP in its specifier. These DPs correspond to the syntactic arguments which function as the subjects of the predicational relations expressed by *res*, *proc* and *init* (subject of result = resultee; subject of process = undergoer; subject of initiation = initiator). Different types of event structures are represented by different combinations of the three basic event projections. In contrast to Borer's theory, lexical items do not combine freely with these argument projections in Ramchand's (2008) model. Rather, verbs are lexically specified for exactly which of the three core eventive projections they license.

In sharp contrast to the generative 'neo-constructionist' theories of Borer and Ramchand, HPSG (much like traditional MGG) lists all information about argument structure directly in the lexical entries of verbs and other theta role assigners. Argument roles are specified in the semantic feature description of the verb, and linking is achieved via structure-sharing between these roles and the values of the SUBCAT-feature, in combination with the Head-Argument Schema (see section 2).¹⁰

Generalisations about the syntactic realisation of arguments can be stated in terms of inheritance hierarchies, linking principles and constraints which distinguish different types of verbs on the basis of the thematic roles they select (see e.g. Davis & Koenig 2000).

In CxG, argument structure is not projected from the lexical properties of verbs, but is a property of lexically listed phrasal *argument structure constructions* (Goldberg 1995; 2013). A key observation that motivates this view is that one and the same verb can appear in many different argument structure constructions. The example, from Goldberg (1995: 11), illustrates this with the verb *kick*.

- (14) a) Pat kicked the wall.
 b) Pat kicked Bob black and blue.
 c) Pat kicked the football into the stadium.
 d) Pat kicked at the football.
 e) Pat kicked his foot against the chair.
 f) Pat kicked Bob the football.
 g) The horse kicks.
 h) Pat kicked his way out of the operating room.

According to CxG, the different argument structures in (14), and the respective special meanings of these sentences, are attributed to the phrasal constructions in which the verb in (14) appears. For example, (14b) is an example of the resultative construction,

¹⁰ In most contemporary HPSG analyses, which use the valency features SPR, COMPS and SUBJ, the verb's feature description includes an additional feature description ARG-ST (argument structure), which is required for the analysis of Binding phenomena. See Müller (2015).

and (14h) illustrates the *way*-construction (a constructional idiom already mentioned in section 2). A verb is integrated into (unified with) a construction by fusing its core participant roles (the roles implicitly understood in the conceptualisation of the verbal event) with the arguments specified by the construction. Importantly, it is possible that some participant roles remain unexpressed after unification, or that a construction adds arguments not specified by the verb's meaning. For example, the verb *kick* specifies two participants (the kicker and the kicked), but the ditransitive construction introduces three arguments. When the verb and the ditransitive construction are unified, a recipient argument is contributed by the construction (Goldberg 1995: 54).

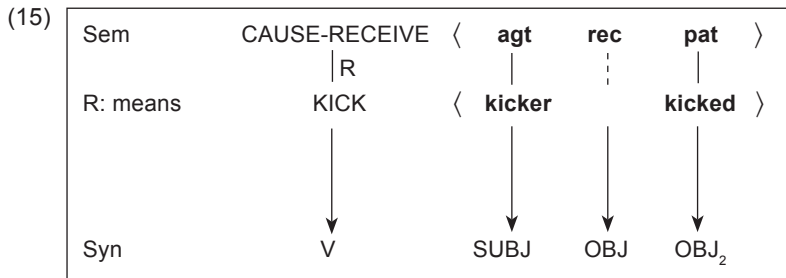


Figure 14.9: Ditransitive construction + *kick*.

Argument structure-constructions in CxG are polysemous; there is typically a family of closely-related meanings associated with the same syntactic form. For example, Goldberg (1995) distinguishes a number of different senses of the ditransitive construction, which are all related to the ‘central sense’ of this construction, defined as ‘Agent successfully causes Recipient to receive Patient’. The central sense is realised only with a small class of verbs such as *give*; other verbs appear with different senses. For example, in *He baked John a cake*, the cake is only intended to be received by John; in *He allowed John an ice-cream*, the transfer is enabled, not caused; in *He refused John an ice-cream*, the transfer is negated etc.

The view advocated by CxG—that structures contribute meaning and that the projection of arguments is a property of syntactic constructions—is in some respects comparable to the neo-constructionist theories of Borer (2005a; 2005b; 2013) and Ramchand (2008). However, the fundamental difference between CxG and the latter theories is that constructions in CxG are lexical items, memorised phrasal schemata that are stored in the mental lexicon. In contrast, in Borer’s and Ramchand’s approaches, argument structure syntax is systematically constructed by Merge from a limited inventory of functional heads. Ramchand (2008: 11) therefore calls her theory ‘generative-constructivist’.

Culicover & Jackendoff (2005) adopt a mixture of these various approaches to argument structure. They assume that the default argument structure of a sentence is licensed by the verb, but they also allow syntax-semantics interface rules to license additional arguments via constructions and constructional idioms in the spirit of CxG.

5. Linearisation

In standard MGG, linear order is established derivationally via Merge. If an element α is merged to the left of an element β , it precedes it; otherwise α follows β . These are the only two options in a binary branching syntax. The head directionality parameter is instantiated by specifying on which side a particular head selects its complement.

In constraint-based grammatical frameworks like *Simpler Syntax* or HPSG, constraints that govern linear order are distinguished from constraints that build structures. For example, in their sketch of English phrase structure in *Simpler Syntax*, Culicover and Jackendoff (2005:145) separate constituency rules from word order rules. Similarly, HPSG postulates linear precedence constraints, which determine the order of heads with respect to their complement(s). In addition, HPSG can account for scrambling languages by formulating the *Head-Argument Schema* in such a way that the nonhead daughter can be any arbitrary element from the head's valency list. This licenses free constituent order (see Müller 2016: 287).

To the best of my knowledge, only MGG has put forward explicit accounts to *derive* linear order from hierarchical structure. The landmark proposal is Kayne's (1994) *Linear Correspondence Axiom*, which stipulates that there is a direct 1:1 mapping between asymmetric c-command relations and linear precedence.¹¹

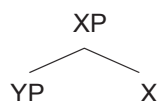
(16) *Linear Correspondence Axiom (LCA)*:

α precedes β if and only if α asymmetrically c-commands β or if α is contained in γ , where γ asymmetrically c-commands β (Biberauer et al. 2014: 207).

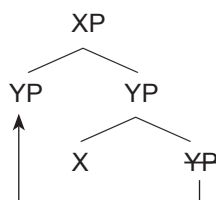
The key idea behind linearisation theories is that syntax is only concerned with the hierarchical relations established by Merge. The linear order of the elements is established at the PF-interface, in the mapping to the sensory-motor system, via the algorithm in (16).

According to the LCA, the c-command relations between heads, complements and specifiers imply that specifiers always precede heads, and heads precede (material contained in) their complements. This means that head-final constructions, in which a head X follows its complement YP , cannot have the syntax in (17a), but must be derived via YP -movement to a higher position, as e.g. in (17b):

(17) a)



b)



¹¹ (16) differs slightly from the version of the LCA given in Kayne (1994), because Kayne's original LCA was formulated using X-bar-theoretical notions and required unary branching. It is therefore incompatible with the Bare Phrase Structure theory of the MP.

Since X c-commands YP in (17a), the tree in (17a) would still be mapped onto a linear order where X precedes material dominated by YP—the fact that X is represented to the right of YP in the tree diagram is irrelevant. However, movement of YP to a position where YP asymmetrically c-commands X as in (17b) results in a head-final order $YP < X$.

A problem with the LCA and other linearisation theories is that, in order to derive attested word orders from syntax, proponents of these theories often have to assume otherwise unmotivated movement operations of the sort shown in (17b). Moreover, empirical problems for the LCA are raised by constructions in which an element X that follows Y can nevertheless be shown to c-command Y. On the plus side, apart from its conceptual appeal, the LCA has also offered a principled explanation for a variety of linguistic phenomena and generalisations. For example, Biberauer et al. (2014) provide an LCA-based account of the so-called *Final-Over-Final Constraint* (FOFC), which they state informally as in (18) (see also Sheehan et al. 2017).¹²

(18) *The Final-over-Final Constraint (FOFC)*

A head-final phrase αP cannot dominate a head-initial phrase βP , where α and β are heads in the same extended projection (Biberauer et al. 2014: 171).

The FOFC captures the empirical observation that a head α can only follow its complement βP if βP is also head-final. While one finds ‘mixed-headedness’ in extended projections in which a head precedes a head-final complement, what does not seem to be attested in natural language are constructions in which a head follows a head-initial complement. To cite just one example, Holmberg (2000) shows that Finnish allows for three possible word orders with auxiliaries, verb and object: Aux-V-O (both AuxP and VP are head-initial), O-V-Aux (both AuxP and VP are head-final), and Aux-O-V (AuxP is head-initial, VP is head-final). However, the fourth theoretically possible order, V-O-Aux, is not attested and ruled out by the FOFC. Biberauer et al. (2014) explain the FOFC in terms of the LCA. If head final orders are derived by internal Merge (as in (17b)), and if internal Merge is triggered by movement features (EPP-features or EFs; see section 3), then it follows that the head of a head-final phrase must have such a feature. Biberauer et al. (2014) argue that the relevant feature always originates on the lowest head in an extended projection from where it can percolate upwards. It follows that, if a higher head in an extended projection has the feature, then every lower head must have it too. This derives the FOFC.

6. Morphology

The morphological framework most closely connected with the assumptions and mechanisms of the MP is *Distributed Morphology* (DM) (see e.g. Halle & Marantz 1993; Marantz 1997; 2001; 2007; Embick 2010; Bobaljik 2012; 2015; Harley 2014, among many others). According to DM, morphology is ‘distributed’ across different places in the architecture of grammar; it comprises both syntactic and post-syntactic

¹² Note that in Sheehan et al. (2017), the *Final-over-Final Constraint* has become the *Final-over-Final Condition*.

operations. While the structural aspects of morphology are determined by the same generative principles and mechanisms that also drive syntactic derivations (morphology is ‘syntax all the way down’), the association of phonological form and semantic interpretation with the terminal nodes of syntax happens after Transfer in the interpretative components of grammar, i.e. at the PF- and LF-interfaces.

DM distinguishes three ‘lists’ (Halle & Marantz 1993). List 1 comprises the *morphemes*, the terminal nodes of syntax. Morphemes are combined into larger structures (complex heads and phrases) by Merge and (head) movement. List 2 in DM is the Vocabulary. This list includes the phonological exponents (*vocabulary items*) that are associated with the terminal nodes of a syntactic representation in the mapping to PF via the process of Vocabulary Insertion (VI) (‘late insertion’). The insertion of a particular vocabulary item is licensed by the grammatical feature specification of the morphemes; like A-morphous Morphology (Anderson 1992), Paradigm Function Morphology (Stump 2001), or Construction Morphology (Booij 2010a; 2010b), DM is a *realisational* morphological theory. Finally, List 3 is the encyclopedia, the list of ‘special meanings’, which are associated with terminal nodes in the mapping to LF. The semantics of a sentence is computed by combining these special meanings with the meaning of the interpretable features associated with functional elements.

List 1 includes two types of morphemes: roots (symbolised by $\sqrt{\quad}$; Pesetsky 1995), and functional categories. Roots are ‘pure units of structural computation’ (Harley 2014: 226), i.e. category-neutral elements that appear initially without semantic or phonological properties¹³; functional heads are bundles of grammatical features relevant for syntactic operations (see section 3). The inventory of functional morphemes includes the core functional categories D, T and C discussed in section 2, but also heads such as ‘little’ *v*, *a* and *n*, which may be phonologically zero or overtly realised by derivational affixes, and which determine the syntactic category of the a-categorial roots with which they merge. Verbs, adjectives and nouns are therefore syntactically complex; they are created by combining an unspecified root with a category-defining head, e.g.:



(19) illustrates that a word such as *work* is not inherently specified as a verb or a noun; it is an a-categorial root which only becomes verbal or nominal in the context of verbalising or nominalising functional heads (Marantz 1997; Harley 2014).¹⁴

13 Following Pfau (2000), Harley (2014) assumes that roots are identified by an abstract index that provides a link between the vocabulary items and encyclopedic entries supplied at PF and LF respectively. De Belder and Van Craenenbroek (2015) argue that the syntax generates structurally empty, abstract root positions at the initial stage of the derivation into which specific vocabulary items are inserted post-syntactically.

14 The idea that roots are a-categorial and ‘typed’ in the context of specific functional structure also underlies Borer’s (2005a; 2005b; 2013) exo-skeletal theory (see section 4). However, in contrast to DM, Borer does not assume phonologically empty category-defining heads; instead, roots are typed in the context of inflectional functional categories or derivational affixes.

In the mapping to PF, the vocabulary items of List 2 are inserted into terminal nodes according to a node's feature specification. A vocabulary item may be underspecified and include fewer features than the target morpheme, but its features must be a subset of the features of the target. Features of a terminal node can in principle be matched by more than one vocabulary item, which means that different matching vocabulary items compete for insertion. This competition is governed by the Subset Principle (Halle 1997), which requires that the most specified vocabulary item that matches the feature specification of the target node is chosen for insertion. An example is the present tense in English, for which there are two vocabulary items: *-s* for third person singular, and the zero morpheme \emptyset for all other cases. Both exponents are candidates for insertion into a T-node with the feature [present], but if T's ϕ -features have been valued in the syntax as 3rd Pers Sg by the operation Agree (see section 3), then *-s* must be chosen, because it is more specific. However, if T's ϕ -features have any other value, then *-s* cannot be inserted, because its feature specification is no longer a subset of T's features, and \emptyset must be chosen as the elsewhere case (Bobaljik 2015).

Standard DM assumes that the PF-interface includes various morpho-phonological operations that can alter the structural output of syntax before vocabulary items are inserted, or change the order or the phonological form of affixes after VI. For example, the operation *fusion* can combine two terminal nodes into one; *fission* can split a terminal node into two morphemes; *readjustment rules* can change the phonological form of vocabulary items, and *local dislocation* can change the linear order of affixes, after VI (Halle & Marantz 1993; Embick & Noyer 2001). The proliferation of these post-syntactic operations has been criticised in more recent DM-work (see e.g. Haugen & Siddiqi 2016), and some studies within DM, as well as alternative late-insertion theories, assume a model of morphology with Vocabulary Insertion as the only post-syntactic operation in the PF-component. For example, in Nanosyntax theory (Caha 2009; Starke 2009), every grammatical feature corresponds to a 'sub-morphemic' terminal node in syntax, and vocabulary items can realise more than one terminal node at once, a process known as 'Spanning' (Taraldsen 2010; Svenonius 2012; Merchant 2015). Phonological (and semantic) interpretations are associated with entire subtrees generated in the syntax, and lexical entries therefore include stored information about the structures they license.

An important insight of DM is that morphological operations at both interfaces are constrained by Locality; i.e. that the association of phonological and semantic material from Lists 2 and 3 with a particular terminal node depends on the node's syntactic environment (Marantz 1997; 2001; 2007; 2013; Embick & Marantz 2008). The classical example of how Locality constrains Vocabulary Insertion, going back to Halle and Marantz (1993) and explored in detail in e.g. Embick (2010) and Bobaljik (2012), is *contextual allomorphy*. For example, the past tense morpheme in English can be spelled out as *-t* (as in *left*, *spent*), as \emptyset (as in *hit* or *put*), or as *-ed* in the elsewhere case (Embick & Marantz 2008). The choice between these vocabulary items is determined by the verb that appears in the local context of T[past]. At the same time, T[past] can trigger contextual root allomorphy. For example, the root $\sqrt{\text{LEAVE}}$ is realised by the vocabulary item *lef-* in the local domain of a past tense morpheme, at the same time as this root licenses the vocabulary item *-t* to be inserted into T.

Suppletion is just an ‘extreme’ version of contextual root allomorphy, e.g. *am* is simply the form of $\sqrt{\text{BE}}$ in the context of a phonologically null T [present; 1st Pers Sg].

The idea that not only allomorphy, but also allosemy, is constrained by Locality goes back to Marantz’s (1984) observation that idioms with a fixed subject and a variable slot for objects are rare in comparison to VP-idioms with fixed objects and open subjects. Since the external argument is introduced by little *v* (see sections 2 and 4), it was natural to assume that special meanings are restricted to certain syntactically defined domains, such as VP. This idea was then generalised in Marantz (1995; 1997; 2001), who suggests that the local syntactic environment of a morpheme determines its interpretation, with different contexts giving rise to contextual allosemy. To illustrate with an example from Marantz (2013), the root $\sqrt{\text{HOUSE}}$ can merge with *n* to form a noun (*the house*) or with *v* to form a verb (*to house*), but its meaning in the nominal context is more restricted than its verbal meaning, which does not imply reference to a literal house (you can house someone in a tent). Note that in this example, the different allosemes licensed by the category-defining heads *n* and *v* also correspond to different allomorphs of the root; compare *the hou[s]e*, but: *to hou[z]e*.

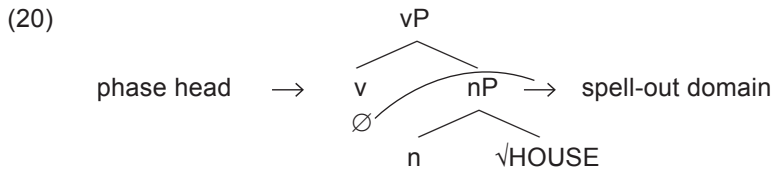
However, the view that late encyclopedic insertion can only target terminal nodes led to a peculiar DM-analysis of phrasal idioms. According to this analysis, the special meaning of a VP-idiom such as *kick the bucket* is derived compositionally on the basis of the special meanings of its parts, which are established in the syntactic context defined by the idiom. $\sqrt{\text{KICK}}$ would mean ‘to die’ in the context of $\sqrt{\text{BUCKET}}$, which in turn receives a null interpretation in the context of $\sqrt{\text{KICK}}$ (Bobaljik 2015) (the role of the determiner is not clear in this account). However, in many instances, such an analysis seems unintuitive, and it is doubtful that all idioms can indeed be analysed in this way (cf. Nunberg et al. 1994; Zeller 2001). In recent work, Marantz (2013: 105) admits that his earlier work was ‘confusing if not simply wrong in conflating the notion of “idiom” with the notion of “special meaning” or “meaning choice” associated with polysemy’, and he accepts that idiomatic meanings can be ‘built on top of polysemy resolution’ (Marantz 2013: 106).

More recent work in DM explores the nature of the local domains that are relevant for insertion of vocabulary items and encyclopedic material. An important hypothesis is that contextual allomorphy and contextual allosemy are restricted to the domain of a *phase*, and that the categorising functional heads *v*, *n* and *a* can function as phase heads (Arad 2003; Marantz 2001; 2007; Embick & Marantz 2008; Embick 2010; Bobaljik 2012). However, it was noted in section 3 that a phase head triggers transfer of its complement as soon as it is merged (Chomsky 2000; 2001). In order to avoid that merger of the first category-defining head would cause the root to be transferred, Embick (2010) and Marantz (2013) postulate that roots are always spelled out and interpreted in the same domain as the head that ‘types’ them for category.¹⁵ The root and the categoriser are then transferred together as part of the domain of the next cyclic phase head. This domain may also include non-phasal material that projects

¹⁵ One way in which this could be achieved is by assuming obligatory head movement of roots to their categorising heads (Marantz 2013).

between the categorised root and the higher phase head. For example, vP, which dominates the verbalised root, will be spelled out as part of the domain of the next phase head C, which also includes the non-phase head T. Since T is in the same spell-out domain as vP, it can determine root allomorphy of verbs, as discussed above.

The categorising heads n, v and a can also be category-changing and merge with the functional projection corresponding to an already categorised root (that is, another nP, vP or aP). Since n, v and a are phase heads, they will trigger transfer of their complement. In this case, root allomorphy and allosemy can only be determined by the *category-defining* head in the first spell-out domain; the *category-changing* phase head in the next phase has no effect on the form or meaning of a root, as it is not part of this domain. For example, Marantz (2013: 103) notes that a verb *to house* can be derived directly from the root $\sqrt{\text{HOUSE}}$ (as explained above), but also from the noun *house*, as in ‘He took a bunch of plastic models and housed the room with them (= filled the room with houses)’. In the latter case, the verb *house* is formed by merging v with the nP corresponding to the noun *house*.



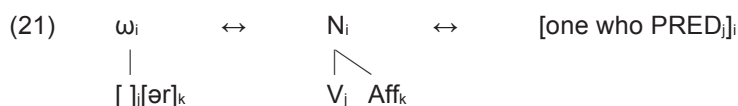
Crucially, the derived verb in (20) preserves the form and the meaning established by the lower category-defining head n; consequently, it is pronounced with the voiceless fricative, and it must include reference to houses.

On the basis of the idea that a categorising functional head can merge with a bare root or with a categorised nP-, vP- or aP-projection, DM distinguishes two types of derivational morphology. Derivational affixes that directly merge with roots can cause semantic and phonological idiosyncrasies of the root, because they are part of the root’s spell-out domain. In contrast, the effects of derivational morphology that attaches outside the functional projection that ‘types’ a root are more regular and predictable (compare (20)). As argued in Marantz (1997; 2001; 2007), this distinction between ‘inner’ and ‘outer’ derivational morphology in DM corresponds to the traditional distinction between ‘lexical’ and ‘syntactic’ word formation. For example, the well-documented differences between adjectival and verbal passives (Wasow 1977), between ‘lexical’ and ‘syntactic’ causatives in Japanese (Kuroda 1965; Miyagawa 1984), or between passives and statives in Bantu (Dubinsky & Simango 1996) follow from the different possible attachment sites of the v-, n- or a-heads whose exponents are the relevant passive, causative, etc. affixes (see Harley 2014 for discussion of the ‘inner’ vs ‘outer’ morphology-hypothesis, which she calls ‘one of the great insights of the syntactocentric approach to morphological analysis’ [2014: 267]).

