

The Evolution of Language: Hints from Creoles and Pidgins

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1. Introduction

The subtitle of this chapter should not be interpreted in the way suggested by Bickerton (1990, 1995, 2002) or Givón (1998). Creoles can inform our research on the evolution of language not because there is anything empirically exceptional or unusual about the way they emerged (see, e.g., DeGraff, 2003, 2005) but because the multitude of facts that we have learned over the past couple of decades about their development has drawn our attention to the kinds of ecological factors that should have informed any sound genetic linguistics (Mufwene, 2001, 2005, 2008). Much of recent research has shown that these new language varieties are largely a legacy of 17th and 18th-century European vernaculars spoken in the colonies around the Atlantic and in the Indian Ocean. They have reintegrated, on the model of gene recombination in biology and under the influence of various African substrate languages (and sometimes with elements imported from these), structural materials from diverse varieties of their lexifiers¹ (see, e.g., Chaudenson, 2001,

1. It is for want of a better short term that I use the term *lexifier* in this essay. Contrary to the tradition in creolistics, I agree with Chaudenson (2001, 2003) that the term inaccurately suggests that creoles have inherited only most of their vocabularies from the European languages they have evolved from. Bearing in mind that the default in language learning is “imperfect replication” (Lass, 1997), many of the structural features of creoles can be traced back to the nonstandard vernaculars spoken natively or nonnatively by Europeans with whom the slaves or contract laborers interacted in the plantation colonies. Although they are largely novel recombinations, with modification, of structural features from various nonstandard dialects, they are also useful windows into the way many, if not most, destitute Europeans who migrated to these colonies spoke.

2003 in the case of French creoles). They also emerged gradually, illustrating the piecemeal way in which selection resolved competition in language contact settings where the language of the economically powerful (among other factors) had selective advantage.

Quite significantly from the point of view of evolution, the literature on creole continua reminds us that languages as communal phenomena are constructed from idiolects, that boundaries are artificially imposed between varieties identified as dialects, sociolects, or languages,² that they do not evolve uniformly, and that the conventionalization and normalization of their structures are the outcomes of the tacit negotiations that take place among their speakers as they endeavor to communicate successfully. The literature also informs us that languages have no lives independent of the communicative activities of their speakers, that population structure (see below) bears significantly on the differential evolution of a language, as patterns of social interaction determine which particular structural variants are more likely to be favored by which particular speakers, depending on location, age, gender, social class, ethnicity/race, frequency of interactions,³ and a host of other “ecological” factors.

In this chapter, I capitalize on some of these factors that bear on language evolution, especially structural variation and the nature of the relevant feature pool, the ensuing competition, and factors bearing on selection from among the variants, on normalization (as emergence of norms) and on speciation (as emergence of new language varieties from the same ancestor). I show how they can inform us indirectly about the phylogenetic evolution of language in mankind. I submit that nothing about the latter topic can be explained without factoring in the ecology of the population of

2. This state of affairs is conspicuous from the traditional identification of creoles with the basilectal varieties and the assumption that the acrolectal varieties are separate languages altogether, although the relation of basilects to acrolects is similar to that of nonstandard to standard varieties in the European languages that creoles have evolved from. Even the continuum, made more evident by intermediate range of variants identified as “mesolect(al)” can be identified in the relevant European languages too. Clearly, the distinctions lie more in the politics of classification than in the reality of evolution or language practice, as is obvious from, e.g., Irvine (2004).

3. Wang et al. (2005) link this to the “rate of effective contact.”

interacting individuals, those aiming at communicating with each other but not necessarily intending to develop a language.

I argue that human languages are not designed phenomena; the term “design feature” used since Hockett (1960) to single out those structural and functional characteristics that distinguish them from animal means of communication is a convenient misnomer. I submit that languages are emergent phenomena with their patterns arising from repeated spontaneous attempts by individuals who share spatial and social space, and must negotiate terms of coexistence, to communicate with each other (see also Steels, 2000, 2003). Although invocations of adequate mental and physiological infrastructures account for humans’ and their hominin ancestors’ ability to produce and copy, or learn, some communicative strategies, these factors do not explain how norms and communal languages emerge. Like Wang, Ke, & Minett (2004), I submit that social interaction is an important ecological factor that had a major role to play in the evolution of language, as much in the conventionalization of particular languages as in their speciation from what Ruhlen (1994) calls “proto-language” and others have identified as “proto-world.”⁴ However, it will be necessary to explain briefly how and why creoles have led me to the hypothesis I articulate below.

2. The Normal Evolution of Creoles and Pidgins

I subscribe to Alleyne’s (1971) position, later elaborated in Chaudenson (1979, 2001, 2003) and Mufwene (2001, 2005), that creoles have not evolved from erstwhile pidgins. A close examination of colonial history and of the geographical distribution of creoles and pidgins around the world should have disputed the traditional view a long time ago. The fact that the morphosyntax of incipient pidgins is simpler than that of creoles, the state of affairs on which linguists have capitalized, is not sufficient evidence for assuming that creoles evolved from antecedent pidgins. It simply reveals that pidgins have

4. This is different from what Bickerton (1990) identifies as “protolanguage,” which I also discuss below.

evolved in a manner very similar to most Indo-European languages over the past 3,000 years or so, from a more complex to a simpler morphosyntax, with fewer and fewer inflections and more and more periphrastic markers of especially TENSE, ASPECT, and MOOD. Incipient pidgins represent extreme such cases in accordance with the ecological conditions of sporadic contacts under which their lexifiers were learned (see below).

It is not even certain that creoles emerged after the incipient pidgins from which present-day expanded pidgins (e.g., Nigerian and Cameroon Pidgin Englishes, and Tok Pisin) have evolved. The evidence for the putative West African Pidgin English (WAPE) invoked by Dillard (1972, 1985) to infer, misguidedly, the ultimate pidgin origins of African American English dates only from the early 18th century (Mufwene, 2000). So does the “Guinea Coast Creole English” invoked by Hancock (1986) to support his Afrogenesis hypothesis of Atlantic creoles.⁵ It is not even evident that there was ever a generalized WAPE spoken in all English trade colonies up to the 18th century. As pointed out by Huber (1999), some Portuguese variety (pidgin or other) had functioned in the region as a universal trade language used, at least initially, by all European traders along the West African coast.⁶ This is consistent with Ostler’s (2003) observation that Portugal, which had in fact prevailed as a leading maritime and trade power until the 17th century (i.e., before the England, France, and Holland did), had succeeded in imposing its language as a trade and diplomatic language on the African coast and in Asia, all the way to Japan. Although this does not necessarily entail that all later pidgins relexified from the Portuguese Pidgin

5. In fact, as pointed out in Mufwene (2000, 2005), this variety need not have been identified as a “creole.” It was spoken in permanent trade forts between the European lançados and their children (who must have spoken their fathers’ language varieties natively), their African “spouses,” and the grumettoes who traded for them in the interior. These were settings in which interactions between Europeans and non-Europeans were not sporadic and the latter had sufficient continuous exposure to the European language to approximate it in a form that was not extremely reduced. They must have spoken what Chaudenson (2001, 2003) identifies as “closer approximations” of the European vernacular.

6. I comment below about the role of interpreters in the early contacts of Europeans with non-Europeans during their colonization of Africa, the Americas, and Asia.

that was spoken on the West African coast (*pace* Thompson 1961 and Whinnom 1965, who also claimed that it must evolved by relexification from the Mediterranean Lingua Franca), colonial history supports the possibility that traders from other European nations would have simply learned the prevailing trade language of their business. This would have been similar to usage of “trade Latin” in the Hanseatic League during the Middle Ages.

It is quite telling that the term *pidgin* did not emerge until either the late 18th century (Bolton, 2000) or the early 19th century (Baker & Mühlhäusler, 1990), soon after the English established a trade colony in Canton, over a century after they had established trade forts on the West coast of Africa in early 17th century. The term emerged two centuries later than the first written attestations of the term *creole* in Spanish and Portuguese, in the late 16th century, for non-indigenous people born in the colonies. That was also a century later than the first attestation, in the late 17th century, of the term for a variety of Portuguese spoken in the present-day Casamance region of Senegal (see Mufwene 1997 and the references cited therein).

Bolton (2002) attributes the emergence of Pidgin English to the intensification of trade with China and the ensuing shortage of interpreters, who had initially been trained by missionaries as proselytes and had spoken closer approximations of native English. As more and more people traded directly with the Europeans in a language they were not familiar with, it was restructured to the pidgin level, i.e., a contact-based language variety whose structures where reduced to the minimum.

As explained in Mufwene (2005), this is an explanation that can apply to Africa too, about which colonial history reveals a significant role of interpreters during the early Euro-African contacts. During the earliest explorations, the Portuguese had usually taken some Africans (often from the royal family) with them back to Portugal, leaving some of their crew behind in earnest. They would return with them a few years later and these L2(second language)-Portuguese speakers would later function as interpreters. During the later colonial ventures, the Europeans would recruit Africans from the earlier colonies of the northwestern coast as auxiliaries (and therefore interpreters, in some naïve way of course) in the colonization of the southern parts.