In comparison to derivation and inflection, compounding has received relatively little attention in DM. Harley (2009) suggests that synthetic compounds such as *truck-driver* are derived by merging the root $\sqrt{\text{DRIVE}}$ with its argument, the nP *truck* (root $\sqrt{\text{TRUCK}}$ plus n). The whole structure is selected by another n-head, the agentive nominalising affix *-er*. The complex terminal node is formed via incorporation

of all heads into the highest n-head. ‘Modification’ compounds such as *quick-acting*, and even root compounds such as *alligator shoes* are derived in the same way (i.e. in the latter case, $\sqrt{\text{SHOE}}$ selects the nP *alligator*, and the whole structure is merged with a higher, unpronounced n).

In the remainder of this section I discuss an alternative, constraint-based view of morphology, i.e. Construction Morphology (CM), developed in Booij (2010a; 2010b). CM adopts the general conceptual framework of CxG and regards constructions as the basic units of grammar. In Booij (2010a; 2010b), word formation processes are captured in terms of constructional schemata, which are viewed as abstractions across paradigmatically related words. Complex words are instantiations of these morphological constructions. For example, the lexical entry for the agentive nominalising suffix *-er* in English is viewed as an abstract generalisation over the paradigmatic relationship that characterises pairs of verbs and nouns, such as *drive* \approx *driver*, *read* \approx *reader* etc. The systematic relationship between these words can be captured by a schema with a variable in the position of the verb, and a fixed element, the affix (Booij 2010a: 8).



The construction in (21) is notated in the format of Jackendoff’s (1997; 2002) ‘tripartite parallel architecture’. It expresses the correspondence between phonological, syntactic and semantic information via lexical indices and correspondence arrows. The phonology of the derivational affix is linked to its morpho-syntactic representation as a verbal suffix. The phonological word including the affix is linked to the complex noun in morpho-syntax and to the semantic representation ‘someone who carries out the action described by the verb’. The schema represents a generalisation over existing words, but since its verbal part corresponds to an open slot in the phonology and in the semantics, it can be unified with any verb to productively derive new nouns. This means that (21) is a constructional idiom (see section 2).

The representation in (21) shares with DM the idea that the lexical entry for an affix must specify its morpho-syntactic context. The crucial difference is that in CM, the affix is only linked to its phonological expression, but not to a semantic representation—the semantics is only specified for the *combination of* verb and affix, which means that the affix only has meaning as part of the schema in (21). This is the constructional aspect of CM. In DM, in contrast, the encyclopedic entry for the affix *-er* is a special meaning, which would be inserted into the terminal node n in the appropriate local context of a vP-complement. The meaning of the agentive noun would then be derived compositionally on the basis of the meanings of the verbalised root and the derivational suffix.

Schemas such as (21) above capture the paradigmatic relation between simple words and corresponding complex words that include the derivational affix. However, paradigmatic relationships can also exist between two morphologically complex words. Booij (2010a) argues that nouns such as *altruist*, *autist* or *pacifist* cannot be

derived by attaching the affix *-ist* to a root or stem, since there are no independently existing roots for these derivations. Rather, these complex nouns are systematically related to other morphologically complex nouns, namely *altruism*, *autism* and *pacifism*. Booij (2010a: 33) captures this correlation through a paradigmatic relationship between two word formation schemata, represented by the \approx -symbol:¹⁶

(22) $\langle [x\text{-ism}]_{N_i} \leftrightarrow \text{SEM}_i \rangle \approx \langle [x\text{-ist}]_{N_j} \leftrightarrow [\text{person with property } Y \text{ related to SEM}_i]_j \rangle$

In contrast, a DM-analysis would treat words such as *altruism* or *pacifist* as being derived from the roots $\sqrt{\text{ALTRU}}$ and $\sqrt{\text{PACIF}}$, which are only licensed in the context of a categorising little *n* head if this head is spelled-out as a derivational affix *-ism* or *-ist*.

Affix schemata such as those in (21) and (22) are related to other constructions via the familiar inheritance hierarchies of CxG. For example, the lexical entry in (21) inherits properties from a more abstract schema that specifies general properties of derived nouns. At the same time, word formation schemata dominate the words that instantiate them. For example, any complex noun formed through the unification of (21) and a verb inherits information from both (21) and the verb (Booij 2010a:26).

Schemata related through inheritance rules are also used for compounding. For example, Booij (2010b: 4) proposes a schema for nominal compounds in English, which captures the fact that these compounds adhere to the Right-hand Head Rule (Williams 1981).

(23) $\langle [[a]_{X_k} [b]_{N_i}]_{N_j} \leftrightarrow [\text{SEM}_i \text{ with relation } R \text{ to SEM}_k]_j \rangle$

The schema specifies that endocentric nominal compounds are based on the category and meaning of their right-hand member, which stands in an arbitrary semantic relation *R* to the left-hand member. The category of the left-hand member is represented by the variable *X*, which stands for the major lexical categories. VN, NN, AN and PN compounds are represented by lower-level schemata which inherit the general properties of (23).

Van der Spuy (2017) provides CM-representations for all major types of inflectional morphology. For example, he represents English plural formation with the affix /z/ as in (24) (2017: 64):¹⁷

(24) $/X_{[N]}-z/_{[N \text{ pl}]} \leftrightarrow \text{SEM}$

(24) specifies that a noun ending in /z/ is a plural form of that noun and linked to its specific plural semantics. Note that according to (24), a plural noun ending in /z/ is

16 In (22), each constructional schema is represented inside angular brackets. The phonological and morpho-syntactic information in the schemata has been conflated in (22). SEM represents the arbitrary meaning of the word ending in *-ism*.

17 In contrast to Booij (2010a), Van der Spuy (2017) does not use angular brackets to demarcate constructions. He represents phonological forms between slashes, and morpho-syntactic features as subscripts in square brackets. Van der Spuy also omits the corresponding arbitrary semantics, represented by SEM in Booij's (2010a) schemata, in some of his abbreviated representations.

not morpho-syntactically complex; the phonological form ending in /z/ spells out a noun which has the feature [plural], but there is no internal morphological structure. This view, which is characteristic of ‘Word-and-Paradigm’ theories such as Anderson’s (1992) *A-morphous Morphology*, is fundamentally different from the DM-analysis, which associates the exponents of inflectional morphology with functional nodes in the syntax.

According to Van der Spuy (2017), inflectional processes involving allomorphy or suppletion are captured in CM in terms of paradigmatic relationships of the sort shown in (22) above. For example, Van der Spuy (2017: 65) provides the following constructional representation for suppletive *am* as the form of [1st Pers Sg] *be*:

(25) /bi/ _[V] ↔ BE ≈ /æm/ _[V 1sg pres] ↔ BE

Again, in contrast to the DM-analysis of suppletion discussed earlier in this section, (25) does not postulate a separate functional category in the morpho-syntax that would contribute the inflectional features. Instead, (25) simply specifies that the verb *am* is a variant of the verb *be* with the relevant feature specification [1st Pers Sg].

Conclusion

In this chapter, I have provided a synopsis of current ideas and developments in the MP and in DM, and I have contrasted the theoretical assumptions and analyses of MGG with syntactic and morphological approaches that are representative of constraint-based theories. The major distinguishing attributes of the grammatical frameworks I have discussed in this chapter are the following: 1. In contrast to constraint-based grammars, MGG assumes a *derivational* syntax; 2. The postulation of *empty structure and elements* is common in MGG, while constraint-based theories are *more surface-oriented*; 3. In contrast to MGG, there is no strict boundary between *the lexicon and grammar* in constraint-based theories. These aspects characterise the different approaches to core syntactic phenomena in the MP, HPSG, CxG and Simpler Syntax, as well as the different treatments of inflectional morphology and word formation processes in DM and CM.

There are other, perhaps more fundamental, differences. For example, while work in HPSG, CxG and Simpler Syntax is usually strongly data-driven, analyses in the MP and DM are guided by the search for ‘deeper’ reasons and principled explanations (the ‘Galilean style’ of scientific inquiry), an approach that has led to the perception among MGG sceptics that conceptual considerations are prioritised in the MP and DM at the expense of empirical accuracy. However, despite the different views about the architecture of grammar, and the fierce debates about what should be the overall goal of linguistic analysis, both derivational and constraint-based approaches have made important contributions to the development of a descriptively adequate and cognitively plausible theory of natural language.

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Chapter 15

A dynamic lexicographic practice for diverse users and changing technologies

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1. Introduction¹

At the CIPL congress held in Prague in 2003 lexicology, including lexicography, was introduced for the first time as a strand on the programme with its own state-of-the-art paper.² This paper ‘Milestones in metalexicography’ (Gouws 2004a) presented a brief overview of a number of significant phases in the development of metalexicography. Three major phases were identified, i.e. a phase characterised by a focus on the linguistic contents of dictionaries, a phase emphasising the structures of dictionaries and a phase in which lexicographic functions came to the fore.

Today, 15 years later, contents, structures and lexicographic functions still are core elements in the theory of lexicography because they play an indispensable role in the planning and compilation of dictionaries. Once a lexicographer has identified the target user of an envisaged dictionary, the planning of that dictionary has to be preceded by the lexicographer answering one very important question, namely: What do I want my user to be able to do with this dictionary? Having answered that question, the lexicographer should be aware of the function or functions of the planned dictionary and according to the function(s) the contents can be selected. Also, the necessary structures for the appropriate presentation of and access to the data can be devised.

The last decade has witnessed an expansion in metalexicographic literature with different perspectives on contents, structures and functions continuously coming to the fore as research topics. It has also emphasised a certain schism in the ranks of lexicographers that divides those with a stronger attachment to linguistic theory from those with a stronger attachment to lexicographic theory that is not that closely linked to, or based on, linguistic theory. In this regard it is interesting to look at remarks given in Gouws (2012) from certain well-known lexicographers who dismiss the idea of a theory of lexicography. In this paper no attempt will be made to falsify these views or to justify the claims of the opposing side, i.e. those lexicographers adhering

¹ This chapter is dedicated to the memory of Herbert Ernst Wiegand 08.01.1936–03.01.2018.

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to the belief that there is something like a theory of lexicography. The latter will, however, be the assumption in this paper.

Where linguists and lexicographers adhering to a linguistic approach in lexicography comfortably associate themselves with the focus of lexicography on the linguistic contents of dictionaries, they do not always feel as comfortable with the focus on structures and functions. A comparable uneasiness can be detected when metalexigraphers discuss dictionary types other than general language dictionaries because, yet again, a specialised dictionary in which terms from a specific subject field are lexicographically treated is often not of much interest to linguists. Language is the object of the field of linguistics, whereas dictionaries are the objects of metalexigraphy. The transition from a phase in which the main research focus was on the linguistic contents of dictionaries to complementary phases primarily looking at structures and/or functions implies that lexicography can no longer be regarded as a subdiscipline of linguistics. Rather, it can be seen as a discipline in its own right, albeit that it still maintains a strong connection with linguistics, especially when looking at the ever-important linguistic contents in general language dictionaries. A linguistic perspective on these dictionaries will always remain important but should not be regarded as the only perspective, and linguistics should not be seen as the dominating influence in lexicographic theory.

Acknowledging the continuous importance of contents, structures and functions in dictionaries as well as in metalexigraphic literature one needs to realise that the dynamic nature of lexicography has ensured that research also went beyond these three areas. It is equally important to realise that a strong focus on theory never eschews the value of lexicographic practice or estranges itself from this practice.

This paper will focus on lexicography as a two-legged animal—with both a practical and a theoretical component. Linking to the theme of this conference the emphasis will be on various aspects illustrating something of the dynamics of lexicography.

2. Dictionaries and users

Dictionaries have developed as practical tools, and whether one consults a dictionary on a clay tablet or an internet-based one it should always fulfil this role. Each and every dictionary should have a genuine purpose—i.e. to assist specific users in specific situations of use in finding solutions for specific problems. Therefore Wiegand (1989a: 251) maintains that lexicography is a practice aimed at the production of dictionaries in order to enable a further practice, namely the cultural practice of dictionary use. Dictionary consultations should provide answers to questions arising in extra-lexicographical situations.

One issue consistently relevant throughout the development of dictionaries over centuries is that the eventual success of any given dictionary is not in the first instance to be determined by the quality of its contents or the nature, extent and even presentation of the data in that dictionary. The access to data and the degree of success the intended target user achieves during a consultation procedure in retrieving information from the data on offer will determine the success of any given dictionary.

Users, their needs and their reference skills have shown massive changes during the last centuries. The development of the lexicographic practice witnessed numerous

significant transitions, e.g. from clay tablets to parchment, from parchment to paper, from manual writing to the use of the printing press, from the use of typewriters to computers and, significantly, from printed products to online products.

These transitions had different kinds of impact on lexicographic practice and, to a certain extent, also on theoretical lexicography. Dictionary use and dictionary users were also influenced by these transitions. With regard to the users it is especially the last transition that needs to be discussed. Dictionaries are compiled in order to be used. It should be evident that any lexicographer has to identify the potential target user of the envisaged dictionary and that the lexicographic needs and the reference skills of these users should then determine the contents of the dictionary and the way in which data are to be presented. In both practical and theoretical lexicography the user plays a central role. Hartmann (1989: 103–105) focused on the needs and reference skills of dictionary users, introducing the importance of a user perspective in lexicography. Unfortunately, the recognition of the importance of the user is in too many cases paid only lip service. That is why Wiegand (1977: 62) refers to the user as the ‘well-known stranger’.

The emergence of online lexicography did not only represent a transition between media or significant changes in dictionary structures, but it also heralded a new culture in dictionary use — a culture of which lexicographers have to take cognisance.

Different dictionaries need to be planned to cater for the different needs of diverse members of any given speech community. This fact resulted in the introduction of a wide spectrum of different types of dictionaries. The digital era brought the reality of online products and lexicography had to adjust to a new medium — without completely eschewing the old medium. The transition from printed to online dictionaries was not a complete transition because many speech communities will, at least for the immediate future, still rely on printed dictionaries. This brings an additional responsibility to the lexicographer with regard to their users. Good online dictionaries are needed and their planning demands a thorough theoretical model. But the development and improvement of printed dictionaries may not come to an end because users relying on these dictionaries have the right to products that reflect the latest results of metalexicographic research.

In order to maintain a societal dictionary culture metalexicographers need to work on models for both online and printed dictionaries. The planning and compilation of online dictionaries have some completely new aspects regarding the perspective of the user that need to be taken into account. One of the most significant issues in this regard lies in the nature and demands of the target users. Generation Z, the typical user group for which lexicographers have to make provision, has a completely different attitude and approach to reference works. In order to offer authoritative reference tools to these members of the speech community, lexicography needs to adapt to presenting changing language in a changing medium — cf. Gouws (2017).

In the past the notion of lexicographically lost generations was used to refer to those members of any given speech community that have not had the opportunity to acquire dictionary using skills and are not familiar with the use of dictionaries. Today there is a real danger of a new category of lexicographically lost generations — those potential dictionary users who have no interest in dictionaries because they refrain from consulting printed reference works and the available online products do not live

up to their specific expectations. This can easily result in a situation where a society is in possession of userless dictionaries — where dictionaries are available but are no longer used because potential users regard them as no longer relevant. Metalexigraphers need to collaborate with practical lexicographers to devise and compile the most appropriate and relevant reference tools that can empower all potential target users from both the older and younger generations.

3. From follower to leader to follower to ...

Lexicographic practice is much older than lexicographic theory. Numerous earlier dictionaries had been produced in a pre-theoretical era. Gouws (2011) has indicated that, for a long time since its introduction, lexicographic theory had to play a catch-up game in order to get to the point where it could adequately account for the spectrum of developments in lexicographic practice. Eventually theory reached the position where it could assume the role of leader instead of follower and where metalexigraphic models could form the basis for the planning and compilation of new dictionaries. These models had to provide guidelines for the appropriate contents, including the linguistic contents for which a thorough comprehension of various components of linguistic theory is non-negotiable. They also had to give guidelines with regard to the structures and functions of the envisaged dictionaries. Unfortunately the emergence of online dictionaries too often also occurred in a metalexigraphical vacuum — with the new lexicographic practice yet again isolated from lexicographic theory. There is a twofold motivation for this. First, many of these early online dictionaries were compiled by people from the IT or computer science fields without any lexicographical expertise. These dictionaries were technologically innovative but lacked lexicographic quality. Second, metalexigraphy yet again lagged behind the developing new practice, and the industrious and innovative lexicographers who embarked on lexicographic products within the new medium did not have sufficient support from the prevailing metalexigraphic models. Metalexigraphers had to realise that the new environment demands new ways in the planning and production of dictionaries, and the new guidelines need to be the result of new research projects. Practical lexicographers making the transition from printed to online dictionaries not only had to acquire new skills but also had to subject themselves to a process of unlearning in order to ensure that they do not transfer the methods and possibilities of printed dictionaries to online dictionaries in an uncritical way.

Although many types of linguistic data in online dictionaries will be the same as the corresponding data in printed dictionaries, online dictionaries offer much more in terms of both the nature and extent of linguistic data. To ensure a comprehensive presentation of data and an optimal retrieval of information close cooperation is needed between linguists, lexicographers and IT specialists. Lexicography no longer requires lone rangers or single knights on white horses. It has become a team effort and different types of dictionaries demand different combinations of team members. The relevant work regarding the linguistic content of dictionaries will not be discussed in this paper. The focus in this paper will primarily be on the influence the new digital environment has on a few dictionary structures.

The practice of lexicography should not function in isolation. The compilation of any dictionary must be done with meticulous care and adhere to a well-defined

dictionary plan and should display the necessary links with a clearly formulated lexicographic process. To ensure this, the practice of dictionary making needs a strong theoretical basis. Developments in lexicographical practice—cf. Gouws (2004a)—give ample evidence of different phases emerging and later being substituted or complemented by other phases. The constant changes in dictionaries should not be seen as changes for the sake of changes but rather as a direct response to changes in the theory of lexicography that demand new applications in the practice. These changes in the theory follow from changes in the needs and reference skills of the speech community at large and from innovative possibilities coming to the fore as a result of, among others, new technological developments.

Currently lexicographic theory is yet again moving from a role as follower to a role as leader. The need for an interactive relation between theory and practice remains very important so that leader and follower can develop together.

4. Structures

Lexicographic research in the final two decades of the last century was largely influenced by the work of the German metalexigrapher Herbert Ernst Wiegand. A distinguishing feature of Wiegand's prolific research portfolio has been his identification and meticulous and comprehensive discussion of a host of dictionary structures, among others the macrostructure, microstructure, article structure, data distribution structure, frame structure, addressing structure and access structure. In his research Wiegand explicitly focused on printed dictionaries.

The emergence of the digital era introduced changes in the lexicographic practice and compelled metalexigraphers to take cognisance of new types of dynamics that inevitably had to lead to changes in lexicographic theory. Lexicographers were confronted with a number of questions regarding the continued applicability and even validity of theories designed for printed dictionaries.

Dictionaries should always have specific functions and these functions, e.g. the communicative functions of text reception, text production and translation or the cognitive function, are not medium-specific. Although online dictionaries can assist users in a more rapid satisfaction of the intended functions, the transition from the printed to the digital era did not really have a significant influence on the nature of lexicographic functions. As indicated in an earlier paragraph, the linguistic contents of online dictionaries may cover a wider spectrum and may be presented in more detail, but the same categories of items giving linguistic data that are found in printed dictionaries also occur in online dictionaries. Looking at functions, contents and structures it can easily be stated that the transition to the online era had the most far-reaching influence on dictionary structures.

The difference in structures between printed and online dictionaries are in some instances so vast that the question arises whether one needs a separate theory for online lexicography. However, metalexigraphers rather attempt to formulate a single theory that provides for both printed and online dictionaries. In such a theory provision should be made for the following: (a) that certain components will more or less equally apply to both printed and online dictionaries; (b) that some aspects typical of printed dictionaries have to be complemented by an adapted version to provide for online dictionaries; and (c) that some components will only apply to

printed dictionaries, whereas some new features need to be introduced to make provision for the uniqueness of online dictionaries. This approach is also adhered to in this paper and certain adaptations to the structures devised for printed dictionaries that are needed for the online environment will be discussed.

4.1 Different structures

In this paper it will not be possible to discuss all the dictionary structures. Only a few will be discussed, especially ones that show significant differences in online dictionaries. These structures are the data distribution structure and the frame structure, the macrostructure and especially the article structure. The screenshot structure — a completely new structure found in online dictionaries — will not be discussed, but does need to be mentioned here.

4.1.1 *The data distribution structure and the frame structure*

In printed dictionaries the data distribution structure provides the framework for the positioning and presentation of all the different data entries in a dictionary — cf. Bergenholtz et al. 1999). When planning and employing the data distribution structure of a printed dictionary lexicographers should take cognisance of the different textual positions in a dictionary. All articles in the article stretches of the central list should be used to accommodate data. However, by introducing a frame structure, cf. Kammerer and Wiegand (1998), the front and back matter sections, as well as the middle matter, participate in the assignment a dictionary has to function as a carrier of text types. These texts should also be used to accommodate lexicographic data (Wiegand 1996). Although front and back matter texts have been utilised in dictionaries for many decades, they were far too seldom regarded as functional textual components of dictionaries. In many cases the outer texts were arbitrary add-ons. Especially with the emergence of learners' dictionaries, the fiercely competitive market forces led to an increase in outer texts where lexicographic one-upmanship, rather than the needs of the user and the functions of the specific dictionary, determined the nature and extent of the outer texts. Many of these texts contributed little more than cosmetic value, or in terms of Wiegand and Gouws (2011: 238) they were aimed at lexicographic face-lifting. Compare, in this regard, the use of non-functional colours and illustrations that do not enhance the transfer of data.

The way in which the value of the outer texts has previously often been underrated can be seen in the entries in the table of contents of many dictionaries, where the alphabetical section is indicated as 'The dictionary' — as if the outer texts are not always a part of this container of knowledge (McArthur 1986).