In Hawaii, American missionaries first taught English to members of the royal family, who would later become instrumental as interpreters during the colonization and the economic exploitation of the islands. In all these contact settings, pidgins would emerge when contacts between the non-Europeans and Europeans (or Americans in the case of Hawaii) increased; there were too few interpreters, and more and more non-Europeans assumed they had learned enough English or the relevant European language to communicate with the traders. As the trade expanded, more and more interactions among non-Europeans in the European languages would lead to their extensive divergence away from the originals and the erosion of their morphosyntaxes.

Klein (2003) also reminds us that Europeans, especially the Portuguese and Spaniards, had enslaved Africans as domestics in Europe before they imported slaves to the New World. Some of these were probably used as “interpreters” between masters and *bozal* slaves in the New World, although the nature of initial communication between the Europeans and their future interpreters remains very mysterious. The question arises in fact about the first homesteads in which the Europeans lived together with their African captives. What is certain is that the contact ecologies were not those of sporadic contacts and minimal interaction typically associated with the development of pidgins. The very limited rate of slave importations during the homestead phase, due to shortage of capital, created a contact situation where the resident populations grew more by birth than by immigration. As pointed out by Chaudenson (2001, 2003), Creole children of the homestead phase most likely did not speak creole varieties, which would develop during the later, plantation society phase. White and Black Creole children of the homestead phase spoke native *koiné* varieties of the European vernaculars (i.e., new varieties combining elements from the different dialects in contact), variable as the latter were from one speaker to another.

Overall, if creoles did not develop earlier than pidgins lexified by European languages, they developed concurrently, but certainly not later. They also developed in settings where pidgins did not, and

probably could not, emerge. In the Caribbean, pidgins identified as baragouins are reported to have emerged in the contacts of Europeans with Native Americans but not with Africans (Prudent, 1980; Wylie, 1995; Chaudenson, 1992, 2001). Overall, both creoles and pidgins evolved by basilectalization, from closer approximations of the European colonial vernaculars to varieties more and more divergent from the originals. As I observe in Mufwene (2001, 2005), no language-restructuring mechanisms have been identified that are peculiar to either creoles or pidgins. As also argued by many creolists since Arends (1989), the evolution process seems to have been gradual. The evidence of creole continua suggests in fact that they have always been internally variable, reminding us that the term *idiolect*, so central but still under-exploited in modern linguistics, denotes individually variable varieties. What is attested in creole speech communities is just a more evident case of the inter-idiolectal variation that can be observed in any language community.

I articulate in Mufwene (2008) the most important reasons why I do not share Bickerton's (1990f) position that pidgins, from which he assumes creoles have evolved, can especially inform us about his putative "protolanguage," that presumably critical transition from pre-language to modern languages in human phylogeny. The first is that unlike our hominin ancestors who developed that protolanguage (whose empirical validity I question below), the modern humans who developed pidgins, especially during trade contacts between Europeans and non-Europeans from the 16th to the 19th century, were speakers of modern languages. This is an important difference from the late *Homo erectus* or the early *Homo sapiens*, who presumably started from something quite different from a modern language. The creators of pidgins were therefore able to draw on fundamental properties of Universal Grammar (presumably the biological endowment for language) and/or on particular resources in their respective languages in modifying the relevant lexifier—unintentionally, in their attempts to communicate—to the minimal structures associated with pidgins. Note that pidgins still have lexical and syntactic categories (such as NOUN, NOUN PHRASE, VERB, and VERB PHRASE) and, despite variation among them, individual

speakers systematically adopt SVO or SOV syntactic structures, although they do not produce complex structures with especially adverbial subordinate clauses.

Although Bickerton (1981f) argues that pidgins lack (complex) syntax, what he has really shown is that the attested syntax is inter-idiolectally variable. This simply means that the incipient pidgins have not conventionalized their structures to the extent that expanded pidgins have. In other words, the grammars used individually by their speakers, which are otherwise internally systematic, have not converged in ways observable in language varieties of stable communities, where mutual accommodations have made the idiolects more similar to each other.

With regard to variation, the difference between pidgins (or creoles) and other languages is just a matter of degree of convergence among speakers. Otherwise, reality shows that no two speakers behave in identical ways; therefore, they probably do not use identical grammars. Aside from the fact that speakers are no more identical mentally than they are physiologically, the main reason for inter-idiolectal variation is that each speaker has had a unique history of linguistic interactions with members of their community and has been exposed to a different subset of primary linguistic data from which they could work out their respective individual grammars. It is mutual accommodation through regular interactions with each other that over time make their systems similar to each other or perhaps just enable them to interpret each other's outputs. This is what I mean by convergence of idiolects, which Steels (2000, 2003) calls system "coherence." As he correctly observes, the convergence is necessary in order for inter-individual communication to be successful.

We must note that, contrary to Saussure's assumption about the conventional nature of language (also preserved in much of today's formal linguistics), members of a speech community communicate with each other not because they possess identical systems of their language (which is only a construct) but because they are able to interpret each other's utterances successfully (Mufwene 1989). Linguists should not brush under the rug the fact that members of the same speech community sometimes misinterpret each other

even under conditions involving no noise or fatigue, a condition that is corroborated by Wang et al.'s (2004) modeling of language evolution. It is like two computers communicating with each other but sometimes experiencing translation problems.⁷

Regarding the simplicity of pidgin systems, one thing they reveal, just like child language does for that matter, is that ontogenetically human languages develop from simple to complex structures. Phylogenetically, human language also appears to have evolved from rudimentary to complex structures (see below), although the histories of modern languages over the past 5,000 years or so also shows evolutions from more complex to simpler morphosyntax. In the case of children, the structural simplicity is apparently correlated with cognitive maturation. The story for pidgins, however, is that of initial attempts by individuals or groups already speaking mutually unintelligible complex languages to establish communication among themselves. It involves establishing communicative correspondences between the languages the relevant individuals have been speaking and what they are targeting jointly. It also involves knowing what part of information packaging can be done away with and what cannot.

What would be particularly informative in this case, in relation to the phylogenetic evolution of language among humans, is knowing how gradually a communal norm (some sort of social consensus, so to speak) emerges out of the multitude communicative strategies initiated individually by members of the interacting community (see also Wang et al., 2005). Where the emergent norm is intra-communally variable and where more than one communal norm emerge, it must also be informative to know what particular ecological factors bear on this variation. These include Population Structure, which determines who interacts with whom and how

7. Wang et al. (2005) make a similar observation: "The fact that two people are talking with each other by no means leads to the conclusion that they really understand each other, or that they share the same grammar and linguistic representations." Much of this has to do with the fact that naturalistically, the default and dominant way around the world, language is learned by inferences (see also Steels 2000, 2003) and not by explicit articulation of meanings, oppositions, and rules, as in a language class.

frequently, who is most likely to accommodate whom, the setting of the social contact and what motivates the contact, the time period of the contact in the relevant populations' history, the respective demographic strengths of the populations in contact, and, where a significant demographic disproportion obtains, which proportion or segment of the majority population interacts with the minority and powerful population.

As shown in Chaudenson (1992, 2001, 2003) and Mufwene (2001, 2005, 2008), these factors have borne as much on the evolution of European languages into creoles and pidgins as in other cases of language evolution. In this chapter, I focus on creoles and pidgins not because their emergence has been exceptional or unusual but simply because they have prompted us to do better genetic linguistics, paying closer attention to ecological factors that influence language birth and death, beyond the structural changes that have traditionally interested historical linguists. We could thus also pay attention to founder effects, generative entrenchment, periodization, scaffolding, and patterns of population growth.

3. Hints from Creoles about the Evolution of Language

The development of creoles and pidgins reminds us of the fact that languages are really not transmitted, at least not in the way that genes are transmitted and inherited in a biological species, in which offspring inherit passively what is transmitted from their parents. As pointed out in Mufwene (2001), languages are learned by unguided and ecology-specific inferences from the performances of current speakers or signers. (See also Steels, 2000, 2003 for a similar position.) To make things more complicated, there are for every learner typically multiple model speakers or signers, who influence the learning process in different ways. Under ecological pressures that vary from one learner and one setting to another, each learner selects from various models variants that can cumulate to become part of his/her productive idiolect. One must also bear in mind that there is no perfect replication in the learning process, which is itself

subject to mental, perceptual and other physiological peculiarities of the learner. Like that of other languages, the emergence of creoles and pidgins is largely the result of imperfect replication in settings where contact with other languages increases the extent to which the outcome of the appropriation of the target language is ultimately more divergent at the communal level, particularly when the majority of the learning population is adult.

Equally noteworthy about the emergence of creoles and pidgins is the significance of periodization. Not every member of the relevant population appropriates the target at the same time or from the same speakers. The nature of the target changes from one generation to the next. In the case of creoles and pidgins, the gradual restructuring of the target away from the metropolitan norm led to situations where later learners had as model speakers whose knowledge was already divergent from that of the earlier generations of speakers. Many of the models were no longer native speakers and spoke varieties influenced by their own substrate languages. Repetition of this process over generations made the emergent variety more and more divergent, especially in settings where the learning process was exclusively naturalistic, the proportion of native speakers of the European variety kept dwindling, and either the non-European population was growing more by importation of adults than by birth in the case of creoles or the language kept spreading locally, among non-Europeans needing it as a lingua franca. Reiteration of this individual imperfect language appropriation process within a novel population in a setting exogenous to the target language accounts for the usually dramatic way in which creoles and pidgins diverge from their lexifiers. Although many of their features are selections from 17th and 18th-century colonial European vernaculars, they have been recombined into the new systems in novel ways, often influenced by substrate languages.