Like some practical lexicographers, metalexicographers also realised the real value of outer texts and, since the publication of Kammerer and Wiegand (1998), the notion of a frame structure and the lexicographic contribution of outer texts came to the fore in various publications — cf. Gouws (2004b) and Gouws and Steyn (2005). Significant in this regard is the way in which these outer texts have been regarded as textual components that make a contribution to the transfer of knowledge in a dictionary. Bergenholtz et al. (1999) make a significant distinction between integrated and non-integrated outer texts — with the first type characterised by the fact that they

are integrated into the genuine purpose of the specific dictionary. Non-integrated outer texts are not only texts like the preface, title page or imprint but also texts that contain data that are relevant to the intended target users of the dictionary, albeit that their coverage does not coincide with the genuine purpose of the dictionary. The emergence of the function theory resulted in lexicographers assessing the contribution outer texts make to satisfying the function(s) of a given dictionary. A transtextual approach to structures compels lexicographers to further distinguish between function-integrated and non-function-integrated outer texts — cf. Gouws and Steyn (2005).

In online lexicography the data distribution structure has an almost unlimited scope, especially with regard to the online equivalent of outer texts. As in printed dictionaries the allocation of data is not restricted to the components of the single dictionary, nor to the dictionaries presented in a dictionary portal. Other online sources can be linked and information can be retrieved from the data in these sources — all data are not accommodated within the frame structure of any given dictionary. The notion of a frame structure, relevant in printed dictionaries, becomes redundant in online dictionaries seeing that there are no front and back matter texts to complement the central list. This does not restrict the venues for the allocation of data to the central list. Klosa and Gouws (2015) introduced the concept of *outer features* to replace the concept of *outer texts* in online lexicographic products. This new range of possibilities regarding the data distribution structure and the idea of outer features will not be discussed in this paper. Here it will suffice to say that outer features open new possibilities to lexicographers in planning the data distribution, and also the data linking, in their dictionaries.

4.1.2 *The macrostructure*

Macrostructural properties of printed dictionaries have been discussed extensively inter alia by Wiegand (1989b) and Wiegand and Gouws (2013) where the macrostructure has been defined as an ordering structure.

One of the prominent questions with regard to online dictionaries is whether the notion of a macrostructure is still applicable. Dictionaries still have a lemma selection presenting a macrostructural coverage of the relevant section of the lexicon. The vertical ordering as found in printed dictionaries and the frequent use of horizontal ordering to accommodate niched and nested lemmata are not prominent features of the majority of online dictionaries. Neither does a traditional outer access structure that enables the search route to the lemma sign as a guiding element of an article play a compelling role in online dictionaries. The lemma sign can still be a starting point in the access process to retrieve information regarding a specific lexical item included as macrostructural element of a dictionary. A general theory of lexicography that is not medium-specific needs to account for the fact that online dictionaries do have some macrostructural features and therefore the notion of a macrostructure should not be eschewed, but rather re-interpreted and adapted. Gouws (2014a) focused on features like the alphabet bar in online dictionaries as well as the occurrence of partial lemma stretches often found on a screenshot to complement the treatment of a given lemma. The priority in printed dictionaries on the macrostructure as an ordering structure could be changed in online dictionaries to the coverage of the relevant

section of the lexicon that falls within the scope of the specific dictionary as well as the presentation of the appropriate guiding elements of dictionary articles.

4.1.3 The article structure

When looking at the article structure it is necessary to put an article and its subsections within the broader structure of a dictionary. According to Wiegand and Beer (2013) the word list of a printed dictionary forms a search field, each dictionary article can be regarded as a search area and the search areas are divided into search zones — see also Gouws (2014b). In online dictionaries the scope of the search field may differ from that of printed dictionaries — this still has to be investigated. The article as search area and the different search zones remain relevant in online dictionaries. The traditional approach to dictionary articles is seen in the definition found in Wiegand et al. (2013: 317):

A dictionary article is an accessible dictionary entry characterised by the following three definitive features: (a) it shows at least one external access text element, (b) it is a constituent of a wordlist, (c) it consists of lexicographic data made accessible, including at least one such part, by means of which the dictionary user can unlock lexicographic information mentioned by the access text element.

A typical example of a static dictionary article that adheres to this definition is that of the lemma sign *eggo* (‘echo’) in HAT 5 (the *Verklarende Handwoordeboek van die Afrikaanse Taal*):

eg/ge-noot s.nw. [eggenote] Man met wie 'n vrou getroud is.

eg/ge-no-te s.nw. [-s] Vrou met wie 'n man getroud is: 'n *Liefderike, hulpvaardige eggenote*.

eg/go
 > s.nw. [-'s; ~'tjie]
 1 Herhaling van 'n geluid deur terugkaatsing van klankgolwe teen rotse, kranse, mure, ens.; weerklank, -galm: 'n *Hinderlike eggo in 'n saal. Sterk eggo's in 'n grot.*
 2 Herhaling van iets deur 'n ander gesê, geskryf: *Eggo's van groot skrywers.*
 > ww. [geëggo] 'n Eggo laat hoor; weerklank, weergalm: *Sy stem eggo deur die klowe.* ♦ (fig.): *Hy eggo maar net wat die hoof sê.*
 [Gr. *ekho* klank]
eggo: ~effek, ~gewelf, ~loos.

eg/go-fo-to s.nw. Foto, bv. van inwendige liggaamsdele, verkry deur klankgolwe wat deur die vel dring en op 'n skerm sigbaar word.

Figure 15.1: Partial article stretch from HAT.

This article has an external access element, is a constituent of a wordlist and consists of lexicographic data made accessible. Due to the nature of the specific medium, printed dictionaries have a static article structure. In many dictionaries, cf. the article of the lemma sign *eggo*, a linear ordering of the comment on form and the comment on semantics prevails. Where the lemma represents a polysemous lexical item the comment on semantics displays a sequence of subcomments on semantics with their respective search zones. CD-ROM dictionaries that are mere digital versions of printed dictionaries typically maintain this static ordering and structure.

Online dictionaries also have articles and these dictionary articles also exhibit specific structures. Consequently the notion of an article structure is equally relevant in printed and online dictionaries. However, article structures in online dictionaries show significant differences compared to their counterparts in printed dictionaries. These differences reside in both the structural features and the segments constituting the article. With regard to their structure, online dictionaries have a dynamic article structure with a different type of search area and with search zones not necessarily presented, ordered or accessed in a linear way. Regarding the segments included in the articles one needs to compare the online dictionary articles with those of printed dictionaries. Articles in printed dictionaries contain items and indicators as text segments—with items belonging to the microstructure and being data-carrying segments from which information regarding the subject matter of the specific dictionary can be retrieved. Both typographical and non-typographical structural indicators do not belong to the microstructure and are not data-carrying entries, but are employed to identify specific search zones and items presented in the articles. Articles in online dictionaries contain items but their structural indicators often deviate from the traditional structural indicators used in printed dictionaries. In printed dictionaries structural indicators are often employed in execution of the textual condensation processes due to spatial restrictions. In online dictionaries there is less textual condensation and indicators are often substituted by data-identifying indicators that function as inner access links and give a more explicit indication of the relevant data types or search zones. See in this regard Figure 15.2, a screenshot from the article of the word *Tisch* ('table') in the German online dictionary *elexiko*.

The screenshot shows the OWID (Institut für Deutsche Sprache) interface for the word "Tisch". The main content area displays the word "Tisch" with a speaker icon and the label "Lesart: 'Möbelstück'". Below this, there are tabs for "Bedeutungserläuterung", "Kollokationen", "Konstruktionen", "Sinnverwandte Wörter", "Gebrauchsbearbeitungen", and "Grammatik". The "Bedeutungserläuterung" tab is active, showing a definition: "Mit Tisch bezeichnet man ein Möbelstück, das gewöhnlich aus einer Platte mit Stützen besteht und an dem eine Person(engruppe) sitzen kann." Below the definition, there are options for "Belege anzeigen" and "Illustrationen anzeigen". A "Wortklasse: Individuativum" is also indicated. On the left, a vertical list of words is shown, with "Tisch" highlighted. On the right, a navigation menu lists various dictionary features like "elexiko", "Startseite", "Wortartikel", "Projekt", "Benutzungshinweise", "Glossar", "Erweiterte Suche", "Sprichwörterbuch", "Kommunikationsverben", "Verlaufsformen", "Fremdwörterbuch", "Neologismenwörterbuch", "Schulddiskurs 1945–55", "Protestdiskurs 1967/68", "Schlüsselwörter 1989/90", "OBELEX^{meta}", "OBELEX^{dict}", "Korpussuche", and "OWID^{plus}".

Figure 15.2: Data-identifying indicators in *elexiko*.

For one of the polysemous senses access is given to, among others, the search zones containing collocations, constructions, related words and grammar. This is done by means of data-identifying indicators given as buttons that identify the specific search zones. The major differences between the articles of printed and online dictionaries can be found in their respective structural features. These differences are significant from a metalexicographical perspective because metalexicographers need to re-assess their approach to dictionary structures and negotiate the innovative structural features of online dictionaries within the comprehensive general theory of lexicography. Different online dictionaries take different approaches to the ways in which they employ the various structures. This offers challenges to metalexicographers who have to provide the necessary theoretical basis for these structures. Collaboration between theoretical and practical lexicographers is needed to ensure the best possible ways to use these structures in online dictionaries. The following paragraphs, presenting some of the ideas of Gouws (2018a; 2018b), will give a discussion of a few aspects of article structures as can be found in one specific dictionary, i.e. the previously mentioned the German online dictionary *ellexiko*.

The following screenshots display a part of the treatment of the word *Tisch* in *ellexiko*. Figure 15.3 presents the opening screenshot of this dictionary which offers users the option to click on a letter in the alphabet bar in the top section of the screenshot or to type the required word into the search box in the top right-hand

The screenshot shows the OWID website interface. At the top, there is a search bar with the text 'Suchen' and 'Erweiterte Suchen'. Below the search bar is an alphabet bar with letters A-Z and a search box containing the word 'Tisch'. The main content area is titled 'Willkommen in ellexiko,' and contains the following text:

einem Online-Wörterbuch zur deutschen Gegenwartssprache
ellexiko ist ein Online-Informationssystem ("Wörterbuch") zur deutschen Gegenwartssprache, das den Wortschatz der deutschen Sprache anhand von aktuellen Sprachdaten (bis ins Jahr 2013) in sogenannten Modulen dokumentiert, erklärt und wissenschaftlich kommentiert. Der Schwerpunkt von *ellexiko* liegt im Modul Lexikon zum öffentlichen Sprachgebrauch auf der ausführlichen Beschreibung von Bedeutung und Verwendung der (hochfrequenten) Stichwörter. Daneben gibt es auch Angaben zur Orthografie, zur Belegung im *ellexiko*-Korpus usw., die für viele (niedrig frequente) Stichwörter automatisch ermittelt wurden.

Bitte rufen Sie hier alle bearbeiteten Stichwörter auf. Zum Teil sind diese Stichwörter auch vergleichend in sogenannten Wortgruppenartikeln beschrieben. Wenn Sie sich für die *ellexiko*-Stichwortliste in rechtsalphabetischer (d.h., rückläufiger) Sortierung interessieren (weil Sie z.B. auf der Suche nach Reimwörtern oder solchen Wörtern sind, die auf das gleiche Suffix enden), dann finden Sie hier die Rückläufig sortierten Stichwörter.

Die Funktionen im Menüpunkt "Erweiterte Suche" bieten Ihnen die Möglichkeit, alle Stichwörter zu suchen, die mit einer bestimmten Zeichenfolge beginnen oder enden bzw. die eine bestimmte Zeichenfolge enthalten. Außerdem können Sie hier nach allen bearbeiteten Stichwörtern suchen, die ein gemeinsames Merkmal aufweisen (z. B. alle Stichwörter, die Kurzwörter sind, oder alle Stichwörter, die Adverbien sind).

Bitte nutzen Sie die Menüpunkte "Benutzungshinweise" und "Projekt", um weitere (umfangreiche) Informationen zum Wörterbuch und zum Projekt *ellexiko* aufzurufen. Im Menüpunkt "Glossar" finden Sie Erläuterungen zu allen in *ellexiko* verwendeten Fachtermini.

Wenn Sie Fragen oder Anregungen haben, wenden Sie sich bitte an: ellexiko@ids-mannheim.de

The sidebar on the right lists the following sections:

- ellexiko
 - Startseite
 - Wortartikel
 - Projekt
 - Benutzungshinweise
 - Glossar
 - Erweiterte Suche
- Sprichwörterbuch
- Kommunikationsverben
- Verlaufsformen
- Fremdwörterbuch
- Neologismenwörterbuch
- Schulddiskurs 1945-55
- Protestdiskurs 1967/68
- Schlüsselwörter 1989/90
- OBELEx^{meta}
- OBELEx^{dict}
- Korpussuche
- OWID plus

Figure 15.3: Opening screenshot from *ellexiko*.

corner. In this screenshot the word *Tisch*, the search word that should guide the user to the specific article, has already been entered into the search box.

The subsequent search leads to the screenshot in Figure 15.4 which is the first access to the article of the lemma sign *Tisch*.

This screenshot does not capture a view of the full article. Contrary to printed dictionaries there is no traditional search area in which all the different search zones can be seen. A division comparable to that between the comment on form and the comment on semantics in printed dictionaries can be drawn to present a grouping of *Lesartübergreifende Angaben* (*Orthografie, Herkunft und Wandel* and *Wortbildungsprodukte*) and *Lesartenbezogene Angaben* respectively. Within the latter grouping the different polysemous senses are presented as subcomments on semantics — albeit that they contain only an item giving a paraphrase of meaning.

A click on the single word semantic marker in a specific subcomment on semantics, e.g. on *Möbelstück*, guides a user to the screenshot (Figure 15.5) that has a repetition of the relevant paraphrase of meaning but also includes data-identifying buttons, cf. Gouws (2016), to give a user the option to retrieve more linguistic information regarding the occurrence of the word represented by the lemma sign in this specific sense.

Figure 15.4: Partial screenshot page of the lemma sign *Tisch* in *elexiko*.

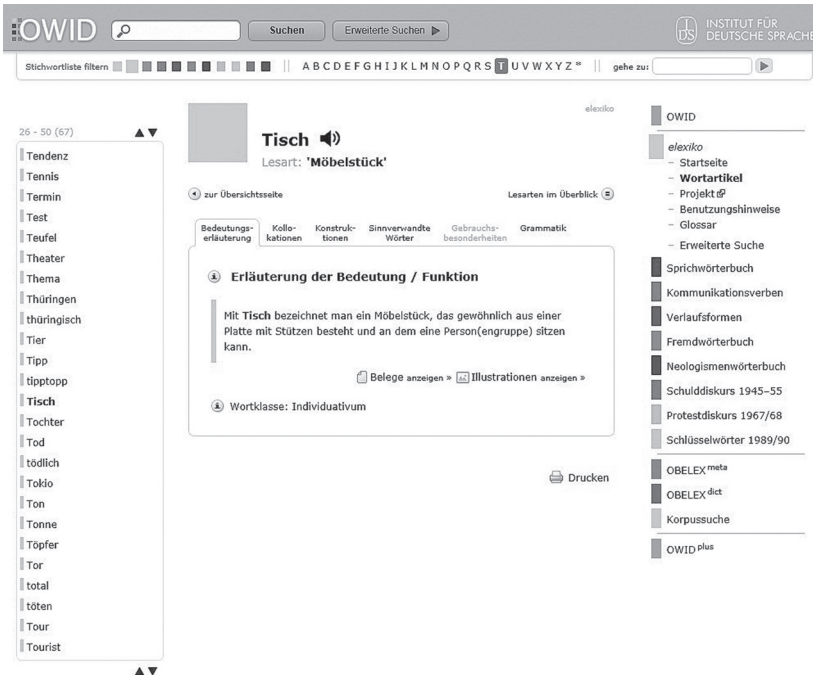


Figure 15.5: Partial article of the lemma *Tisch*.

Clicking on the button for illustrations leads a user to the following screenshot where a pictorial illustration is given.

When applying the definition of an article to the examples from *lexiko* the question arises as to what exactly qualifies as an article? Each screenshot contains a part of the segments, both items and indicators, employed in the treatment of the word presented by the lemma sign occurring in that specific screenshot which is also the word given as the macrostructural item in the relevant partial article stretch that can be accessed via the alphabet bar, cf. Gouws (2018b). In terms of the definition given by Wiegand et al. (2013: 317) the display in each one of these screenshots qualifies as an article because each one contains an external access element, is a constituent of a wordlist and contains lexicographic data regarding the word represented by the lemma sign.

The full treatment of the lemma sign *Tisch* can never be seen in a single screenshot. This lemma sign has a multi-layered article structure consisting of a number of restricted articles — each with the word *Tisch* as lemma sign but each only presenting a part of the treatment of the lemma sign. The comprehensive article, in this dictionary only an abstract concept, is never realised.

The introduction of an innovative comprehensive article structure is the result of the dynamics of the lexicographic practice and its interaction with technological advances. In response to this, metalexigraphy needs to produce new theoretical explanations that reflect these changes and account for a new interpretation of the concept of a dictionary article. This demands a dynamic metalexigraphy.

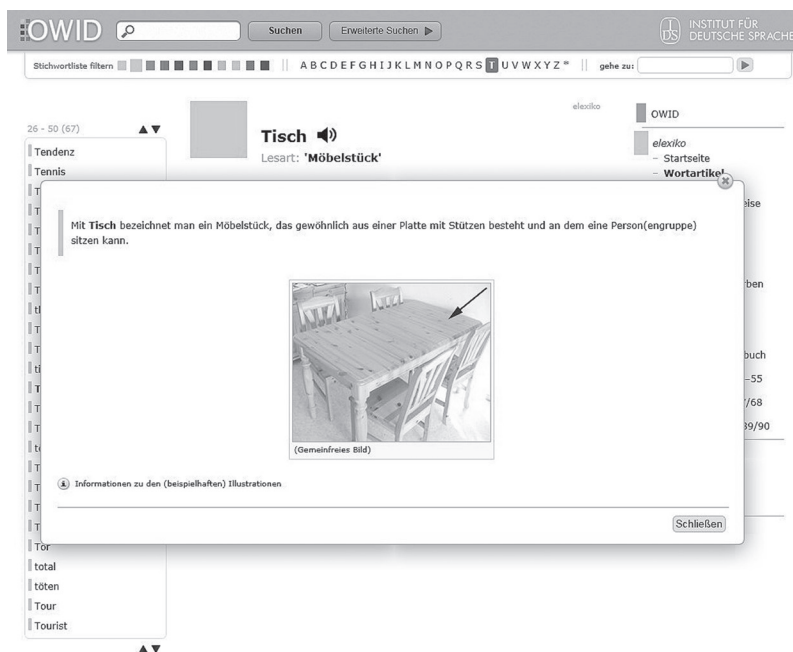


Figure 15.6: A pictorial illustration of *Tisch* in *elexiko*.

Conclusion

A dynamic lexicographic practice that reflects the dynamics of language, changing needs of dynamic users and the dynamics of a technological era challenges the metalexigrapher to provide the contents relevant to the specific functions of a dictionary and to devise an array of dictionary structures that can be employed to ensure proper ways of accommodating and reflecting the dynamics of language in dictionaries that adhere to a user-driven approach.

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Chapter 16

New modes of interaction, new modes of integration: A sociolinguistic perspective on a sociological keyword

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1. Introduction¹

In late November 2017, a new round of a never-ending language-ideological debate took place in Belgium (cf. Blommaert 1997; 1998; 2011; Blommaert & Verschueren 1998). A large network of schools in Flanders had announced that non-Dutch mother-tongue pupils would be allowed to use their first languages during class breaks and, on limited occasions, during class sessions as well. The Flemish nationalist party, the N-VA (the leading party, at the time, in Belgian politics), instantly condemned this measure as unwelcome, for it would lead to ethnolinguistic ‘segregation’ and, thence, to further problems with the ‘integration’ of non-Dutch mother-tongue groups in Flemish-Belgian society. In the eyes of N-VA politicians, ‘integration’ could *only* be achieved through a totalised Dutch monolingualism stretching into all corners of Flemish-Belgian society. A nationalist MP summarised this view in a Tweet addressed to Jan Blommaert. Note a detail here that should not escape us: the politician interacts through a very new infrastructure, social media. We shall come back to this later. First, let us consider the politician’s Tweet (Figure 16.1).

We encounter a highly simplified view here of the connection between language and social integration or, even more generally, between language and social processes. This view is widespread in lay and professional circles, and — be it in rather more sophisticated versions — drives official ‘integration’ policies in several countries across the world, including aspects such as language testing in immigration procedures (see Silverstein 1996; 1998 for seminal discussions). This view has for years come under heavy fire from sociolinguists, exposing both the inaccuracy of the view and its potential for miscarriages of justice (e.g. Maryns 2005; Blommaert 2009; Jacquemet 2015; Spotti 2016; Khan 2017).

¹ This paper forms part of the ‘Online with Garfinkel’ project and summarises elements from the ‘Durkheim and the Internet’ project. For a survey of the latter, see Blommaert (2018). In both projects, an attempt is made towards re-theorising contemporary society, its features and dynamics, on the basis of a sociolinguistic methodology and sociolinguistic findings. A much shorter outline of the central argument in this paper can be found in Blommaert (2016).



Figure 16.1: Tweet by N-VA representative, 27 November 2017. Translation: ‘Excuse me. Dutch = integration. So fully in the picture. Speaking Dutch makes one forget differences.’

In this paper, we intend to extend this sociolinguistic critique towards the theoretical level, using an assumption which hardly any sociologist of the Grand Tradition from Simmel to Giddens and Bourdieu has ever challenged: that interaction defines whatever we understand by being social, and that all real social relationships are grounded in social interaction. This assumption underlies and motivates the very existence of sociolinguistics (cf. Williams 1992). But in spite of this, sociolinguists have rarely attempted to draw sociological-theoretical statements from their analyses, even when such analyses offered profound revisions of existing mainstream theory interaction (cf. Blommaert 2018 for an elaborate discussion). Integration—a key concept in the sociological tradition—is a case in point.

We shall first describe the theoretical field in which our intervention should be situated: the highly schematic and linear imagination of ‘integration’ in the Grand Tradition, certainly in the work of Parsons; and the sociolinguistic-interactional perspective we can use in our critique of that imagined integration. Next, we shall present and discuss two empirical cases revealing, we suggest, actual processes and patterns of integration in the lives of contemporary diasporic subjects. We shall conclude by pointing towards the manifest advantages of the sociolinguistic perspective we apply here in re-theorising the structures of contemporary societies, and underscore its pertinence.

2. From Parsons to Garfinkel

As our opening example showed, integration continues to be used as a keyword to describe the processes by means of which ‘outsiders’—immigrants, usually—need to ‘become part’ of their ‘host society’. We have put quotation marks around three crucial terms here, and the reasons why will become clear shortly. Integration in this specific sense, of course, has consistently been a central sociological concept in the Durkheim-Parsons tradition, and it was the central theme in much of Talcott Parsons’ work. Parsons’ sociology, as we know, focused on integration at the level of ‘society’ (e.g. Parsons 1937; 2007). Societies would remain integrated because of the widespread acceptance of specific and relatively enduring sets of *values*, while *norms* characterised smaller social groups. Norms could differ from the dominant values, of

course, they could even run counter to these values; but they were distinctly ‘lighter’ than values. A society, in the views of Parsons and his followers, is a conglomerate of social groups held together by integration: the sharing of (a single set of) central values which define the character, the identity (singular) of that particular society (singular).

It is this specific sense of the term that motivates complaints — a long tradition of them — in which immigrants are blamed for not being ‘fully integrated’, or more specifically, ‘remaining stuck in their own culture’ and ‘refusing’ to integrate in their ‘host society’. What is expected from such immigrants (and researched about them) are ‘integrative’ processes often labelled as ‘adjustment’ or ‘acculturation’ (e.g. Brown et al. 2013). Immigrants, thus, enter processes of change, while the ‘host society’, ‘mainstream society’ or ‘receiving culture’, so it appears, remains unaffected and stable. The profound influence of Parsons’ framework is evident here, at two levels at least: (1) processes of integration are primarily attitudinal, a matter of degrees of sharing of the prevailing values of society; (2) the ‘society’ he imagined does not change, even if challenged by highly deviant subcultural social groups harbouring profoundly different norms. Thus, in a text written in 1964 on US youth culture (at that time perceived as rebellious and increasingly deviant), Parsons confidently concluded that, ‘American society in a sense appears to be running its course. We find no cogent evidence of a major change in the essential patterns of its governing values’ (Parsons 1964: 181).

In other words, the long-haired, pot-smoking, anti-Vietnam young rebels of the 1960s were still good and decent Americans, and their shocking behaviour did not shake the foundations of the American mode of integration. Four years later, such an argument would prove to be hard to sustain, and not just in the US (Elbaum 2002).²

‘Integration’, thus, is a simple and linear movement performed by people (individuals or groups) who are currently *outside*; by means of integration, they will *enter* and become part of what is often described as ‘mainstream society’ — the kind of society which Parsons saw as enduringly tied together by common values. Graphically, the conceptual structure of ‘integration’ can be represented as such, see Figure 16.2.

Over half a century ago, in a trenchant critique of Parsons, C. Wright Mills (1959: 47) observed that historical changes in societies must inevitably involve shifts in the modes of integration. Several scholars documented such fundamental shifts — think of Bauman, Castells, Beck and Lash — but mainstream discourses, academic and lay, still continue to rely on the monolithic and static Parsonian imagination. The core of the problem lies in something that Gregory Bateson (1958; 1972) repeatedly observed: in social sciences and humanities we tend to focus on individuals and groups rather than on the relationships and processes that actually form them and make them socially, culturally and politically meaningful, the things for which Simmel used the shorthand ‘sociation’ (a term he much preferred over its

2 Needless to say, Parsons’ view of US society as integrated — the mainstay of his work since the 1930s — was fundamentally challenged, and some will say shattered, by Gunnar Myrdal’s monumental *American Dilemma* (1944).

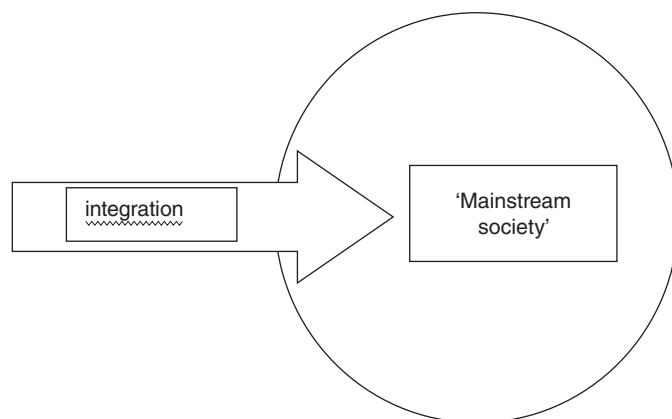


Figure 16.2: The conceptual structure of 'integration'.

result, 'society': Simmel 1950: 9). In other words—and we return to an earlier observation here—there is a widespread neglect of the fundamentally interactional nature of what is social, of the actual, small-scale interactional processes that underpin whatever generalisation we attempt to make about society and its populations.

Scholars such as Cicourel (1973), Goffman (e.g. 1974), Strauss (1993) and Garfinkel (2002), all focusing on the concrete features and situated nature of performed social action, pointed to this fatal flaw in mainstream sociology long ago. Contemporary sociolinguistics can provide approaches and arguments now that make these earlier calls compelling and inevitable: as a post-World War II discipline aimed at understanding society through the lens of language, social interaction is, simply put, its bread and butter.³ Sociolinguistics can offer a simple four-step methodological programme for empirical investigations into groups of any kind and configuration, starting from safe ground: the empirical observation of actual modes of interaction. Here it is:

1. Patterns of communication necessarily involve meaningful social relationships as prerequisite, conduit and outcome.
2. Such relationships will always, similarly, involve identities and categorisations, interactionally established.
3. Thus, when observing patterns of communication, we are observing the very essence of sociation and 'groupness'—regardless of how we call the groups.
4. And specific patterns of interaction shape specific forms of groups.

In this sociolinguistic frame, thus, we approach groups pragmatically and axiologically, from the angle of the actual observable communication practices that,

³ It will be clear that we are ourselves inclined towards the ethnographic tendency within sociolinguistics. Yet, the statement here can be made categorically and programmatically, and pertains to variously labelled subdisciplines devoted to this general programme.

eventually, characterise them through the values attributed to such practices — very much a strategy developed (in a radical form) by Harold Garfinkel (2002). Groups, then, are not *a priori* collections of human beings but patterned sets of communicative behaviours and the relationships through which they are dialectically related. Whenever we see such ordered forms of communicative behaviour, there is an assumption of active and evolving groupness — sociation — but the analytical issue is not the nature of the group (or the label we need to choose for it) but the specific social relationships observable through and in it. All other aspects of sociation can be related to this. A group, thus, is defined as a communicatively organised and ratified set of social relationships. These social relationships will establish the nature of the group as well as the specific ways of attachment to it displayed by individuals — their membership of groups and, by extension, their ‘integration’ into such groups.

We do not expect this interaction-based perspective to raise much controversy. It has its feet firmly in an empirical tradition of social research in which social facts are seen as *interpreted* and *experienced*, strongly dependent on and conditioned by the actual modes of performed social interaction leading to such interpretations and experiences. The subtitle of Goffman’s *Frame Analysis* was ‘an essay on the organisation of experience’, and later classics of sociolinguistics — think of Gumperz (1982) or Rampton (2006) — all subscribe to it. What we do here, following (but mitigating) Garfinkel’s (2002) example, is to ‘peel off’ most of the social-theoretical assumptions often tacitly taken on board in research, and put them up for reconstruction through a long and hard look at concrete instances of communicative practice.

In what follows we shall draw on this interaction-centred perspective and propose that new modes of diasporic social life, now conditioned by access to new forms of mediated communication enabling new modes of interaction, do indeed result in new modes of integration. To formulate this as a theoretical proposition: *people are integrated in a wide variety of communities, both ‘thick’ and ‘light’ ones, and to differing degrees.* A ‘completely integrated’ individual is an individual who has achieved these diverse forms of integration and is able to move from one community to another one while shifting between the modes of integration expected in each of them.

3. New modes of integration

Recall what Mills claimed: that historical changes can and will change the modes of integration in societies. One quite undeniable historical change could be observed over the past two decades: the phenomenal development, growth and distribution of new infrastructures for mobile and online communication — reshuffling the communicative, cultural and knowledge economies worldwide and affecting the conditions of social life in a very broad sense (cf. Appadurai 1996; Castells 1996). Here, thus, we have a form of historical change which has effectively and explicitly to do with reorganised conditions and opportunities for *social interaction*. The change is massive and profound — its effects on modes of integration should be hard to disqualify or dismiss as superficial.

Such effects are, we believe, general. But in line with the more specific point about immigrants and their integration challenges, we shall look at the ways in which these changes have affected the lives of subjects in diasporic situations. It is well

known—and already anticipated by Appadurai (1996)—that diaspora subjects do use new communication technologies to their benefit (see e.g. Tall 2004). In view of that, Jelke Brandehof (2014) investigated the ways in which a group of Cameroonian doctoral students at Ghent University (Belgium) used communication technologies in their interactions with others. She investigated the technologies proper—mobile phone and online applications—as well as the language resources used in specific patterns of communication with specific people. Figure 16.3 is a graphic representation of the results for one male respondent, whom we shall nickname Sainge (Brandehof 2014: 38).

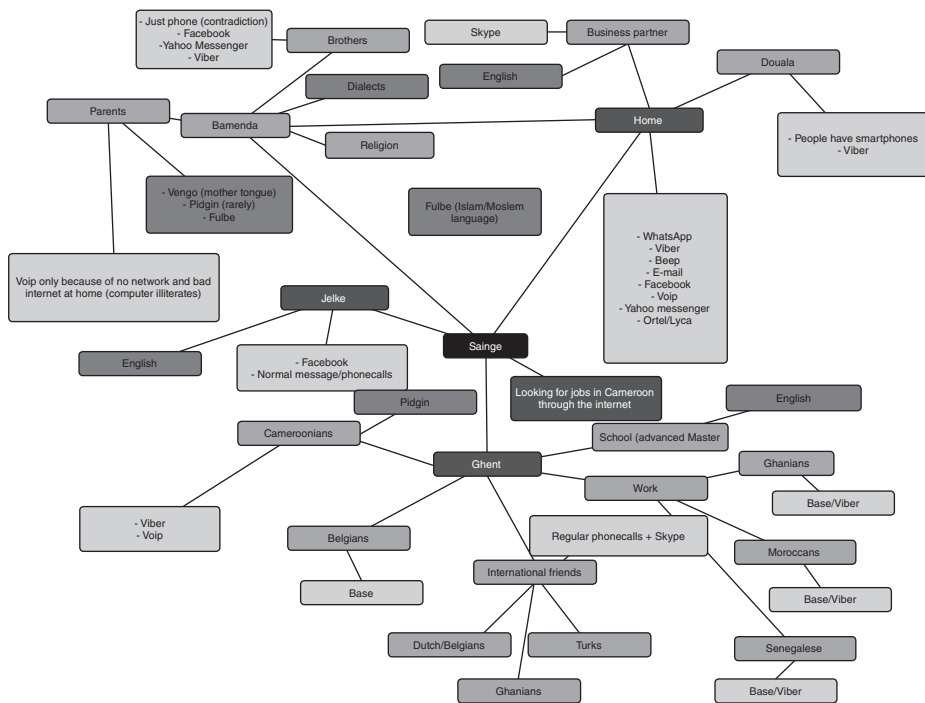


Figure 16.3: Sainge’s communication network.

© Jan Blommaert, Jelke Brandehof, Monika Nencova

This figure, we would suggest, represents the empirical side of integration—*real* forms of integration in contemporary diaspora situations. Let us elaborate this.

The figure, no doubt, looks extraordinarily complex; yet there is a tremendous amount of order and non-randomness to it. We see that Sainge deploys a wide range of technologies and platforms for communication: his mobile phone provider (with heavily discounted rates for overseas calls) for calls and text messages, Skype, Facebook, Yahoo Messenger, different VOIP systems, WhatsApp and so forth, and free call signals known as ‘beeps’. He also uses several different languages: Standard English, Cameroonian Pidgin, local languages (called ‘dialects’ in the figure) and Fulbe (other respondents also reported Dutch as one of their languages). And he

maintains contacts in three different sites: his local physical, economic and social environment in Ghent, his home environment in Cameroon, and the virtual environment of the labour market in Cameroon. In terms of activities, he maintains contacts revolving around his studies, maintaining social and professional networks in Ghent, job hunting on the internet, and an intricate range of family and business activities back in Cameroon. Each of these activities—here is the order and non-randomness—involves a conscious choice of medium, language variety and addressee. Interaction with his brother in Cameroon is done through smartphone applications and in a local language, while interactions with other people in the same location, on religious topics, are done in Fulbe, a language used among Muslims.

As mentioned earlier, specific forms of interaction assume specific forms of sharedness and shape specific forms of groups. Our subject is integrated, through the organised use of these communication resources, in several groups situated in very different zones of social life. He is integrated in his professional and social environment in Ghent, in the local casual labour market where students can earn a bit on the side, in the Cameroonian labour market where his future lies, and in his home community. Note that we use a *positive* term here: he is integrated in all of these zones that make up his life, because his life develops in real synchronised time in these different zones, and all of these zones play a vital part in his life. He remains integrated as a family member, a friend, a Muslim and a business partner in Cameroon, while he also remains integrated in his more directly tangible environment in Ghent—socially, professionally and economically. And note, of course, that some of these zones coincide with the ‘thick’ groups of classical sociology (the nation-state, family, religion) while others can better be described as ‘light’ communities—the student community, the workplace, web-based networks and so forth.

This level of simultaneous integration across groups, both ‘thick’ and ‘light’ ones, is *necessary*. The social world of any contemporary human being is, by default, *polycentric*. Sainge intends to complete his doctoral degree work in Ghent and return as a highly qualified knowledge worker to Cameroon. Rupturing the Cameroonian networks might jeopardise his chances of reinsertion in a lucrative labour market (and potential business ventures) upon his return. While he is in Ghent, part of his life is spent there while another part continues to be spent in Cameroon, for very good reasons. The simultaneity of integration in a variety of zones, however, should not lead us to suggest that the *degrees* of integration would be similar. Put in a more theoretical vocabulary, a polycentric social universe is not composed of *equivalent* groups and social arenas: some are more enduring than others, some have a more profound impact than others on the life trajectories of subjects, some affect more aspects of social life than others, some demand more profound levels of involvement than others. Modes of integration, consequently, will differ across the different units we observe. We can assume that Sainge is more profoundly integrated in, for instance, his family and religious communities in Cameroon, than in the Ghent-based casual labour market where he needs to rely on the advice and support of others to find his way around. And we can assume that he was, at the time of our research, more profoundly integrated in the Ghent academic laboratory culture in which he performs his doctoral work, than in the Cameroonian business world in which he aspires to find his place in the future.

We observe exactly the same phenomena and patterns in the case of a young Tajik man, whose communication economy was investigated by Monika Nemcova (2016). Coming from Dushanbe, the capital of Tajikistan, 24-year-old Bobby (as we call him) spent the first 15 years of his life in that city. Although he spoke Tajik with his parents, he went to a Russian-medium school. In the last year of his curriculum there, he was selected for a programme which enabled him to study at an American high school and live with an American family for one year. After coming back to Dushanbe and graduating from high school, he went on to study at Tajik Agrarian University. Later, his family moved to Ankara, Turkey. Bobby followed them to the country, but chose Istanbul for his subsequent studies. After finishing there, he decided to do his Master's degree in The Netherlands, where he resided at the time of our interviews. Apart from Tajik and Russian, Bobby speaks and understands several other languages with varying proficiency. These are English, Turkish, Persian/Farsi, Arabic, French and Chinese. His relatives and friends live in various countries and to keep in touch with them, Bobby employs diverse applications, specifically Facebook, WhatsApp, Skype, Viber, Line, Instagram and Vkontakte. Figure 16.4 shows us the structure of Bobby's network (Nemcova 2016: 25).

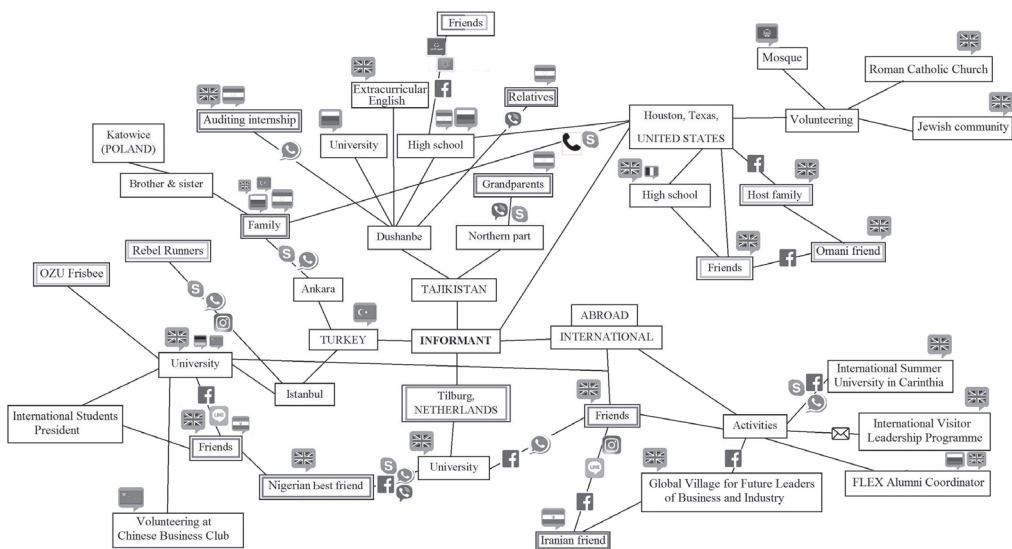


Figure 16.4: Bobby's communicative network.

© Jan Blommaert, Jelke Brandehof & Monika Nemcova

We have seen Bobby's complex migration trajectory, taking him from Tajikistan to the United States, back to Tajikistan, onwards to Turkey and finally to the Netherlands. His family, specifically his grandmother, uncle and cousins, live in Tajikistan, while his nuclear family has moved to Turkey. Furthermore, he occasionally keeps in touch with his American host family and friends he met there. He has been participating in several international programmes and conferences, which has led to further

diversification of his network. And obviously, he must maintain dense patterns of interaction with fellow students and staff in the Dutch university where he does his graduate work, and also maintains loose ties with a broader social network there. Like Sainge, Bobby does *not* spend his life in one place and in one community; his social activities and relationships are dispersed over various places, are of a very different nature when compared to one another, and require different specific modes of interaction in order to be sustained.

We emphasised that our subjects have to remain integrated across these different social arenas — *sufficiently* integrated, not ‘completely’ integrated. And the technologies for cheap and intensive long-distance communication enable them to do so. This might be the fundamental shift in modes of integration that we have seen since the turn of the century: to be in the diaspora no longer means a total rupture from the places and communities of origin; neither, logically, does it entail a ‘complete integration’ in the host community, because there are instruments that enable one to lead a far more gratifying life, parts of which are spent in the host society while other parts are spent elsewhere. In short, here is a textbook example of Castells’s network society (1996). We see that diasporic subjects keep one foot in the ‘thick’ community of family, neighbourhood and local friends, while they keep another foot — on more instrumental terms — in the host society and yet another one in ‘light’ communities such as internet-based groups and the casual labour market. Together, they make up a late-modern diasporic life.

There is nothing exceptional or surprising to this: the jet-setting European professional business class members do precisely the same when they go on business trips: smartphones and the internet enable them to make calls home and to chat with their daughters before bedtime, and to inform their social network of their whereabouts by means of social media updates. In that sense, the distance between Bauman’s famous ‘traveller and vagabond’ is narrowing: various types of migrants are presently using technologies previously reserved for elite travellers. And just as the affordances of these technologies are seen as an improvement in the nomadic lifestyle of elite travellers, it is seen as a positive thing by these other migrants, facilitating a more rewarding and harmonious lifestyle that does not involve painful ruptures of existing social bonds, social roles, activity patterns and identities.

4. Integrating the sociolinguistic perspective

What looks like a *problem* from within a Parsonian theory of ‘complete integration’, is actually a *solution* for the people performing the ‘problematic’ behaviour. The problem is theoretical, and rests upon the kind of monolithic and static sociological imagination criticised by Mills and others, and the distance between this theory and the empirical facts of contemporary diasporic life. Demands for ‘complete integration’ (and complaints about the failure to do so) can best be seen as nostalgic and, when uttered in political debates, as ideological false consciousness grounded in a deeply flawed, unrealistic imagination of society and its populations. If we return to the cases of Sainge and Bobby we can, for instance, ask where the ‘mainstream’ of the ‘host society’ can be found? Is that host society, in Bobby’s case, Turkey? The US? The Netherlands? And, turning to Sainge, would we be ready to accept the university laboratory and its community, into which Sainge was rather smoothly integrated, as

some kind of ‘mainstream’ in Flemish-Belgian society? Given that the lingua franca in that laboratory is English, not Dutch, it is doubtful (certainly for the Flemish nationalist MP we quoted at the outset). What we observed in both cases does not fit the conceptual scheme presented in Figure 16.2: there are multiple ‘host societies’; there is no real rupture between the local ‘host society’ and the translocal societies of ‘origin’ since all these arenas form part of the social world of our subjects; and within each of these societies, our subjects were part, to different degrees of intensity, of *specific* communities. The ‘mainstream’, we can see, is hardly a realistic sociological unit.