However, we should focus now on how the norms of these new varieties emerged. Although, we may not ever be able to answer this question fully, we now know about how to conceptualize it and think of elements that should help us answer it. As in any other population, the individuals who collectively and cumulatively produced creoles and pidgins never did this according to explicit “rules of

engagement” or a particular script that they all followed uniformly (Mufwene, 2008). Each of them faced communicative challenges individually and solved them by reacting adaptively, drawing on what they had heard others say successfully, and innovating and keeping track of their successes and failures while capitalizing on past linguistic experiences, but not necessarily producing identical utterances or using identical structures. Pressures to communicate successfully led them to accommodate each other (not always in the same direction) and thus to reduce differences in their linguistic and other communicative productions.

The above process, which may be referred to as competition and selection (Mufwene, 2001, 2005, 2008), is a protracted one. It is complicated by the fact that no individual communicates with all members of his/her speech community, as also noted by Wang et al. (2005). Communication is typically within networks, within which individuals do not communicate with each other with equal frequency anyway. The networks overlap and some individuals clearly belong in more than one (social and professional, for example), and this particular kind of overlapping interactive structure affects the ultimate outcomes of feature competition. Speakers or signers receive competing influences. Particular ecological factors (such as more successful communication and being accepted by a particular group) determine which particular variants should be favored over which others. It is the specific of the dynamics of selection that remain obscure.

No population, any more than a particular individual, ever had the foresight of planning a linguistic system (idiolect in the case of individuals) that they would use for future communication. The reality about language is that individuals face communicative challenges in the present and try to resolve them, taking advantage of past experience on every occasion. They adapt their strategies as new communicative needs arise and their adaptive responses contribute cumulatively, with new symbols and/or structures, to the emergence of a(nother) language (variety). Quite often, interactants do not know how other members of their linguistic communities have solved similar communicative challenges and innovate *ex nihilo*. Sometimes their innovations are the same as, or similar to, those of others, but

some other times they are quite different, thus producing variation in the linguistic feature pool.

Within networks of communication, members often save energy by copying each other's innovations/productions, not necessarily actual utterances (*pace* Croft, 2001, though this happens too, especially with words and phrases), but grammatical strategies identifiable in the constructions. Competition, as unequal weighting of variants, is most obvious at the level of copying and spreading, where copiers and learners do not always emulate the same forms or structures. This is where we can ask, "How does a communal norm arise?" or "How does a communal language variety normalize?" We must bear in mind that the variants that are not preferred are not necessarily driven out of the feature pool; they are often only relegated to a minority or marginal status. This much has been learned from the emergence of creoles and pidgins as applicable also to the emergence of, say, the Romance languages, and quite likely the emergence of norms in any language community.

The above observations must constrain the kinds of assumptions we can entertain in addressing the subject matter of the phylogenetic evolution of language. It is absolutely important that we conceive of communal languages not as organisms but as species (Paul, 1880/1891; Mufwene, 2001; Steels, 2000, 2003), to which the idiolects of their speakers or signers contribute overlapping features (interpreted for convenience as the same, e.g., the pronunciation of words with only minor phonetic variation), overlapping systems, and variation. Members of the same linguistic community do not all innovate the same features nor to the same extent. Some function more as copiers and spreaders than others. For reasons of individual skills, owing to mental and physiological variation, the copiers seldom replicate their models; they usually include modifications, minor or significant ones, subject to a variety of ecological factors which drive some aspects of evolution. Below, I focus only on communicative adaptations that can be claimed as noteworthy milestones in the phylogenetic evolution of language.

The literature to date abounds with evidence for the conclusion that the evolution of language must have been gradual. For example, along with Lieberman (1984, 2002), MacWhinney (2002a, 2002b),

Li (2002), Fitch (2002), Jackendoff (2002), and Wang et al. (2005), we need not assume that the emergence of speech (involving the production of phonetic sounds), which must have occurred during the time of *Homo erectus*, between 1.5 million years ago (mya) to 150,000 years ago (kya), if Bickerton (1990) is correct, overlapped with that of vocalizations which apparently occurred 5–7 mya, before the separation of the *Homo* line from other primates. Not even did the descent of the larynx, which, as part of the organic infrastructure that made speech possible, coincide with the emergence of the latter. Speech was really made possible by a combination of other subsequent evolutions, including the reshaping of the skull, especially the basicranial structure; the growth of the brain, particularly the cortex and the Broca's area (which controls the muscles involved in the production of gestures and speech); and changes in the shape of the tongue and the structure of the mouth. As these modifications of the human anatomical structure were not concurrent, and the emergence of speech (about 500 kya, according to Corballis 2002a, 2002b) need not have coincided with that of syntax, I submit, as in Mufwene (to appear), that there is no compelling reason for conjecturing that the emergence of language was as abrupt as Bickerton (1990ff) claims. It does not even seem empirically justified to posit his notion of "protolanguage" characterized as lacking the following set of features which he associates with modern or "true language":

Infinitely recursive processes; the binding of anaphors and the traces of moved constituents, "proper" as well as ordinary; case assignment; the processes by which null elements are identified; constraints on movement; adjunction, conjunction, and the embedding of constituents; not to mention a host of technical concepts such as "scope", "valence", "c-command", "bijection", "subjacency", (...) "quantifier-float", "extraposition", "exceptional case marking", "preposition stranding", "chains", "parasitic gaps", and many more that, doubtless to the reader's relief, will not be discussed here (Bickerton, 1990, p. 188).

Consistent with typological variation, many modern languages lack some of these features, such as case assignment, movement,

preposition-stranding, parasitic gaps, extensive use of null elements. Be that as it may, there is no reason for assuming that all the sounds in the phonetic inventories of particular languages emerged concurrently, nor was there necessarily a particular comprehensive set that emerged wholesale in either Bickerton's "protolanguage" or Ruhlen's "proto-language." If it is true that larger units such as words and syllables emerged before the actual phonetic sounds, then it is more likely that phonetic inventories evolved gradually, as hominins developed more and more complex culture(s) and it became necessary to make more lexical distinctions. This particular evolution followed from the complexification of the hominin's brain and his representational capacity. Despite Bickerton's (1990, p. 185) arbitrary characterization of "protolanguage" as consisting of "negators, question words, pronouns, relative time markers, quantifiers, modal auxiliaries, and particles indicating location," one must also wonder whether all these features evolved concurrently. If they did not, as seems more likely, then we must ask why this particular stage of the evolution of language is more significant than any other.

The question of the normalization of either Bickerton's "protolanguage" or Ruhlen's "proto-language," the initial modern language from which today's human languages have evolved, cannot be addressed independently of another one: Did language evolve, gradually of course, within one single group of hunter-gatherers (the dominant life style of the time) and others simply copied it, or did different groups (concurrently) develop various embryonic linguistic systems and these became more similar as different groups interacted with each other before the dispersal from eastern Africa? (See Wang & Minett, 2005 for an alternative wording of the question in the context on monogenesis versus polygenesis.) If language emerged, piecemeal, as seems quite likely, is it plausible to assume that the members of each community gathered regularly, apparently around their campfire in the evening, and planned their "protolanguage"? Or is it more likely that as particular individuals felt novel communicative needs, they innovated in ways reflecting their current mental developments and anatomical structures? Since members of their respective groups or networks were equipped with similar anatomical and mental structures, they were ready and able to copy such innovations, typically with modification, which led to

variation. Of course we cannot overlook the variation, perhaps more conspicuous, which also arises from different interactants innovating in different ways to meet similar communicative needs, especially when they are not aware of others' innovations. As contact brings individuals together, the emergent feature pools carry more and more competing variants and therefore variation.

It is certainly convenient to imagine that, once they were equipped physiologically and mentally to communicate linguistically, our hominin ancestors would have agreed to develop a uniform and homogeneous system so that they could use it in their interactions. However, the conjecture is far from being realistic. It does not factor in the fact that even modern humans are mentally, physiologically, and culturally different from each other, in various ways and to different extents. They do not develop the same skills or techniques at the same time, nor do they innovate the same solutions to the same problems. Although it is probably still accurate to assume that all linguistic systems are equivalent, in the sense that they can satisfy the communicative needs of their users and can be adapted to meet new communicative needs, the details of their architectures still differ in some significant ways, as it has become increasingly obvious from sound typological research on the structures of modern languages.