What this small exercise demonstrates, we hope, is the theoretical potential, largely untapped, of the study of language in society for understanding *society*, and not just language. The relevance of such work for critically questioning the foundations of our thinking about societies and the people inhabiting them is tremendous, certainly at a time when the biggest forces of change in these societies are new and rapidly developing technologies for social interaction—the internet and its mobile applications. The neglect of language as a topic of detailed inquiry in sociology (and, by association, in social theory) is old and persistent. Herbert Blumer (1969: 7) lamented that:

... a society consists of individuals interacting with one another. The activities of the members occur predominantly in response to one another or in relation to one another. Even though this is recognised almost universally in definitions of human society, social interaction is usually taken for granted and treated as having little, if any, significance in its own right.

Consequently, there is a continuous risk of anachronisms in our fundamental assumptions about society and people, many of which were developed in an era in which the architects of such theoretical assumptions transferred handwritten texts to people called ‘typists’, who used a specialised skill called ‘keyboard writing’ on a machine called a ‘typewriter’. If it is our aim to understand society, and perhaps even to contribute to its improvements, we can no longer afford to overlook language as a source of fundamental and generalisable insights, as a source of social theory, of relevance to all those who use language. That is: to all human beings.

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Chapter 17

Multilingualism across the lifespan: The family as a space for language learning, and practices and policies

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1. Introduction¹

Linguistic inquiry has across the years taken a pronounced interest in the lifespan perspective in multilingual populations, investigating, in particular, aspects of acquisition and loss (Hyltenstam & Obler 1989; Bialystok et al. 2005) and more recently the impact of age on language acquisition and cognitive development (Nicoladis & Montari 2016). Indeed, such psycholinguistic and more cognitively oriented approaches to the study of multilingualism have specifically addressed the lifespan perspective by studying language competence across various age groups, from infancy until late adulthood, usually through cross-sectional experimental methods. In these studies, generally a societal perspective has been missing. Sociolinguistic and anthropologically oriented approaches to multilingualism, on the other hand, generally do *not* deal with the lifespan perspective of linguistic practices and policies, although timescales have received increasing attention in sociolinguistic-oriented research on language transmission and socialisation. Interdisciplinary approaches that bridge the gap across research on linguistic competence in language learning, practices and policies, that is, across psycholinguistically oriented studies and sociolinguistically oriented studies, promise a more comprehensive understanding of what it means to become and act as a multilingual. The question is: How can we draw on such interdisciplinary approaches in order to better understand multilingualism? Specifically, how can such approaches shed light on the child's acquisition of more than one language?

This article addresses multilingualism across the lifespan by focusing on the family, a social unit that includes members across various age spans and generations, taking into account language learning, social interaction and social practices in multilingual contexts, as well as family language policies. The family as a space for the child's acquisition of language has been traditionally consigned to developmental psycholinguists (e.g. De Houwer 2009; Grüter & Paradis 2014; Unsworth et al.

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2014); however, the burgeoning field of family language policy (King et al. 2008, Curdt-Christiansen 2013, King & Fogle 2013, Li Wei 2012; Lanza & Li Wei 2016; Smith-Christmas 2016; King & Lanza 2017; Macalister & Mirvahedi 2017) has brought the family into the purview of sociolinguistic inquiry in issues concerning language transmission across generations.

With a focus on language learning (both multilingual first language acquisition and early second language acquisition) and language transmission across generations in the family, this presentation thus highlights how bringing together both psycholinguistic and sociolinguistic approaches can contribute to a better understanding of multilingualism. Investigating the family as a space for language can provide vital insights into understanding young multilingual children's orientation to learning and use of language(s) in the classroom, and language in education policies in increasingly multilingual and multicultural societies.

In the following, developmental psycholinguistic perspectives to the acquisition of more than one language in childhood are presented. Subsequently, the increasing interest in the impact of input on language acquisition is outlined, and finally, an expanding field of inquiry investigating both practices and policies in the multilingual family is reviewed. In conclusion, a call is made for an interdisciplinary approach to understanding multilingualism across the lifespan in the family.

2. Children's multiple language acquisition

Seminal works in the study of children's acquisition of more than one language were in fact anchored in the family through the authors' observations of their own children in homes in which adults employed the so-called 'one person–one language strategy' (Ronjat 1913; Leopold 1939–1949). Further interest in bilingual children's language acquisition lay dormant, however, until the focus on grammar emerged in the late 1970s. The burning question became whether these children initially developed one linguistic system or two from the onset of language acquisition. The proponents of the one system hypothesis, also referred to as the 'unitary language system hypothesis' (Genesee 1989), invoked the child's use of language mixing/language contact as evidence for their stand (Volterra & Taeschner 1978; Redlinger & Park 1980; Taeschner 1983; Vihman 1985). Nonetheless, a turning point in research on bilingual first language acquisition occurred in the late 1980s and 1990s in which studies in the field focused on grammatical development and an increasing amount of robust evidence came to support the claim that the child's bilingual development was similar to that of monolingual children, for both languages (e.g. Meisel 1989; De Houwer 1990) and that language mixing could be interpreted from a sociolinguistic perspective, drawing on language socialisation theory (Lanza 1997). That is, there was a move away from the one system hypothesis to the two system hypothesis from birth, confirming that the young child could in fact differentiate between her/his languages already from the beginning. While these earlier studies relied on production, currently, even speech perception by infants exposed to more than one language is shown to be quite acute already in the first year of life.

Developmental psycholinguistic studies of multilingual acquisition in children have recently resulted in important insights into evolving multilingual competence across different age groups. The bilingual lexicon has received considerable attention

and new methodological tools and innovative testing methods based on bilingual norms have contributed to a more accurate assessment of vocabulary size of bilingual children in both of their languages, instead of using normed vocabulary tests designed for monolingual populations (cf. Hansen et al. 2017; Simonsen & Haman 2017). While parental background questionnaires are often used effectively to gather information about the child's language learning environment, developmental psycholinguistics has increasingly focused on the role of input in the child's acquisition of more than one language, from birth or in early childhood, exploring questions such as how lexical acquisition is affected by various external factors including the variety of speakers providing language input and the types of activities for which the languages are used. In early acquisition and childhood studies, the focus on input addressed specifically the family.

3. Parents and other caregivers in the multilingual family: Input and policies

While a theoretical interest in input is not novel today, it was indeed previously not considered relevant. Snow (2014: 117) points out that 'In 1974, when the *Journal of Child Language* was founded, the claim that quantity or quality of linguistic input might be relevant to the course of language acquisition was highly controversial. For some, in fact, it was an absurdity to suggest such a thing.' Presently, what is of interest is the quantity of input and how it may relate to language dominance and rates of acquisition, and quality of input and how it may affect the child's acquisition and use of two or more languages; in other words, what is of interest is variation in the input the child receives, encapsulating the young child's experience with the languages (Grüter & Paradis 2014). The theoretical importance ascribed to the relationship between amount of input and children's language development depends on one's theoretical orientation. Usage-based or constructivist approaches hold that the relative amount of input predicts language outcomes, with studies focusing specifically on verbal morphology and vocabulary. On the other hand, for generative/nativist approaches, it is claimed that input underdetermines the unconscious knowledge children acquire. Should relative amount of input be shown to predict language outcomes in multilingual first language acquisition, this would present a challenge (Unsworth 2013).

Sociolinguists emphasise the need to embed children's multilingual acquisition within a social space, the family. Drawing on Wenger (1998), Lanza (2007: 47) argues that the family is a 'community of practice', a social unit that has its own norms for language use and hence provides a focus on praxis, the cornerstone for language socialisation theory. The study of language socialisation with its origins in anthropology examines how cultural beliefs, ideologies, and child-rearing, including language acquisition, are interlocked (Ochs & Schieffelin 2011). Language socialisation is an interactional process occurring over time. The field of family language policy, originally anchored in language policy studies, finds its roots in the field of children's language acquisition and early second language learning, including bilingualism and multilingualism. However, as King and Fogle (2013: 172) state:

This line of inquiry differs from more psycholinguistically oriented investigations of bilingualism; rather than targeting the child, the emphasis of family language policy is on the balance between and use of languages within the family unit. Thus, family language policy addresses child language learning and use as functions of parental ideologies, decision-making and strategies concerning languages and literacies, as well as the broader social and cultural context of family life.

Increasingly, following current approaches to language policy in which language practices can be considered to be de facto policies, the study of family language policy has come to encompass not only explicitly stated overt policies, but also more covert policies revealed through linguistic practices. Hence while parents may claim to pursue a one person–one language strategy of interaction with their children, analyses of their actual practices may reveal other strategies. Children’s multilingual acquisition can be examined in light of actual practices in the home. Some of the questions addressed by family language policy include: What language conditions provide affordances and constraints for multilingual development? What types of language input and literacy practices facilitate children’s multilingual development? What measures should parents take to ensure desirable multilingual outcomes? (cf. Schwartz & Verschik 2013).

The current field of family language policy is greatly influenced by two broad processes of transformation in sociolinguistic research on multilingualism: (1) ‘broad epistemological shifts in the field of sociolinguistics to ethnographic and critical approaches’; and (2) ‘increasing focus on the study of the social, cultural and linguistic changes ushered in by globalisation’ (Martin-Jones & Martin 2017: 1). King and Lanza (2017) note that there have accordingly been shifts in focus in family language policy research through research questions that examine language as a means through which multilingual adults and children define themselves and their families; by a focus on globally dispersed, transnational or multilingual populations beyond the traditional, two-parent family; and by research methods that attend to meaning-making in interaction as well as the broader context.

Family members, both children and adults, engage in communication and socialise one another, drawing on their entire linguistic repertoires, including translanguaging (Song 2016), the practice of using elements from different named languages or language varieties in interaction — see Li Wei (2017) for a discussion on the theoretical motivations behind the concept of translanguaging. While parents and other adult caregivers are assumed to be the language socialising agents in the family, children have been demonstrated to negotiate language choice and hence take on their own agency in the home concerning language use (e.g. Gafaranga 2010; Kheirkhah & Cekaite 2015). Attention to the role of other caregivers, especially grandparents, reveals that parents in fact may not be the decisive agent for language maintenance or even acquisition of the minority language (Ruby 2012). Zhu Hua and Li Wei (2016) highlight how family language policies are affected by individuals and generations of families, and how bilingualism and multilingualism have different meanings to different generations and individuals even within the same family.

4. The way forward

In her commentary to a special issue on multilingual encounters in transcultural families (Lanza & Li Wei 2016), King (2016) traces various phases in the development of what today has been crystallised as the field of family language policy. Starting with the classic diary studies of Ronjat (1913) and Leopold (1939–1949), the trajectory moves through research involving central developmental psycholinguistic questions, as outlined above, concerning the bilingual child's differentiation between her/his two languages. Once the field of family language policy was—so to speak—launched through the influential article of King et al. (2008), there has been a turn to include a more diverse range of family types, languages and contexts, beyond North American/European nuclear families to globally dispersed, transnational or multilingual populations. The shifts in focus in family language policy research also includes research questions that examine language as a means through which multilingual adults and children define themselves and their families, and by research methods that attend to meaning-making in interaction and as well as the broader context. To some extent then there is a shift away from the original questions asked by family language policy research and that concerns sociolinguistic factors promoting language acquisition in multilingual contexts.

The need for interdisciplinary approaches in language policy and planning research is voiced clearly by Tollefson and Pérez-Milans (in press):

If researchers want to understand language loss and language shift, the development of bi/multilingualism, and the complex sociolinguistic systems of daily life, then they must explore the interface between individuals' life trajectories and the culture and practices of the classroom, the street, the playground, or the home, and how these are linked with national and international ideologies, discourses, and policies.

As for the development of bi/multilingualism, Carroll (2017: 3) makes an appeal to developmental psycholinguists to heed the importance of exposure and input in the study of the acquisition of grammar in multilingual contexts, stating that 'learners' belief systems and identity are not normally part of the analyses of grammarians but they are part of the story of differential outcomes to bilingual learning'. Moreover, she clearly states that 'In short, the realities of bilingual family life are complex and patterns of language use in the home, including patterns of parental language use (studied via recordings), merit detailed examination' (Carroll 2017: 9).

Bringing together important insights from the acquisition process revealing the internal cognitive factors involved, along with insights from interactional use of languages in the family, and family language policies informed by various ideologies, promises to be a fruitful approach to understanding what it means to become multilingual and to act multilingually, and how the two processes interlock. By focusing on the family and not just on the language learner in isolation, we gain a greater understanding of how and why some languages are successfully transferred across generations while others are not, and why some multicultural families use more than one language, or switch between languages, across generations while others do not. In language learning situations involving more than one language, the

family provides a privileged site for examining multilingualism across the lifespan and interdisciplinary research can provide new lenses for examining old questions.

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Chapter 18

Language policy in African higher education: Between dependency and decolonisation

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1. Introduction

In September 2017, the East African Kiswahili Commission held its first conference in Zanzibar, Tanzania, that brought together scholars and policy-makers from the entire region. The Commission, of course, is an arm of the East African Community — a regional economic body of six member nations, Burundi, Kenya, Rwanda, South Sudan, Tanzania and Uganda. The theme of the conference was ‘Transforming the East African Community through Kiswahili’, and the presentations focused on the potential role of Kiswahili in helping the other primary institutions of the Community in fulfilling their integrative and developmental mission. These institutions include the Civil Aviation Safety and Security Oversight Agency (CASSOA); the East African Development Bank (EADB); the East African Health Research Commission (EAHRC); the East African Science and Technology Commission (EASTECO); the Inter-University Council for East Africa (IUCEA); the Lake Victoria Basin Commission (LVBC) and the Lake Victoria Fisheries Organisation (LVFO). Naturally, therefore, the conference touched on a wide range of disciplinary issues, from the legal to the educational, from the economic to the scientific.

Particularly noteworthy about the conference was that all the presentations and deliberations were conducted exclusively in Kiswahili. Speaker after speaker, from the former president Ali Hassan Mwinyi and current vice-president Samia Suluhu Hassan of Tanzania to graduate students at the State University of Zanzibar, related his/her presentation to the challenges facing Kiswahili as well as the opportunities offered by the language in helping the East African Community meet its vision and goals.

The status of Kiswahili as the region’s lingua franca was well articulated and it became clear that many graduate students are already writing their dissertations in Kiswahili. Furthermore, a number of cross-border Kiswahili associations have over the last few years been formed to advance the language. At the conference of the East African Kiswahili Commission, these associations strongly advocated for the strengthening of regional and national institutions so that they could contribute to the socio-economic transformation of Africa and the attainment of Sustainable Development Goals through effective use of Kiswahili and other African languages.

Outside the main conference hall were Kiswahili book displays by various

publishers which included several Kiswahili specialised dictionaries — on computer science, biological sciences, linguistic studies, literary works, etc. At the end of the three day conference, it was clear that Kiswahili had evolved to a stage where it was now well-equipped and prepared to assume the crucial communicative functions in government business, administration of justice, science and technology and, more importantly for our purposes, as medium of instruction in some of East Africa's educational institutions.

Why then is the language not being utilised more extensively by at least some members of the East African Community? Kiswahili is the official language of Tanzania and the medium of instruction of its elementary education. And in 2015, the then President Jakaya Kikwete unveiled the country's *Sera ya Elimu na Mafunzo* — Policy on Education and Training — intended, in part, to introduce Kiswahili as a medium of instruction in Tanzania's post-elementary public education which hitherto was the exclusive domain of English. But this intended extension of Kiswahili's instructional role beyond elementary education continues to be an uphill task in Tanzania. In Kenya, Kiswahili has acquired a new constitutional status as an official language, sharing that role with English and Sign Language. It is also a compulsory subject in primary and secondary schools. But, by all indications, English has continued to overshadow Kiswahili in many official interactions, although a significant amount of code-switching occurs. Uganda, Rwanda and Burundi have all been toying with the idea of giving Kiswahili an expanding role in their societies. Uganda's National Curriculum Development Centre (NCDC) has recently released a new policy that includes Kiswahili as a compulsory subject in the country's secondary schools. In 2016 Rwanda passed a law making Kiswahili its fourth official language, and there seems to be a clear commitment on the part of the government of South Sudan to promote the teaching of Kiswahili and eventually adopt it as one of its official languages (Akwezi 2017). But the overall progress in implementing these policies has been relatively slow. Most ironic of all, the East African Community has the East African Kiswahili Commission as one of its nine primary organs, but is yet to allow the language to pair up with English as one of its official media of business and communication. Today Kiswahili is one of the official languages of the African Union, but has failed to gain similar recognition precisely in the regional organisation of nations where Kiswahili is most widely used.

Here, then, is a case of a language where virtually all the central arguments that have been advanced against the use of African languages as media of instruction in African education do not apply. There is no dilemma of which language to select for educational purposes from the multiplicity of languages in the region, as Kiswahili is widely accepted in both Kenya and Tanzania and is quickly gaining presence in other states within the East African Community. The language has amply demonstrated its capacity for rapid expansion in its technical limbs in various disciplines. There is clear commitment on the part of the publishing industry to continue its efforts to make academic reading material available in Kiswahili. There is even an initiative to form an East African Association of Swahili Publishers to strengthen and coordinate the production of Kiswahili materials and find creative ways of expanding the Kiswahili readership. Much of what is missing is the political will to take that additional step to consolidate and build on the gains already made. How then does

one explain this political apathy when it comes to the promotion of African languages like Kiswahili?

On the flip-side of this language equation are the numerous claims of falling standards of English and French proficiency in African educational institutions. In Uganda, for example, there has been ‘an outcry from different corners, the media for one, and even from the Uganda National Examination Board (UNEB), at the gradually falling standards of English generally’ (Mukiibi 1991: 40). In Kenya too, the fear of falling standards of English has been a recurrent issue in government reports and the media. A 1993 report of the Kenya National Examination Council, for example, notes that ‘the standard of English has been falling, while that of Swahili has shown improvement since it was made a compulsory subject ... in the system of education’. The report goes on to state that students cannot follow basic instructions in English and end up giving irrelevant answers in examinations (*Daily Nation*, 14 August 1993). Similar concerns have been raised more recently with respect to Ghana (*The Chronicle*, 24 August 2015).

Declining proficiency in ex-colonial languages is by no means limited to Anglophone Africa. In Senegal, for example, it has been reported that the ‘proficiency of many Senegalese students in French, the colonial language, is declining and the use of local languages—especially Wolof—is becoming more common on [university] campus and in lectures’ (Marshall 2014). A similar trend has been observed in Malagasy (Ioussouf 2013) among Francophone nations. But far from making policy makers question the wisdom of the continued reliance on ex-colonial languages, this situation of an observable academic decline in English and French proficiency and a rise in Kiswahili proficiency in some East African nations, seems to have strengthened their resolve to push for more English and more French. The psychology of linguistic dependency on ex-colonial languages, if not linguistic fatalism altogether, seems virtually unshakeable.

2. Nationalism: Direct and derivative

Of course, there have been African countries that have taken some steps towards replacing the imperial languages in education. Among these are Tanzania and the Sudan. Under the former president, Julius Nyerere, Tanzania pursued policies of increased Swahilisation deliberately at the expense of English in education, the media and politics. The aftermath of British colonialism in this East African country saw the rise of the nationalism of self-reliance, *Kujitegemea*, buttressed by a socialist ideology of *Ujamaa*. The linguistic expression of this socialist-nationalism was Kiswahili, the common-person’s language of Tanzanian nationhood. To support the expansion of the language, the government set up institutions such as the National Kiswahili Council (BAKITA) and the Institute of Kiswahili Research at the University of Dar es Salaam. Tanzania thus came to distinguish itself as the first sub-Saharan African ex-colony of Britain with a language policy that posed a genuine challenge to the supremacy of English as an imperial language. In short, economic nationalist policies of *Ujamaa* were central to fostering a pro-Swahili mood in the nation.

Another important force that has challenged the centrality of English is the post-colonial politics of Islamisation and Arabisation. This too is sometimes a case of derivative nationalism; in this case promoting nationalist distinctiveness and pride

rooted in religion (Islam). As in the case of the Sudan, the Islamisation policies sometimes have resulted in the reduced role of the imperial language and the promotion of the Arabic language instead. When the country gained its independence from Britain in 1966 English was the language of instruction throughout post-elementary education. Then, in 1969, English was replaced by Arabic at the secondary level, while English continued to be the primary instructional medium at the University of Khartoum, except in subjects like History, Islamic Philosophy and Shari'a. English also served as an important working language in a variety of white-collar professions.

By the 1990s, English in the Sudan began to experience a second wave of existential challenge. Even though Sudanese nationalism has always been a source of pressure for the gradual replacement of English by Arabic, it was during the Islamist period of President Omar Hassan al-Bashir that it faced its greatest threat. By 1996, Arabic had become the medium of instruction at almost all levels of education, including most departments at universities and other tertiary institutions of learning. Only medicine, dentistry and pharmacy continued to be offered in English.

But must African countries turn to forms of nationalism triggered by either socialism or Islamism before they can be stimulated to undertake a linguistic revolution in education? Why is the direct force of *linguistic nationalism* not sufficient to generate linguistic reforms in education? We can define linguistic nationalism as that version of nationalism which is concerned about the value of its own language, seeks to defend it against other languages, and encourages its use and enrichment. Many Africans south of the Sahara are nationalistic about their race, about their ethnicity and often about their land. But nationalism about African languages is relatively weak when compared with India or the Middle East or France. Some of the reasons for this anomaly are explored more fully in Mazrui and Mazrui (1998). What is significant for our purposes is the idea that, because many sub-Saharan Africans are not strong linguistic nationalists, they are seldom resentful of their massive dependence on English or other imported languages. An African politician may speak six or more African languages fluently. Yet, if he or she does not speak the relevant European language, he or she cannot become a member of the legislature. Dr Hastings Banda spoke only English in public and could therefore become the president of Malawi. There is no example in sub-Saharan Africa of a president who is elected to the presidency without a European language. The irony of this dependency is quite manifest during national days where heads of state address citizens, not in the national language, but in a European language fully aware that it is understood only by a minority. And that is partly why recommendations about paying more attention to African languages have often encountered either silent scepticism among black intellectuals or outright derision (Mazrui & Tidy, 1984:314).

It is the above syndrome of self-abnegation that Okot p'Bitek seeks to capture in her poem, *Song of Lawino*, in which Lawino laments that her husband has been 'properly' schooled in English in the ways of the white men. In the words of Lawino (1969: 208):

Bile burns inside me!
 I feel like vomiting!
 For all young men
 Were finished in the forest [of books]
 Their manhood was finished
 In the classrooms,
 Their testicles
 Were smashed
 With large [English] books.

The weak linguistic nationalism, then, made much of Africa especially vulnerable to imperialist linguistic penetration that is facilitated by economic and educational bodies in the service of colonialism and neoliberalism. Through a process of estrangement from the existential self, Lawino sees English-based education as one that has produced ‘docile bodies’, impotent and functionally ineffective in meeting the needs of production and development in their own societies.

The other side of this coin of linguistic nationalism, of course, is alienation, a syndrome that has deep roots in the very structures and substance of the educational systems inherited from Europe. We employ the term ‘alienation’ in the broad Fanonian sense of estrangement from one’s existential self—both psychologically and culturally—as it frames one’s identitarian space. And it is to this dialectic in the African encounter with European colonialism that we should now turn.

3. The legacy of European colonialism¹

There has been some consensus that the primary economic problem in Africa is not structural adjustment of the kind prescribed by the Bretton Woods institutions. The problem, rather, is how to carry out a cultural readjustment. The formal educational systems that came with European colonialism are part of the Western package of modernity. But that package came to Africa with many cultural trappings. By design they have become the greatest purveyors of cultural alienation and intellectual dependency. The pressure now is for some readjustment towards a greater balance between the continuities of African cultures and new forces that have developed or been imposed on the continent. Within education this means making Africa’s schools and universities more skills relevant and more culturally relevant, partly as a way of enhancing their responsiveness to the needs of African people.

One primary function of culture is to provide a universe of perception and cognition, a societal paradigm and a worldview. Thomas Kuhn’s ([1962], 2012) work on the structure of scientific revolutions provided new insights about the process through which scientific paradigms shift, and new alternative systems of explaining phenomena that come to dominate scientific thought. But what about shifts in cultural paradigms? And how are these related to shifts in scientific paradigms?

¹ This section is based on the essay by Ali A. Mazrui and Alamin M. Mazrui, *The African Renaissance and the Seven Pillars of Wisdom: Some educational implications*. In N. Assie-Lumumba (ed.), *African Renaissance and Education*. Dakar (Senegal): CODESRIA (forthcoming)

Religion is often a cultural paradigm in its own right. Copernicus and Galileo between them, by helping to transform scientific thought on planetary movements, in time also helped to change the Christian paradigm of the universe. Charles Darwin, by helping to initiate a revolution in the biological sciences, also started challenging the Christian concept of creation. These are cases in which paradigmatic changes in the sciences also led to paradigmatic changes in culture and, more specifically, in religion.

Historically there have also been cases where religious revolutions have resulted in scientific shifts. The rise of Islam, for example, gave the Arabs, for a while, scientific leadership in the Northern hemisphere—from algebra to astronomy. Puritanism and non-conformity in Britain in the 18th century was part of the background of both a scientific and an industrial revolution—even though some have argued that it is technology which was the precursor of the Protestant Reformation.

But paradigmatic changes are caused not only by great discoveries like those of Copernicus, Newton, Darwin and Einstein, nor only by great social movements like Islam and the Protestant revolution, but also by acculturation and normative diffusion. It is in this sense that colonialism was a major shift in the cultural paradigms of one African elite after another in different territories. Indigenous knowledge systems about crops, health, birth and so forth all became increasingly abandoned in the face of the epistemological culture and paradigms of the West.

At independence, the one paradigmatic change which was necessary for the imported academy did not in fact occur. The missing factor was a change in the conception of the academy itself and what its purposes were. The African academy was imagined using the prism of Europe and its curricula mirrored that of Western institutions. There was little effort to make it relevant and responsive to the context in which it was being implemented. As one observer put it with regard to universities in ex-colonial states, nowhere

has there been any serious attempt to replace them by alternatives capable of meeting the needs of more serious learners or of regenerating deep-rooted traditions of education and scholarship ... Even in countries where such traditions have existed before Europe ... the image and status-giving functions of Western universities seem so internalised by the elites that reforms are generally limited to technical face-lifting operations. (Rahnema 1993: 48)

But the lack of change in the conception and content of the transplanted academy caused a lot of changes in the attitudes, values and worldview of its products. Since the academy was so uncompromisingly foreign in the African context, and was transplanted with few concessions to African cultures, its impact was more alienating than it need have been. A whole generation of African graduates grew up despising themselves and their own ancestry and scrambling to imitate others (Mazrui & Mazrui, 1999: 178–180). Lacking in self-confidence, they were unable to transform the academy to fit the needs of the continent.

To put it bluntly, those African graduates who later became university teachers themselves have on the whole remained intellectual imitators and disciples of the

West. African historians have certainly begun to innovate methodologically as they have grappled with the oral tradition. Experimentation is also taking place with herbal medicine and indigenous musical traditions in some African universities though still at a symbolic level. But, on the whole, academic disciplines in Africa are still condemned to paradigmatic dependency.

A major source of intellectual dependency, of course, is the language in which African graduates and scholars are taught. For the time being, it is impossible for an African to be even moderately familiar with the works of Marx or Ricardo without the help of a European language. *Das Kapital* is not yet available in isiXhosa or Hausa or Kiswahili. In short, major intellectual paradigms of the West are likely to remain unavailable even in a single African language other than Arabic, unless there is a genuine educational revolution involving widespread adoption of African languages as media of instruction.

Of course, it is not only the state of elite closure and alienation that continues to consolidate the Europhonic tradition in Africa. It is also the force of imperial agencies. Whether or not one agrees with Robert Phillipson's (1992) thesis of linguistic imperialism related to the hegemony of English, there is no doubt that the British Council has been a major and influential institution in the continued supremacy of English in African education. The central place that French has occupied in Africa's educational and intellectual spaces would have been severely weakened without the push of the French-controlled Francophonie Organisation. As suggested earlier, then, the alienation of the national elite cannot be separated easily from the wider hegemonic relations arising from the neoliberal order on a global scale.

Some of the oldest universities are in Africa, including Al Azhar University in Cairo and Fez University in Morocco, each of which is over 1 000 years old. While the longest surviving universities in Africa may indeed be in Egypt and Morocco, Timbuktu in Mali, West Africa, also had a vigorous academic tradition for a while in medieval times. On the other hand, some of the youngest institutions of higher learning are also in Africa. In between has been the experience of colonialism, from Cape to Cairo, from Dar to Dakar.

The most pressing academic need is how to transform post-colonial universities from their role as factories of cultural dependency into fortresses of cultural self-defence. It is sometimes ironic because the West learned things from other cultures before the West became hegemonic and then transformed, also sometimes undermined, other cultures. For example, the academic gown of Oxford University had its origins in the Arabian robes in the Middle East. Also, the notion of a *chair* as a position in universities came from a tradition in medieval Egypt for the *alim* or 'learned one' to sit in a chair and the *talibul ilm* or those who are 'seekers of knowledge' to sit on mats around the chair. The literal professorial chair at Al-Azhar University in medieval times became the academic title of the Albert Schweitzer chair in the Humanities at Binghamton University in the second half of the 20th century (Mazrui 1993: 31–32).

However, apart from institutions like Al-Azhar, Fez and Timbuktu, universities in much of the rest of Africa are much more recent and are often the direct result of contact with European colonialism and imperial occupation. And this encounter with Europe, as we have stated above, created new forms of cultural tensions, in the process making universities in Africa instruments for the creation of a westernised

elite. The challenge thus remains of how the African university can generate the skills necessary for modernisation and development without consolidating the structures of cultural dependency inherited from the imperial past.

4. The imperative of a paradigm shift

In order to shift this balance, African societies must be allowed to fundamentally influence the educational system themselves. The primary task is one of creative cultural synthesis. This is the mission of decolonising modernity by seeking cultural nearness to African society and enabling the influence of local society to balance that of the Western reference group.

Advocates of African languages as media of instruction have often taken the UNESCO position that learning is itself enhanced by the use of one's first language. Opponents have often focused on considerations of a practical nature in the context of a globalised world, and states have sometimes added financial cost to the mix. And the World Bank, especially in its comparison between English-based educational instruction in Kenya and Kiswahili-based instruction in Tanzania, has even suggested that educational instruction in African languages may be a liability rather than an asset in educational training (1988).

Our own point of departure is of a different type and is related to the kind of history that Africa wishes to claim and own for itself and its posterity. If Africa seeks to be a player and not just a pawn or a bystander in the stadium of ideas, of economic development, of scientific and technological innovation, then the question of an educational paradigm shift, which would include the centring of African languages in specific ways, is not a matter of choice. It is a matter of urgent necessity. Let us see why.

Ali Mazrui once defined development in Africa as modernisation minus dependency (Mazrui 1975: 200). This is the challenging equation that African societies face. The changes which improve living standards, reduce infant mortality, curtail ignorance and disease, and enhance knowledge of human beings and their environments, are ones which imperialism helped foster. These changes deserve to survive. But those aspects of modernisation which reduce local autonomy, erode local self-confidence and undermine the capacity of Africa to contribute to genuinely shared world culture should be eliminated. In time, the concept of modernisation should become distinct from the concept of Westernisation.

A paradigm shift of the African university would necessarily involve various arenas of intervention. Structures of academic programmes, the content of curricula, the mode of instruction, qualifications for faculty recruitment, and several other factors, will all need to be subject to critical scrutiny and creative engineering. Critical among the necessary transformations is the language of instruction.

As part of an attempt to domesticate the school in Africa, there is the urgent need to introduce African languages as media of instruction at various educational levels, all through a gradualist approach and careful planning (Okombo 2001; Njogu 2003). This paradigmatic linguistic shift may go some distance in liberating African intellectual discourse from its western confines, creating new room for theoretical and methodological innovation. The situation may be compared with the liberation of European philosophy from the fetters of Latin as the medium of philosophical discourse in the eighteenth century. According to Kai Kresse:

Philosophy was now no more principally restricted to a Latin-speaking elite; through a shift in the use of language (which had to do with a shift of power constellation) it opened up for secular topics and social contexts. The educated Latin-speaking elite of philosophers lost its unifying scientific language, but the gain on the other hand was ultimately much higher: in switching philosophy to the regional languages a social interplay and discourse could more directly take place. Academic philosophy was now, at least in principle, more generally accessible to the illiterate, to whom the texts could be read ... (1999: 28–29)

Similarly, a linguistic revolution in the African academy has the potential to generate new spaces for new epistemological inscriptions that would allow new alternatives to emerge as real possibilities for the continent.

In addition to its epistemological and philosophical consequences, the language question in education also has economic implications. Capitalism, for example, has succeeded best where the language of the marketplace has not been too far removed from the language of the classroom. Capitalism has succeeded in those societies where the language of intellectual learning and the language of economic bargaining have not been too distant. In much of Africa, on the other hand, the language of the marketplace (usually indigenous) and the language of the classroom (usually foreign) are indeed distant. Africa has become the only continent in the world which is attempting a capitalist take-off while having such a massive dependence on foreign languages. It is also the only continent seeking to industrialise and transform communities through European languages. If development in Africa ought to be seen as the socio-economic transformation of rural areas, as Claude Ake (1996) has asserted, and considering that indigenous languages are dominant in those locations, isn't the continued use of European languages undermining inclusive socioeconomic transformation?

Among the contrasts between Africa and East and Southeast Asian countries which have been leaving Africa behind in the capitalist race is the linguistic contrast. The language of the marketplace is much closer to the language of the classroom in Japan, Korea, Taiwan, Hong Kong, China, Singapore and Malaysia. Furthermore, the Asian elites use indigenous languages much more than do the African elites south of the Sahara. Is it possible that the success of East Asian and Southeast Asian efforts in the capitalist game is related in part to such linguistic considerations? Has more dependence on indigenous languages helped East Asian economies? (Mazrui & Mazrui 1998: 198–199).

A recent study that essentially confirms the above reading on the interplay between language policy and the economic development is that of David Laitin and Rajesh Ramachandran (2016), in which they explore the impact of language policy choices on economic and human development. Laitin and Ramachandran invoke the notion of structural distance between languages based on language trees to develop 'a weighted measure that calculates the average distance and exposure of local population's languages from the official language' (2016: 457). In a cross-country study involving some eleven African countries and India, they demonstrate that there is a negative relationship between an official language of a country that is distant from the local indigenous languages and the primary indicators of human capital.

Contrariwise, everything else being equal, countries with official languages that are proximate to the other languages used in the society generally fare better in terms of socio-economic well-being. Laitin and Ramachandran (2016: 460) explain this lingo-economic equation in terms of the higher cost involved in ‘obtaining human capital and participating in the economy’ in nations where the official language is distant from the other languages around it as is the case in most African nations.

There is also the interplay between language and the development of science of which the Arabic language provides a good experiential example. In the Muslim world of the Medieval period, science is said to have been ‘practiced on a scale unprecedented in earlier or contemporary human history’ (Dallal 1999: 155). Such considerable resources were devoted to its promotion that ‘until the rise of modern science, no other civilisation engaged as many scientists, produced as many scientific books, or provided as varied and sustained support for scientific activity’ as did the Islamic civilisation.

Underlying this phenomenal growth of science under the Islamic dispensation, however, was the power of language—the rise of Arabic as a trans-ethnic, trans-racial means of communication—especially under the Abbasid Caliphate (750–1258). The scientific movement itself inspired a good deal of linguistic engineering, whereby Arabic became a scientific language, especially through adaptation of terms and borrowings from other languages. On the other hand, the currency of a rapidly scientificating Arabic served as an important stimulus to the growth of scientific culture within the Muslim world itself.

Many important works were produced directly in the Arabic language. But there also arose a conscientious effort to translate scientific works from languages like Persian, Hindi and Greek—in the process fostering new levels of scientific exchange between cultures and civilisations (Dallal 1999: 158). These translations contributed not only to the growth of scientific knowledge available in Arabic, but also to the formation of a scientific limb in the language—a terminological legacy which, of course, ultimately found its way into the languages of the West in the form of words like *algebra*, *alchemy*, *alcohol*, *zero*, among others. The language of poetic elegance and Qur’anic revelation had now become the medium of scientific discourse.

It is not at all surprising, then, that in this period of Islamic history efforts in science went side-by-side with developmental efforts in language. Dallal reminds us that

in addition to religious works, the earliest scholarly contributions among Muslims were of a linguistic nature. Of particular relevance to the later development of science, were the extensive compilation efforts by Arab philologists and lexicographers. The specialised lexicons that were produced ... represent a large-scale attempt at classifying Arabic knowledge. (Dallal 1999: 158)

In other words, the Arabic linguistic revolution was perhaps one of the most important cultural transformations to have occurred within the Muslim world. And this communicative device, especially because it was not limited to the elite, became an important instrument in the stimulation of a scientific culture within the Muslim world of the time.

We realise, of course, that there are major historical differences between the Islamic world of the Abbasid Caliphate and the African realities of the 21st century. In addition, in its momentum for expansion, Arabic impacted on many other African languages, threatening the survival of some and led to the extinction of others. Even today, Amazigh nationalism in Algeria, for example, demonstrates continuing concern of the Amazigh people about the potential loss of their language as a direct result of Arabisation. Nonetheless, our basic argument is still defensible that linguistic engineering and scientific socialisation can be mutually stimulating and mutually enriching phenomena. With the right kind of language policy, it is possible to pursue this lingo-scientific agenda without some African languages posing a threat to others.

A distinction must be drawn between scientific knowledge and scientific culture. Scientific knowledge can indeed be acquired in any language, with English being particularly utilitarian under the current conditions of globalisation. But in the development of a scientific culture, of science as a discipline evolving to become an integral part of a people's cultural system, the employment of an instructional language that is close to other indigenous languages is an indispensable course of action. Much has been made of the idea that 'science' is something out there, universal, above and beyond the dictates of the social forces within which it operates. But as Raymond Wilder (1981) has amply demonstrated through a historical analysis, mathematics is indeed a subculture of the general culture, and its development is often subject to cultural influences. If Africans seek to go beyond the current state of being consumers of scientific knowledge and scientific applications, to becoming players and contributors to scientific knowledge, discoveries and innovations, then the African university must transcend the mere quest for scientific knowledge. It must seek creative ways of making science part and parcel of African cultural systems. Such a paradigmatic shift can only be achieved through an intellectual revolution rooted in the language(s) of the relevant societies. We contend that it is only when a discipline has become part of the cultural system that it can trigger a sense of ownership of its body of knowledge in a way that can generate the sense of confidence necessary in stimulating the creative impulse and releasing the creative potential of a people as a foundation for scientific discovery and innovation.

5. Towards Africanising the African university

Against the above backdrop, then, African universities can play a crucial role towards creating the kinds of linguistic reforms in education that could bolster Africa's own capacity to meet the challenges of a better tomorrow. For one, universities could be active sites of coordinated efforts in developing African languages towards what Neville Alexander dubbed 'the intellectualisation of African languages' (2005: 30), as he suggests with regard to post-apartheid South Africa,

The basic idea is that a university or group of universities would be given the task of developing specific languages such as isiZulu, or isiXhosa, or Sesotho, or Setswana and over a period of 10 to 15 years ... a step-by-step development and implementation plan should be formulated ... such that ... it will be clear when they will be able to be used as languages of tuition in specific disciplines.

The initiative would then be complemented by a strategic plan to use these developments in African languages in the classroom, taking into consideration the specific circumstances of each institution. Rhodes University in South Africa is already providing an excellent model of action under the leadership of Russell H. Kaschula, the Chair of the Intellectualisation of African Languages, Multilingualism and Education Project housed in the African Language Studies Section of the School of Languages in the Faculty of Humanities.

In terms of putting these African languages to specific uses in the classroom, institutions could begin by exploring a variety of bilingual/multilingual options. These would vary from region to region, country to country, and even from one institution to another. For example, we noted how, inspired by an Islamist ideology, Sudan has succeeded in Arabising its educational system. At the university level, however, Arabic is used mainly in the humanities, social sciences, education, law, commerce, economics and related disciplines. English, on the other hand, continues to be widely used in the faculties of medicine, pharmacology, dentistry, science and engineering. Following the lead of the Sudan, there is every reason to believe that Kiswahili, for example, can now operate bilingually with English as an instructional medium in universities in Kenya and Tanzania.

There could also be a bilingual instructional arrangement within a single course. A number of the large undergraduate survey courses, for example, could combine lectures and tutorial/discussion sections. The lectures could still be delivered in English, French or Portuguese, but the tutorials could be conducted in a number of African languages relative to the competence of the students. In one American institution that was teaching Arabic, Kiswahili and Yoruba, for example, the survey course, Introduction to African Studies, allowed students the option of registering in tutorial sessions run in those African languages, in addition to several others conducted in English. A similar approach could be explored in the teaching of some subjects in some African universities. And these tutorial sessions could be particularly useful in field testing the technical registers of the various African languages that have been developed by the coordinated work of several universities.

University admission requirements should also be reformed in the direction of giving new weight to certain subjects of indigenous relevance. Social and cultural anthropology ought to become a secondary school subject, rigorously examinable, and required for entry to university. This should help promote considerably more interest in African cultures in primary and secondary schools. Secondly, admission to a university should include a requirement for a pass in an African language. There were times when many universities required some competence in Latin for entry into some faculties; the African university of the future should require competence, formally demonstrated in an examination, of at least one African language — regardless of the subject that the student proposes to study once admitted.

The African language university admission requirement would, of course, vary from region to region, country to country, and in some case, even from one university to another. In places like Egypt and the Sudan, where the medium of instruction is Arabic (sometimes in a bilingual partnership with English), the choice is clearly Arabic. Among countries of the East African community, for example, that language could be Kiswahili. In South Africa, the requirement could be fulfilled by any of the

official languages other than English. In Nigeria, one of the major regional languages — Hausa, Igbo and Yoruba — could serve this purpose. This implies, of course, that the examinable languages are offered, at least as academic subjects, at the high school level.

The policy of using a select number of African languages in African universities must, of course, be counter-balanced by their potential impact on other languages as a matter of policy. We know that some of the larger languages, like Kiswahili, Hausa, Amharic and Arabic, among others, that have acquired a trans-ethnic momentum and the politico-economic energy that often comes with it, have sometimes developed and expanded at the expense of the languages of minority populations. For African policy-makers, then, the challenge is one of finding creative formulas that, at least initially, would permit the use of a handful of languages in university education while continuing to develop the other languages, promote their use at other educational levels and in some official domains.

The African university should also re-examine the content of its courses, permitting indigenous culture to penetrate more into the university, and non-Western contributions to find a hearing at African universities. Recruitment of faculty will in turn be affected by these considerations. At present virtually all teachers at an African university are expected to have formal degrees from Western or non-Western educational systems. But should there be areas of expertise where lecturers or even professors could be appointed without the degree requirement so characteristic of Western institutions? Okot p'Bitek once compared the recruitment requirements for a university with the electoral requirements for an African parliament. African parliaments have, on the whole, insisted on competence in either English or French before an African could become a member. A candidate could speak ten African languages and still be ineligible for parliament if he did not speak the imported metropolitan language. Conversely, a candidate could speak only English or French, and no African language, not even the language of his or her immediate constituents, and still be eligible for parliament. Okot p'Bitek saw a similarity in the linguistic and formal requirements for a parliamentary career and a university teaching career in Africa:

You cannot become a member of their parliament unless you can speak English or French ... you may be the greatest oral historian but they will never allow you anywhere near their University. Our Universities and schools are nests in which Black exploiters are hatched and bred, at the expense of the taxpayers, or perhaps heartPAYERS. (Okot p'Bitek 1967: 47)

The question which arises is whether there are specialists of oral history in African societies, for example, who could be appointed to university faculties without having a formal degree. Presumably this might be difficult if these oral historians are unable to read and write. A compromise situation would be one in which only those oral historians who can, in addition, read and write in at least one examinable African language at the high school level, might be regarded as eligible. Admittedly, literacy skills are a departure from ancestral ways in many African societies, but even readiness to acknowledge competence, regardless of formal Western-type degrees would be revolutionary in African universities.