The evolutionary scenario that seems the most compelling is that suggested by the gradual emergence of creoles and pidgins. That is, the one that factors in inter-idiolectal variation and according to which present-day creole continua date from the earliest attestations of these language varieties (Lalla & D'Costa, 1990) if not from the earliest Euro-African contacts at the trade forts of West Africa and the homesteads of the New World and Indian Ocean (Mufwene, 2005). When it comes to communication, every individual innovates when they must; otherwise they find it more advantageous to copy forms or strategies used successfully by other speakers or signers. They innovate mostly when they have not heard or seen anybody else express the meaning they intend to convey. In so doing, they rely on the power of analogy, drawing on resources they have already accumulated, as is obvious from cases of grammaticization.

From a population studies perspective it seems misguided to assume the whole eastern African cradle of mankind to have

consisted of one mega-village, as this view is incompatible with the hunter-gathering culture of our hominin ancestors. We may thus not be able to answer conclusively the phylogenetic question of whether there was one single initial linguistic system that was gradually developed by one group and was copied with modifications by other groups that came in contact with them or by earlier learners, or whether various initial linguistic systems emerged almost concurrently in different communities. Whatever happened, one cannot ignore the role of variation in Ruhlen's "proto-language." Aside from the same kind of variation that is observable in any modern linguistic community, the same question arises that Trubetzkoy (1939) raised about Proto-Indo-European: was it a single language or a cluster of related languages spoken by populations that were (racially and) culturally related?

In other words, how realistic is it to posit one "proto-language" spoken by the migrants out of eastern Africa about 60–50 kya? Assuming it was homogeneous, can successive mutations and innovations alone account for the present-day linguistic diversity? Given some fundamental properties that account for the structural unity of all modern languages, wouldn't it be more realistic to assume that if there was one "proto-language," it must have been internally variable and different groups took different subsets of variants with them? The migrants would thus have innovated and diverged from the original variable "proto-system" only under the constraints of the materials that could be scaffolded (see below) to produce present-day typological diversity. Alternatively, it can also be assumed that the seeds of present-day diversity must lie in the variation among the different languages spoken by the earliest migrants from eastern Africa.

If Cavalli-Sforza (2000, p. 153; 2006) is correct in hypothesizing that linguistic diversity as we know it today is the ultimate consequence not only of population dispersals but also of sequences of later contacts and admixtures of both people and their languages, then there is really no compelling reason for assuming that Ruhlen's (1994) "proto-language" consisted in one single language, let alone that it was internally homogeneous. As noted above, such an assumption would be incompatible with the hunter-gathering lifestyle

of early *Homo sapiens*. The sparse populations migrating out of eastern Africa need not have spoken one single language (variety) centuries after speech had emerged.

The above discussion does not apply to Bickerton's "protolanguage," because he assumes a "catastrophic" evolution, characterized by a sudden leap from prelinguistic to linguistic communication, regardless of whether "protolanguage" must be conceived of as a transition between the two modes of communication or as the beginnings of linguistic communication. I argue in Mufwene (to appear) that the paleontological evidence about the phylogenetic evolution of the *Homo* line has been accumulating against the conjecture that syntax and other modules of modern language evolved abruptly rather than gradually and cumulatively. Lieberman (2002) and Fitch (2002) in particular submit convincing hypotheses about the gradual evolution of the human vocal apparatus and neuro-anatomical structure to discourage hypothesizing that language emerged abruptly.

On the other hand, since the publication of his *Language and Species* (1990), Bickerton has privileged the representational function of language over the communicative one, arguing in *Language and Human Behavior* (1995) that language had particularly enhanced the human capacity for complex thought. The fact that great apes are unable to learn human language and therefore enhance their capacity for complex thought suggests, on the contrary, that it is the complexification of the human mind that enabled the production of language. The fact that language has made it possible for humans to enrich their experiential memory without actually living the experience itself, what can be characterized as a "world-creating capacity," appears to be a consequence of the social, communicative aspect of language, which, through its symbolic aspect, enables them to talk about their individual experiences. This is also facilitated by humans' ability to take each other's perspectives and incorporate them in their own discourse and their representations of the world (see McNeill et al., 2007). It is not clear that (many) animals can do this. Yet is obviously in this kind of interaction that the conventionality, or what McNeill et al. (2007) identify as the "shareability" of language, arose. This is the property that enables members of a linguistic

community to use more or less the same symbols and construction patterns to convey what for all practical purposes can be referred to as the same lexical or propositional meanings.

Systematicness has traditionally been invoked as one of the “design features” of human languages. However, it must clearly be distinguished from conventionality. Systematicness enables individual speakers or signers to be consistent, keeping them ideally from using the same symbol for more than one denotation or relation. Polysemy is thus a consequence of a speaker or signer not being systematic or, more often, of several speakers or signers having used the same phonetic string or gestural combination for different denotations. With time, the competing uses spread and escape the action of selection; they settle within the linguistic community.