In other words, there is a case for broadening the criteria for recruiting academic staff to include both formal degrees and, where appropriate, indigenous skills adequately demonstrated and capable of being effectively utilised on both teaching and research at the university level. Clearly cultural synthesis is at play here, and staff recruitment could reflect the cultural dualism of this hybrid situation. Departments of sociology could have indigenous specialists in oral traditions. Departments and faculties of medicine and preventive medicine could include specialists in indigenous herbal cures. Departments of history, literature, musicology, philosophy and religious studies could allow for the possibility of recruiting skills using a different set of criteria from that which has been honoured in Western institutions. In all these cases, the role of African languages will be enhanced in some way or another.

There is also the need for a diversity of vision. At the broader level of society this means the diversification of ways of perception, sources of expertise, techniques of analysis and so forth. This approach should help an African country diversify those upon whom it is dependent. The thesis here is that excessive reliance on only one alien paradigm is more dangerous for a weak state than reliance on half a dozen other cultural paradigms. Reliance on only the West is more risky for Africa than diversified dependency on both the East and the West.

The diversity of vision, however, must not only come from sources external to Africa. It must also draw from Africa's own intellectual experiences and paradigms. In other words, the vision must be anchored in a twin process of increased internationalisation of the curriculum, on the one hand, and increased Africanisation, on the other hand, comparable to what Ngugi wa Thiong'o and his colleagues at the University of Nairobi once proposed for the Kenya's literature syllabus. But even in a field like mathematics, as Ron Eglash (1999) amply demonstrates, there are great opportunities for inscribing African perspectives and paradigms in areas like geometric algorithms, scaling, numeric systems, infinity and complexity.

Language is, of course, at the centre of this quest for a diversity of vision, for access to a culture and civilisation of a people is highly facilitated by knowledge of its language. The chapter on Language and Culture that appeared in Ali Mazrui's *A World Federation of Cultures* (Mazrui 1976) was partly a demonstration of this interplay between language and intellectual culture. Diversifying the sources of intellectual stimulation and vision in African education might be facilitated by a tripartite language framework, requiring students to have studied three languages by the time of their graduation. Most African students already learn one western language — English, French, or Portuguese. They should also be required to learn, in addition, one African regional language and one Asian language. Of course, the colonial linguistic divide in Africa may necessitate the acquisition of an additional Western language for some: the study of French, for example, for students in Anglophone Africa, and of English, for students in Francophone Africa. The study of a second Western language, however, should not compromise the acquisition of an African regional language and a language from Asia.

Conclusion

In recapitulation, then, we have seen how relatively weak linguistic nationalism, elite alienation and imperial forces have continued to impact negatively on African

intellectual and epistemological formations taking place within the corridors of the transplanted African academy. The situation has called for the domestication of the African academy that would require, in part:

- a) greater political pressure towards the development of Africa-related curricula and the localisation of the foreign component in the curriculum to make it more relevant to the African context; and
- b) the introduction of African languages as media of instruction.

All this, of course, will require a gradualist and planned approach, accompanied by creative synthesis of contributions from various parts of the world.

As suggested earlier, imperial organisations like the British Council and Francophonie Organisation have been critical in maintaining the dominance of English and French as media of instruction in African educational institutions. In both Britain and France, as in several other European countries and in America, there is a growing wave of nationalist insularity, captured in terms like *Brexit* and *America First*. As these nations of Europe become more inward looking, are they likely to curb funding for organisations like the British Council and Francophonie, in time reducing their effectiveness in consolidating the position of their respective imperial languages in the African academy? And if the global reach of these imperial bodies is weakened by the nationalist upsurge in the metropole, will the development provide new spaces and opportunities for (re)centring African languages? Of course, all these are questions that point to a range of possibilities and their answers ultimately remain in the womb of time.

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Chapter 19

Language studies in times of transformation: Multiple perspectives.

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Sally Hunt (Rhodes University) and Mantoa Motinyane (University of Cape Town)*

1. Introduction

This chapter is a contribution by the chairpersons (at the time of invitation in 2016) of the four main language societies of southern Africa to a panel discussion at the International Congress of Linguists 20 (ICL20). They were asked to author short sections reflecting on their own research interests in relation to those of their societies and to pay particular heed to concerns in South Africa for curricular and other academic reforms. Rajend Mesthrie contributes section 2 as Honorary Life Executive member of the Linguistics Society of Southern Africa (LSSA) and President of ICL20; Mark De Vos contributes section 3 as president of LSSA; Sally Hunt contributes section 4 as president of SAALA (Southern African Applied Linguistics Association); and Mantoa Motinyane contributes section 5 as outgoing president of ALASA (African Language Association of Southern Africa).

2. A perspective from sociolinguistics (Rajend Mesthrie)

This is a reflective short section stressing the role of linguistics and particularly sociolinguistics in a changing context for South Africa. Let me dwell briefly on the history of this changing context before turning to the practice of linguistics therein. When Linguistics departments came to the fore in South Africa, mostly after Chomsky, it was to a country very much in the grip of apartheid. This determined who were in charge of the academic societies, who dominated, and who were allowed (or perhaps were qualified enough) to serve as executive members. The post-apartheid era (after 1994) freed things up to some semblance of normality. The internationalisation of scholarship has become possible with the lifting of the cultural (/intellectual) boycott, with academics from the rest of the continent becoming participants for the first time in the local practice of linguistics. Much still needs to be achieved in terms of meeting the challenges of linguistic description, as well as the educational and other needs of a developing and economically polarised, multilingual society. While it has long been known that apartheid was but a particularly intransigent instantiation of an older colonial order (see the novels of J.M. Coetzee in the 1980s), the implications for education are only now being felt. Where linguistics and applied linguistics is concerned, the mainstreaming of African languages remains a desideratum, as the literature on language planning, policy and practice often stresses

(see e.g. the interviews with Neville Alexander in Busch et al. 2014). Alexander and others worked tirelessly towards the cause of uplifting African languages as a means of shifting the power balances in the country. The time may well be right, with a new uncorrupted, multilingual president, who spoke in six languages at his inauguration in February 2018, to rekindle and promote this vision. But there are counter-currents that go against the easy achievement of a braver new linguistic order. In the rest of this short section I will discuss two important aspects of language diversity from my recent research that caution against too confident a narrative emanating from any one approach to the nexus of language, language in society, multilingualism and diversity with inequality. The first aspect concerns English accents in post-apartheid South Africa and how linguists need to navigate carefully in matters of description and labelling. The second concerns language flexibilities of ‘youth languages’, in relation to boundaries, creativity and repertoires.

South Africa’s resistance to colonialism shows up in the maintenance of a large number of Bantu languages, even as many languages of the loose Khoi-San phyla suffered incorporation, endangerment and death. The Bantu languages form the majority of spoken languages, with the formerly official English and Afrikaans being in a demographic minority. However, while languages like isiZulu and isiXhosa are growing numerically as L1s (Mesthrie 2008), English also continues to grow. This seeming contravention of basic arithmetic can be resolved by noting that multilingualism brings its own open-ended numerics. It is as an L2 that English has grown rapidly in the recent decades. Moreover, it is a language of integration among foreigners whether from Africa or beyond (though other languages like isiZulu also play this role). English is *also* growing as an L1 with young black elites now embracing it as a dominant language of a mostly multilingual repertoire. Reports by scholars in Johannesburg and Grahamstown suggest that some parents actively encourage young children’s use of English in the home. These are practices of influential people that form obstacles to the efforts and optimism of the promoters of African languages. But as Neville Alexander insisted, not all parents who ‘demand English’ demand ‘English only’ — many would hesitate to sideline the mother tongues altogether.

In my recent research I have pointed to the ongoing deracialisation of the English language in South Africa, at least in middle-class circles. Previously linguists used labels like ‘Black English’, ‘Coloured English’ and ‘Indian English’ (see e.g. Lanham & Macdonald 1979), but seldom ‘White L1 English’ or ‘Afrikaner English’, even though these had their distinctive characteristics too. Racial labels are problematic if they are taken outside their descriptive linguistic contexts and imbued with stereotypical connotations. I had counselled Vivian De Klerk as early as 1996, when she was preparing her book *Focus on South Africa*, not to use the label ‘ethnic varieties’ for the black, coloured and Indian English alone — that in the South African context ‘white’ was an ethnicity too (and, in fact, split between English and Afrikaans communities). Moreover, I coined the term ‘Cape Flats English’ for the same volume in advising Karen Malan, who approached me with a similar dilemma over labelling and the avoidance of stereotyping in relation to the English of ‘coloured’ speakers in Cape Town. But I was also aware that the term ‘Cape Flats’ was itself liable to stereotyping, and that the Cape Flats had speakers of more than one variety (those of coloured and black speakers, which again showed differentiation amidst overlaps).

This is not to say that linguists were blindly following apartheid's racial classification. Even in the apartheid era we were uneasy about labels, being aware in Cape Town, for example, of overlaps between 'white working-class' and 'coloured' accents. But overall, the rigid control of social networks led to a solidification of the erstwhile softer boundaries pertaining to racial, colonial, social, ethnic and geographic issues. And this separation was prominent in linguistic variation for English. Thus, to some extent, despite overlaps, there were indeed distinct Englishes whose primary division (or first principal component, statistically speaking) appeared to be an ethnic one.

The opening of the Pandora's box of English came with the collapse of apartheid and the opening up of schools to children of all backgrounds (with first preference given to local residents of the neighbourhood). The resulting filtering of black children into the private and nearly private schools led to the initial domination of English norms and forms of knowledge, customs, assumptions and accents. So, is it appropriate to speak of deracialisation? I use the term to register the fact that the prestige English accents are no longer associated with one ethnic group alone. This applies to elite middle-class practices with crossovers among mainly females of other racial backgrounds into the space formerly associated with middle-class white English accents (Mesthrie 2017). An indebtedness to international variationist research is visible in this work; yet local particularities are important too. From a young age, black children entered an Anglo world and mostly excelled in it. Only later did questions and dilemmas arise in the degree of assimilation to the detriment of black values. This theme is played out in the novel *Coconut* by Kopano Matlwa (the title referring to the heroine who allegedly becomes attitudinally white on the inside, while physically black on the outside). This theme robustly recalls Fanon's (1967) 'black skins, white masks' thesis, critiquing post-colonial societies which had too readily followed the powerful and prestigious norms of the older order. My own reading is a bit more nuanced. Young people I interviewed (Mesthrie 2017) did not consider themselves to be behaving in a manner that suggested racial or cultural betrayals. Young black men from the multiracial schools still participated to some extent in more traditional activities associated with initiation and black social networks. And young women, whom I had characterised as using a crossover accent, pointed to the markedness of the traditional black South African L2 English. They considered their own accents to be 'normal' for the networks of their young, deracialising peer groups. Their education and resulting facility in English has afforded young women prominent positions in public life, notably on radio and television. It is my impression that the prominence of black females on television and radio has led them to be the new targets for aspirant young black professionals. In other words, what I described as a crossover accent is now becoming unremarkable. And because black female announcers are adept at pronouncing African personal, place and other names, they carry the right degree of authenticity on national television. Moreover, in matters of content (on talk shows or discussion programmes), they are able to connect with historical, political and social issues better than others. The charge of symbolically assuming white masks is thus too strong. What we have is a class cleavage in terms of having had differential access to the resources of the previously dominant parts of society. It may well be that we are now seeing a post-colonial reversal with the accents of young black females becoming the unmarked

norm in prestige television anchorperson, newsreader and commentator roles. On the issue of labels, see e.g. Van Rooy & Van Rooy (2005).

The second aspect of flexibilities in a multilingual society that I wish to draw on concerns the opposite end of the sociolinguistic spectrum—the informal practices associated with urban youth languages in Africa. Varieties like Tsotsitaal in South Africa, Sheng in Kenya and Nouchi in Côte d’Ivoire are prototypically associated with young adolescent and immediately post-adolescent males playing counter-cultural roles that go against the typical values of family, school, and public life. While there are overlaps with the phenomenon of slang, especially in matters of lexical creativity and metaphoric and metonymic innovations, researchers argue that the term *slang* fails to do justice to the performative aspects of urban youth languages. A ‘first wave’ of South African research on youth languages (if I may borrow Eckert’s now well-known characterisation from variationism) stressed their creativity, innovation and divergences from each other in terms of lexis and the base language of their syntax (e.g. Ntshangase 1993; Makhudu 1995). But claims of autonomy as languages and the growing number of different varieties identified led to a need for closer linguistic analysis, which might be thought of as a ‘second wave’. Finlayson et al. (1998) attempted to characterise the variation in terms of Myers-Scotton’s code-switching (CS) model. Their analysis played down the lexical creativity of tsotsitaals arguing that ‘the difference between Tsotsitaal and Iscamtho and many instances of CS regarding novel lexical items is a difference of degree, not kind’. A ‘third wave’ of research (Mesthrie & Hurst 2013; Brookes 2014) gives the lexical creativities a defining role, while emphasising and demonstrating the close links of the syntax with the colloquial vernaculars of everyday urban life. Rural and standard languages, urban varieties and tsotsitaals are viewed as one interlocking package, with overlaps and divergences. Tsotsitaals are performative registers (of mainly young males) of the rather fluid urban varieties (spoken by all ages of people born in the cities), which themselves diverge from erstwhile standard forms of African languages (while sharing a great deal with them nevertheless). A tsotsitaal register differs from the other registers of an urban vernacular on the grounds of typical users, typical intentions (street play, gang activities, male talk), domains of innovation, as well as the rapid turnover of innovative lexis pertaining to young male subcultures. The attractiveness of its ever-changing lexicon has—till recently—obscured an appreciation of its linguistic and hence full sociolinguistic dynamics.

What are we to learn from this thumbnail sketch of variation in English and urban youth languages? I would suggest that they speak of the need for a linguistically informed sociolinguistics and a socio-politically informed linguistics. Descriptions of English cannot proceed without acknowledging the political complexities of labelling and sociolinguistic hierarchies, and the possibilities of post-colonial reversals. Analyses of urban youth languages have advanced by abstracting away from local particularities to understand their more general systemic properties and relations to the other language forms they co-exist with, and are partly defined by. This may seem an unusual position from sociolinguistics, but I therefore also plead for support for the descriptive and theoretical linguists in our midst. We probably have just enough political theorists, sociologists, media specialists and educationalists in South African academia. But we don’t have a large body of linguists. It is hoped

that ICL20 will help keep the flame of linguistics (including sociolinguistics) burning brightly for years to come.

3. Challenges for linguistics (Mark de Vos)

I have been asked to reflect on the state of linguistics in South Africa, drawing from my disciplinary perspective and that of the President of the Linguistics Society of Southern Africa. I will start by outlining my academic history and interests. Then I will elaborate on the global and national higher education (HE) context that plays into concerns around the number of formal linguists in departments relative to the need for basic descriptive and analytical work as well as applied work. Finally, I will outline why I think a strong formal linguistics tradition is important for transformation.

3.1 My perspective on linguistics

I did my postgraduate studies in formal linguistics¹ at Tromsø in Norway and Leiden in the Netherlands, specialising in syntactic theory. I returned to South Africa to take up a lecturing position at Rhodes University in the Eastern Cape, South Africa's poorest province. I had a sense of dissonance insofar as the context of teaching and learning was profoundly different from my European training in just about every respect. I have remained an active researcher in formal syntax and morphology, but over the years I became aware of the need for formal linguistic applications in basic literacy, among other areas. There is a desperate need for linguists to apply their insights in education, particularly from an empirical, psycholinguistic perspective. I have thus developed something of a dual linguistic personality: on the one hand I identify as a syntactician and, on the other, I identify as a species of applied linguist. I hope that this brief introduction gives you a sense of the subjectivities I will adopt in this paper.

Using a broad brush, I take it that linguistics is the study of human language in all its aspects and that our task as linguists is to equip our students to be sensitive to, and able to describe and analyse, language in our environments. I take this as a disciplinary issue but also, crucially, as an issue of transformation of the linguistic academy. In South Africa, our environments outside of the formal sphere are unambiguously, profoundly multilingual including but not limited to the 11 official languages which are in widespread, quotidian use. There are also multiple additional languages: at Rhodes University, for example, there are upwards of 55 different languages spoken within the close friendship and family networks of my first-year class, not to mention multiple dialects of these. In my view, a major aim of linguistics curricula should be to equip our students to be able to engage with this environment using linguistic tools and that, among these, formal linguistic tools (among others)

1 I use the term 'linguistics' as an inclusive term to cover multiple branches of language study including formal linguistics, general linguistics, applied linguistics and language practice among others. In this paper I will use the term 'formal linguistics' to refer to branches of study focusing on the formal study of the (non-social) architecture of language including but not limited to: semantics, syntax, morphology, phonology, experimental and psycholinguistic approaches to these, etc.

are indispensable to this endeavour.² To that end, there is a clear place in the curriculum for formal linguistic studies in general as well as formal linguistic studies of the languages of Africa in particular.³

There is a clear need for more students with linguistics insights and more research into linguistics generally, and into informal linguistics in particular. For instance, it is common knowledge that reading in the Foundation Phase in South Africa is in dire circumstances e.g. only 1 per cent of learners learning in an indigenous language acquire the minimum international benchmark for reading after three to four years of instruction. What is notable, however, is that reading curricula are often not particularly well informed by solid linguistic description. Curricula and reading materials are often translated baldly from English without taking into consideration that the sequence or content of learning required for indigenous languages may not be identical to those of English; e.g. English has more sight words, and complex vowel grapheme combinations than isiXhosa; on the other hand, isiXhosa has much longer, more morphologically complex words at an earlier stage of reading development. There is also the obvious fact that the standard languages taught in schools often differ markedly from the vernacular (including dialects and new urban varieties) that are used in school communities. Unfortunately, there are relatively few linguists working in these areas and on language description. There is a paucity of descriptive studies of many languages and even fewer of regional varieties. Many of the seminal works are fairly dated (although I acknowledge that language descriptions do not really go out of date, it is also the case that there is always scope for more focused, deeper descriptions). There is a need for solid linguistic descriptions (of morphology, syntax, phonology, semantics, etc.), studies of acquisition and psycholinguistics to allow a better understanding of what needs to be taught and how; of applications of this knowledge to education; development of testing instruments, normed instruments, diagnostic instruments, etc. The key point I am trying to make here is that linguistically informed educational interventions need to rely on a substantial amount of linguistic research and that formal linguistic research is vital to that endeavour.

3.2 The higher education context

Unfortunately, achieving this aim is complicated by multiple, overlapping challenges facing formal linguistics in southern Africa in general and South Africa in particular, including a global and national HE context that presents particular challenges. The #RhodesMustFall, #FeesMustFall and other student and worker protest movements are a testimony to and critique of systemic problems within HE nationally and internationally. While it is common knowledge that decades of underfunding is the culprit for costs being borne by students and staff, it is less often acknowledged that

2 I am definitely not playing down the importance of other linguistic subdisciplines which also, obviously, play a central role in understanding the linguistic environment. However, I want to stick to my brief for this paper in focusing on formal linguistics.

3 I think it is important to consider ‘the languages of Africa’ as inclusively as possible to denote all languages spoken in the environments that our students find themselves in.

the post-secondary sector has been undermined and opportunities for post-secondary education have been steadily eroded e.g. the decreasing availability of internships, apprenticeships, in-service learning, the closure of specialist colleges, etc. has raised the stakes for university education. The long-term solutions to these issues are, in my view, largely structural within the state and the SA economy. Nevertheless, mitigating the effects will be a major challenge for leadership in the HE sector.

3.3 Size matters

One area where sustainability concerns impact the academic project is in the casualisation of academic staff. It is widely acknowledged that professional, administrative and service staff grades are often held to short-term contracts. What is less acknowledged is that the same increasingly applies to academic staff too. There are a number of academic staff who are appointed on short-term contracts, usually without benefits, and who experience significant abuse and uncertainty as a result (e.g. not being informed that their contract will not be renewed until after it expires; not earning pension or benefits while on contract, etc.). We can look overseas to the United States and Britain to see the deleterious long-term effects of this trend: in the UK, it is estimated that about half of all academic workers in the HE sector subsist on short-term contracts. Moreover, the Steven Salaita/Phyllis Wise scandal is only one of several indicators that academic freedom and academic rights are taken for granted and how easily institutions can trample on them.⁴

This has deep impacts on staffing generally and linguistics is no exception. Casualisation leads to the lowering of academic qualifications, difficulty in investing in long-term programmes and curricular continuity, higher staff turnover and, very notably, difficulty in attracting and retaining new staff. It is essential that HE be seen as a prudent and sustainable career option by our students. Unfortunately, the current funding levels (both the number and quantum) for advanced linguistics study such as PhDs does not necessarily leave our students with this impression. Standard NRF funding of around R100 000 per year for a PhD student does little, in my view, to encourage postgraduate study as a serious career option. Consequently, it is widely acknowledged that it is difficult to employ formal linguists because the pool of applicants tends to be relatively small.⁵ It is especially difficult to find local applicants for formal linguistics posts.

Impressionistically, there are probably less than five research-active syntacticians and morphologists in the country; even fewer research-active phonologists; even

4 Steven Salaita had been offered tenure at the University of Illinois in 2014 when his contract was summarily withdrawn after university donors objected to the fact that he had tweeted critical statements about Israeli attacks that killed Palestinian children. In justifying the decision, Phyllis Wise, Chancellor at the time, said that the nature of his expression had been 'uncivil'. The requirement that engagement be 'civil' is particularly threatening to freedom of (academic) expression because of its vagueness and because it does not distinguish viewpoints based on truth or untruth. It thus undermines the ability of academics to engage with important societal issues such as racism, sexism, homophobia, intelligent design, etc. because it might make some students feel uncomfortable to have their views challenged and they might consider such engagements to be 'uncivil'.

5 This also has an impact on representativity within the academy, in line with the Employment Equity Act and more broadly.

fewer research-active formal semanticists as far as I am aware. Perhaps there are others but who are less able to access resource and research networks. Although there is nothing wrong with having a relatively small group of researchers per se it does present particular challenges. This can result in many academics developing international links (a good thing) but can also make it a bit harder to develop productive local research networks of researchers in similar fields. This has impacts on finding research partners, disciplinary mentors for junior staff, reviewers for articles, markers for theses, external moderators for curricula, etc. Despite this, there are positive developments: the joint annual conference of the language associations (LSSA/SAALA/SAALT) is a long-standing and healthy tradition; more recently, the SAMWOP initiative (Southern African Microlinguistics Worskhop) is an annual meeting that is well-attended and brings together formal linguists from across the region. In addition there have been attempts within LSSA and SAALA to explicitly develop disciplinary networks to bring together academics in related fields (e.g. there is a theoretical/microlinguistic special interest group). This demonstrates the importance of a healthy linguistics society in fostering these disciplines.

3.4 Transformation of linguistics?

I believe that consideration of the state of linguistics and the linguistics curriculum is a question of transformation too. Transformation is an issue that has been on the table a long time but in many ways the conversation is still in its early stages. In particular, the ideological commitments of different conceptions of transformation remain points of tension that need to be worked through, e.g. transformation as Africanisation; transformation as decolonisation; transformation as globalisation; transformation as radical economic empowerment, etc.⁶ I believe that such debate is healthy and necessary. Moreover, there may be discipline-specific solutions, depending on the ontological commitments of different fields of study. In 2015 and again in 2018, LSSA and SAALA hosted two workshops on Transformation in Linguistics that looked at these issues and resulted in a written commitment to the transformation project and a set of resolutions to enable it.

Transformation is a difficult topic to deal with because it is intrinsically complex, prone to oversimplification and to grandstanding. We often tend to become defensive because of our own vested interests, our own identities and because we have an acute appreciation of the very real political power of these discourses. I know that our first impulse is to be defensive and to justify our practice. I would like to see us, as linguists move beyond a defensive posture to a place where we can allow ourselves to be challenged by transformation, where we can discuss these issues openly with honesty, mindfulness and integrity.

When it comes to our discipline and curricula, transformation is difficult and calls for nuanced and long-term solutions. From the outset, I want to make clear that I don't want to adopt a deficit perspective and there are areas where I believe linguistics may be more transformed and potentially transformative than we have hitherto realised.

⁶ In this brief outline, and in keeping with my brief, I choose not to affiliate myself with any particular ideological transformational approach, but merely reference some of them here.

The questions I provide here are not intended to highlight our inadequacies, but rather to guide the discussion. There are, of course, many different theoretical perspectives and many different ways we could approach this. However, I would like to focus on just two inter-related facets of what is underlyingly extremely complex.

Question 1: To what extent are our students adequately prepared to understand their linguistic world?

From a student's perspective, when a student graduates after having spent three, four or six years studying linguistics in our departments, we could ask to what extent have we actually equipped them with the tools to understand the languages they speak and the linguistic contexts they navigate every day. My personal opinion is that while I think we do this admirably for the hegemonic languages, English and Afrikaans, we may fare less well with the other languages of our context. Certainly, we need to ask ourselves if it is sustainable to continue to graduate students from South African departments who lack a basic understanding of the structure of indigenous languages: who do not know what a noun class is, who have never explored the syntax or phonology of an indigenous language, who have never been encouraged to learn another African language, who have never seen, let alone analysed, a text or discourse in an African language.⁷ If we look at the contents of our journal, of our conference and of the topics studied by our graduate students, what do we see? On the one hand, yes, they are all reflective of language as used by us in our context — and this is a good thing. And yet, there is asymmetry: some languages are represented more than others. We need to ask ourselves which African experiences are being written out of the record?

To this end, we could ask ourselves: To what extent are our curricula uniquely African and to what extent do they reflect African realities? By this I mean, when a student studies linguistics in one of our departments, to what extent do they get an educational experience that is unique to our context, that cannot be obtained in another country? This is not to say that we may only teach parochial topics, but rather to consider the impact our broader curricula may have on our students' learning and on our engagement with our linguistic world.

I think there is plenty of room for hope. One of the advantages of linguistics is that our students all come with language attached. So it is very possible to embed our teaching and curricula in local linguistic context. We should be drawing on our students' intuitions, grammaticality judgements, judgements about language structure and their understandings of semantics and discourse. And we should be doing so with the languages that our students speak. It is in this area that I believe formal linguistics can play an important role in enabling a student-centred pedagogy that takes students' own knowledge seriously as part of the co-construction of knowledge in the classroom.

Question 2: To what extent are our methodological and analytical frameworks contextualised in our context?

There are concerns in many disciplines about curricula that are excessively focused on the North, on Eurocentric and Anglocentric understandings. It may also

⁷ By 'African' I intend anything of or relating to the continent of Africa. I am therefore avoiding using it as a racial designation in this paper.

be the case that we misrepresent theory as being Northern when it is, in fact, a global product. In my view, ‘Chomskyan Theory’ is often misrepresented in this way: in my own field, Syntax, there are a variety of formal, generative frameworks (not all of which are Chomskyan). But for many years, these have been enriched by languages and researchers from across the globe from Azerbaijani to isiZulu contributing to multiple theoretical components such as binding, case theory, agreement, grammatical functions, etc. If one looks at phonological theory, we see a similar pattern: for instance, autosegmental phonology was driven to a very large extent by tone languages from Africa and Asia and by researchers from those places. This is not to say that there aren’t injustices, e.g. instances where local consultants and authors are not given due acknowledgement, where researchers expropriated data without feeding back to communities; or where men appropriate research by women, etc. Clearly this too is part of the historiography, although it is no different to similar exploitative practices in other disciplines such as mathematics, medicine, etc. In my view, presenting such global frameworks as merely ‘Northern’ is a caricature at best. At worst, it denies our students role models, it discourages them from seeing themselves as contributors to the global knowledge project and it encourages them to see their own agentivity as essentially irrelevant to theory making. Therefore, we also need to contextualise our research frameworks in African research and African understandings; to tell the stories of our disciplines with honesty and integrity while making room for African understandings to challenge and change the narrative.

In this section, I have touched on a number of areas that I consider important to formal linguistics in particular and to linguistics in general. We operate within a global and national HE context that makes it difficult to attract and retain staff, particularly students who might want to enter academia. Nevertheless, formal linguistics remains an important part of the linguistic ecology of southern Africa because of (1) the continuing need for linguistic descriptions and analyses, (2) the need to apply these to educational and other contexts and (3) because of the importance of formal linguistics to the transformation project, particularly to equipping students with the tools to understand their multilingual linguistic world.

4. Applied linguistics (Sally Hunt)

In scholarly work in applied linguistics in South Africa, there has historically been a strong emphasis on sociolinguistic issues of language contact, including language planning and language teaching—chiefly of English to speakers of local languages and particularly in the 1980s and 1990s. Since democracy, there has been an increasing shift towards a focus on multilingualism, of all its facets and implications, and now, in the last decade, increasing examination of ideological issues. In this section I will trace this shift via a consideration of the patterns in journal articles published both in South Africa and about South Africa, and conclude with a call for more attention to the analysis of the ways in which language both constructs and constrains our experience of the world we live in.

These emphases on language contact, language teaching and multilingualism, together with the more formal focus on descriptive work, are products of the South African social and political context of the last century. The multilingual context provided opportunities for, and indeed necessitated, both formal descriptive work,

and research into language learning and teaching. While various sociolinguistic studies of the languages and varieties of the region were undertaken, such as Rajend Mesthrie's research on Indian English, analysis of the ideological function of language, (critical) discourse analysis, was limited to particular scholars with an interest in the area, such as Christine Anthonissen at Stellenbosch or Hilary Janks at Wits, rather than forming a coherent project with a particular topic-based or theoretical focus, and has only rather more recently started to feature prominently in conference programmes and journals.

These trends and shifts over time are revealed in the publishing patterns of both local and international journals. Reviews by Lubbe (2002) and Makoni and Meinhoff (2003; 2004) confirm the emphasis in South(ern) African journals on microlinguistics, with Van Rooy and Pienaar (2006) discerning a shift in the early years of this century towards more socially contextualised macrolinguistic areas. In contrast with Lubbe's review, spanning 1965 to 1999, Van Rooy and Pienaar (2006) found a substantial increase in macrolinguistics and applied linguistics from 2000 to 2005. This included domains such as corpus linguistics (which had not been found at all in Lubbe's earlier survey) and language sociology. In addition, several areas that were relatively prominent in the 20th century were noticeably reduced in the latter period: 'terminology, child language acquisition, psycholinguistics, neurolinguistics, bilingualism and diachronic linguistics' (Van Rooy & Pienaar 2006: 197). More recently, from 2006 to 2017, trends in *Southern African Linguistics and Applied Language Studies*, the journal of the Linguistics Society of Southern Africa and the Southern African Applied Linguistics Association, confirm Van Rooy and Pienaar's impression of a recent gradual shift towards ideological concerns. Of 356 articles published in total, 77 articles were tagged with the keyword 'discourse', and 26 refer to critical discourse analysis. This represents a substantial increase from four in six years (Van Rooy & Pienaar 2006), to 26 in 12, with the latter figure constituting 7.3 per cent of all articles published in the journal in that period.

This relatively recent emergence of the relationship between ideology and language as an area of concern for South African scholars is also reflected in international journals: a search for 'discourse' from 1998 to 2015 in the international *Journal of African Languages and Linguistics* resulted in no hits for articles in English that used critical discourse analysis as the dominant research framework, with the bulk of the work taking a formal descriptive approach (Dedaic & Hunt 2015). Indeed, it is the perceived policy of this journal to focus on these issues alone, despite explicitly welcoming contributions on all aspects of African language studies on its website (<https://www.degruyter.com/view/j/jall>), which has the effect of sidelining other areas of linguistics. In journals dedicated to critical studies of language there is a parallel in the relative absence of South(ern) African authors. From 2005 to 2015, only 11 articles dealing with South African texts were published in two prominent international journals specialising in the critical analysis of discourse: the *Journal of Language and Politics* (JLP) and *Critical Discourse Studies* (CDS) (op cit.). JLP had five articles in a 2006 special issue on the Truth and Reconciliation Commission (TRC); and two more by southern African researchers considering local texts. CDS published only four articles since 2004 featuring South Africa, including two dealing broadly with the TRC from a 2009 special issue on

collective memory (ibid.). While *Discourse and Society* published a total of 13 articles on South Africa over 25 years, eight of these were by scholars outside the country and focused on the representation of South(ern) Africa in foreign media, notably the United Kingdom and the United States (Dedaic & Hunt 2015). A similar pattern was found in fifteen years of *Discourse Studies* with three articles reporting on the South African context, of which two took a critical stance. Clearly, there is little evidence in these publishing patterns of a concern by southern African scholars with the critical study of discourse.

This historical pattern is, frankly, surprising, given South Africa's history and the centrality of language to the country's political problems. I would like to conclude this section by commenting briefly on some of the CDA work currently being done in South Africa and arguing that this is an essential element of applied linguistic work, at this time and in this country. Internationally, critical discourse analysis is accepted as part of the linguistics teaching programme, especially in the United Kingdom and Europe. Specialist conferences and journals on the critical analysis of texts emanate from these centres. In South Africa, courses on CDA have been offered at many universities, and have been for decades, often centring around a particular staff member and his or her students. For example, at the University of the Witwatersrand, Hilary Janks, located in Applied English Language Studies, has published over 50 articles, many of them with a critical linguistics orientation and an educational application. More recently, Tommaso Milani (2015), while in the Linguistics Department at the same university, has unpacked issues of gender and sexuality in his critical analyses, and built up a cohort of strong research students in the area. At the University of the Western Cape and then Stellenbosch University, Christine Anthonissen focused on the Truth and Reconciliation Commission (TRC) and Kay McCormick also did work in this area (see e.g. Anthonissen 2007; Blommaert et al. 2006). UWC now has Zannie Bock who is also interested in the TRC and especially in the construction of identity in discourse (Bock 2011). Rhodes University has a long tradition of critical discourse analysis, beginning with William Branford (1967; 1980) including the ideological analysis of texts in the curriculum from the mid-1980s. An ever-growing body of work in this tradition is done by current staff at the university, Ralph Adendorff, Ian Siebörger and Sally Hunt, and their students, with emphases on SFG/APPRAISAL, Legitimation Code Theory and gender, respectively (see e.g. Hunt 2015; Siebörger & Adendorff 2015).

In an age where information is central, and misinformation abounds, a time of fake news and post-truth, the critical analysis of texts of all kinds is increasingly important. Shifting one's trust for reliable news and views from the newspaper to television to the multiple internet genres that peddle information appears to have been seamless for many: 'I saw it on YouTube/Facebook/Twitter, so it must be true' is not a joke. As citizen journalism devolves the responsibility for disseminating information onto the general populace, so too the proliferation of information means that every citizen should be a critical consumer of language. The responsibility for fact checking and the interrogation of assumptions now falls to the readers and viewers. As professional discourse analysts, it is our duty, our professional and personal obligation, to use our training and experience to pass our skills on to others, and to offer the insights our analysis yields to colleagues, to students and to the

general public. Our particular context in South Africa is brimming with opportunities to examine social inequality and uncover how it is legitimised and perpetuated ideologically via language, thereby defusing it. The textual construction of race, an obvious and sadly still salient aspect of identity, together with ethnicity, class, language group, gender, sexuality, economic status and education level, and many other labels we use to divide us, are all elements which deserve attention, and which would contribute to the emancipatory goal of CDA. There is much work to be done in this increasingly recognised area of applied linguistics in South Africa.

5. A perspective from African languages (Mantoa Motinyane)⁸

I have been assigned the task of giving a perspective on African languages as a field of study today, with reference to my own scholarly interests. My background and training is in theoretical linguistics, specifically syntax. The focus of my PhD thesis (Smouse 2010) was on control verbs in Sesotho and how this phenomenon contributes to an understanding of the various interfaces that are at play (morphology and syntax in this instance). The second source of my scholarly background is based on the fact that much of what we have come to understand as African linguistics emerged out of comparative and typological studies based on a combination of literature (both written and oral) and work from the translation of the Bible into various African languages. As a result, we cannot talk about an African language perspective without briefly explaining its origins. This section will therefore focus on the earliest study of African languages in general, followed by the emergence of the scientific study of African languages, then turn to sociolinguistics (which receives attention in another section here) and finally the area of psycholinguistics in African languages, which is currently my primary area of focus.

Linguistics in African languages as a field of study in southern Africa is in its infancy compared to other parts of the world. The picture outside of Africa is much more elaborate as much of the work on African languages has been carried out elsewhere. Much of what we have come to understand about African linguistics is still very much clouded by the work of early missionaries who came to various parts of Africa as part of their mission to spread Christianity. One of their immediate challenges was how to translate the Bible into the various vernaculars without any kind of writing systems, formal grammars or dictionaries. It is therefore not surprising that the earliest written forms of African languages (at least in southern Africa) were those of scriptures and word lists. Given that the missionaries came from different parts of the world (for example Germany, France, Belgium, Britain and the United States), their early works are grounded in the various colonial languages, making access limited to speakers of the languages being studied. Despite this challenge, their contribution cannot go unnoticed.

Much of the early work on African languages in southern African has been on comparative linguistics. Wilhelm Bleek (1862) wrote *A Comparative Grammar of South African Languages*, Meinhof (1906) published *A Comparative Grammar of Bantu Languages*; while Guthrie (1967) published four volumes on comparative

⁸ Formerly published as Mantoa Smouse .

studies of Bantu languages. This trend in comparative studies was broken by Greenberg (1915–2001) whose work on synchronic linguistics laid the foundations for implicational typological universals, which continue to dominate debates on the connections between linguistic distribution, geography, history and cultural evolution as well as how these typological universals might cast some light on the language faculty and in turn constrain grammatical theories. The bulk of this type of work however, has been carried out in other parts of the world.

The area of African linguistics, as we understand it today, emerged during the era of the British-born missionary, Clement Martyn Doke (1893–1980). Following in the footsteps of his predecessors, Doke took the work on African languages a step further by establishing and encouraging scientific studies of translations and publishing of creative writing. His position as editor of the journal known as *Bantu Studies* (1921–1941) and subsequently *African Studies* (1942–) contributed much to this growth in African linguistics. Although much of his contribution today is seen in literature, he remains the champion of the scientific study of language in southern Africa. Doke's prominent works include the standardisation of orthography as well as the unification of the dialects with the hope of standardising the Shona languages of Zimbabwe. The findings of his 1931 report were accepted and form the basis of the Shona orthography in use today. Debates are still raging in this area — see the ALLEX Project (2005), which is a reprint of the 1931 report, with an introduction by Herbert Chimhundu. Doke also co-published a *Grammar of Southern Sotho* with Mofokeng in 1957, which remains one of the most elaborate and extensive descriptions of Sesotho.

Following the promotion of African linguistics through the *African Studies Journal*, other works on the morphology and phonology of Bantu languages emerged (see e.g. Lestrade 1938). The trends in phonology, morphology, syntax and semantics continued in the *African Studies Journal* until the establishment of the *South African Journal of African Languages* (SAJAL) in 1981 whose publications were more on formal linguistics and literature. This trend has continued and it remains the main mouthpiece for research on African languages. Early works in SAJAL include the analyses of various syntactic constructions, book reviews in various African languages (1987, Vol. 7, Sup. 1), lexicographical studies, as well as a focus on sociolinguistics in the early 1990s (see e.g. a special issue on sociolinguistics in SAJAL (1992) featuring articles by a range of local and international scholars).

The work described so far has been on general trends in African linguistics alongside literature. There were other areas that received very little attention and I hope to put the spotlight on one of those areas. The area of language acquisition (first language) has been, and remains, a neglected field. To date, only a handful of studies have focused on language acquisition, despite the contributions and impact these studies make on other areas such as language in education, language change, speech and communication disorders, and early childhood development. The pioneer in the field of language acquisition in Bantu languages is Kunene (1979) who documented the longitudinal acquisition of siSwati. This work was followed by a number of cross-sectional studies on noun class system agreement, passives and the acquisition of relative clauses. Many of the acquisition studies have investigated how some aspects of phonology, morphology and syntax are acquired, with emphasis on the age of

acquisition through studies of production. None of these studies focused on the issue of comprehension within the acquisition process.

As a response to this gap in the field, Gxilishe et al. (2009) and Smouse et al. (2012) studied children's comprehension of subject agreement among isiXhosa-speaking children aged two to six years. These studies involved testing whether (given the subject-verb agreement information) and the absolute pronoun (Smouse et al. 2012), children can decipher the subject or object represented by the agreement markers. The results of these studies concurred with those in other languages by confirming the asymmetry between production and comprehension. In order to try and account for the asymmetry in production and comprehension, and how our knowledge of linguistic theory can contribute to explaining this asymmetry, Smouse (2013) adopted Reuland's (2001) models of levels of derivation, as well as Chomsky's economy principle to account for the observed asymmetry in production. Research on asymmetry in language acquisition fuelled inter-disciplinary work between communication disorders and psycholinguistics in Bantu languages. I now turn to this area of study.

The first outcome of this research has been a series of studies documenting the development of phonology in isiXhosa-speaking children aged three to six years (Maphalala et al. 2014), in Setswana (Mahura & Pascoe 2016) as well as in Kiswahili pre-school children (Gangji et al. 2015). The studies were carried out in the context of understanding how the linguistic benchmarks observed in these studies can help in the development of assessment and interventions tools that are sensitive to the linguistic differences observed in comprehension. Another offshoot of this area has been on documenting specific speech and language difficulties in African languages. Given the evidence of differing language details that influence the course of acquisition, and the scarcity of such research alongside the little that is known about language difficulties in African languages, the development of resources for speech and language assessment and therapy (Pascoe & Smouse 2012) is an urgent desideratum. Assessment and therapy rely heavily on linguistic milestones as well as on research based on specific speech difficulties in speech and language development. This is therefore a call for more work in this area.

The second offshoot of this research area has been a focus on how this research can be relevant to the majority of South Africans. To this effect, a team of linguists from four institutions in South Africa, UCT, UNISA, UFS and UKZN, headed by myself, embarked on a very ambitious research project funded by the National Institute of the Humanities and Social Sciences (NIHSS). The aim of this project is to combine work on psycholinguistics with literacy studies. The team views literacy as a process requiring basic cognitive skills as well as using those skills in ways that contribute to socio-economic development. As a starting point, the team's focus is on an understanding of literacy and the set of skills underlying it, as well as characterising current approaches in this area. Whereas the 'phonic' approach continues to dominate the discussions on literacy, attention has recently been turned to cognitive sciences where some aspects of the human brain processes are studied as a way of understanding the processing of information as it relates to sound, word recognition, vocabulary and spelling. The second area of focus for this team is on the understanding of the actual texts (via textual analysis) that are used as part of early childhood development as it

applies to language. Texts come in different forms, including different levels of language. The language used also differs depending on the style, dialect, social class and ideological content. By analysing texts in this manner, we hope to understand how sociopolitical practices construct and maintain existing power structures. The team is of the opinion that their work will contribute meaningfully towards the deconstruction of the current trends in literacy development that have been based on cultural and linguistic norms that are foreign to African languages.

In conclusion, I iterate that the field of first language acquisition as it relates to African languages is in its infancy in South Africa. Little work exists beyond a few studies that look at the development of language among children who speak Sesotho, isiXhosa, isiZulu, Setswana and Kiswahili. It is, therefore, mandatory that we strengthen the focus in this area before we can talk about cognition skills when we have not yet established the norms for these languages. This research team, because of the combination of linguistics and literature, will continue to work on developing these norms for the acquisition of African languages. These norms are a prerequisite for any kind of work that looks at cognitive development as it relates to language.

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