It is not so much the consequence of inconsistency as of the fact that different speakers or signers in different places (and at different times) initiated different uses. Such an evolution is consistent with the idea of competing innovations discussed above, to which I return below. Polysemy also arises from what is known in studies of grammaticization as layering, when older usage continues to coexist with the later, “metaphorical extensions.” Polysemy is usually not a nuisance when discourse context disambiguates the way the symbols and/or structures are used. All this can happen thanks to conventionalization of usage, as members of the same linguistic community control inter-individual and, to some extent, inter-group variation so that they can understand each other. They align their respective ways of communicating with each other within the same network and indirectly within the same linguistic community, reaching what Steels (2000, 2003) calls “system coherence.” Variation persists longer between those who do not belong in the same network and therefore communicate less frequently with each other.

The same social mechanisms that produce polysemy also account for synonymy, a situation in which two or more symbols or structures are used for more or less the same meaning. Speakers or signers in different places and at different times initiate different symbols or structures for the same or similar meanings. It is when users of the different symbols or structures come in contact with each other that they become aware of the variation and must select

one of the competing alternatives for successful communication. Given so much (possibility for) variation among individuals and between groups, the following questions arise. How does a language normalize to a point where some of the variation disappears or speakers find the remaining variation normal at the exclusion of the variation introduced by non-members of their community? And is it possible to speak of the emergence or evolution of language, instead of that of languages, in mankind?

The same situations of competition and selection which have operated in recent cases of language evolution (Mufwene, 2001f) must also have always applied since the initial stages of the phylogenetic evolution of language. A variant may be preferred to another because it has been heard or seen more often, is simpler to reproduce, or more cost-effective (being less complex and/or involving less energy); or because it is associated with speakers who hold a higher or more prestigious status in a community (e.g., the band's leader); or, in the case of population contacts, because it is associated with a group that is dominant demographically, economically, or politically; or because of any number of reasons that are structural or social. Variants are said to be in competition when they are weighted differently by their (potential) users in terms of preference. Selection occurs when decisions made spontaneously by different users during their communicative acts cumulate to help one or some of the variants prevail over other alternatives.

Sociolinguists have described this social process as mutual accommodation, in which individual users of a language learn each other's symbols and structures and eventually wind up favoring only some of the variants and abandon others. The name is obviously less important than the fact that there are not as many variants of a symbol (ignoring phonetic variation) or of a syntactic construction as there are speakers or signers. Mutual accommodations are the social mechanisms through which selection operates.

The name is actually less important than the fact that every generation in a community does not invent their own language but learns, albeit unfaithfully, the system being used by the older members. This is simply a matter of expediency. So, languages evolve not because every generation decides to invent a new system

but simply because no new user learns the current system faithfully and because, every now and then, speakers or signers will, out of necessity, exapt some current symbols or structures, or invent new ones, to convey novel ideas. Successful ones introduce changes in the current system.

As noted above, the innovations are specific not only to the occasions which trigger them but also to the individuals who author them. As the innovations are copied by others and spread around, competition arises between symbols or structures intended for similar communicative functions. As long as we deal with the same modality, viz. speaking or signing, we can thus assume that conventionalization and normalization in the phylogenetic evolution of language occurred in the same way as in language evolution in modern history, through competition and selection, with some of the variation preserved as normal. As the populations disperse geographically and/or segregate socially (the effect of population structure), the competing forms and structures may specialize gradually, possibly leading to language speciation and to typological diversity.

On the other hand, assuming like McNeill et al. (2007) that communication by gesture and speech evolved concurrently as parts of the same system, there are other questions that we cannot dodge. For instance, why has speech evolved to produce so many different languages, which may be used independent of gestures (as different from sign languages), whereas the latter cannot be so used? Why are signed languages, which have apparently evolved from gestures, statistically less commonly used than spoken languages? They appear to function worldwide as backup alternatives to spoken language, among or with speakers who cannot use speech. Are the answers for the underdevelopment of gestures the same as those for the preference of spoken language over signed language?

Givón (1998, 2002) has addressed these questions in some ways, arguing that, with bipedalism, speech offers some selective advantages over gestures. For instance, this evolution has enabled humans to communicate and carry objects or do other things concurrently, representing an improvement in human capacity to interact with his physical and social ecology. Speech also enables humans to communicate even when they cannot see each other,

such as in the dark or when there is a barrier between them. Some scholars claim that voice can carry farther than one can see from distance. I would like to add that to the extent that speaking involves some sorts of internal gestures with the “speech organs,” the activity is more energy-efficient than gesturing, at least in terms of space used and the amount of information that can be transmitted within the same period of time, when communication is compositional rather than holophrastic. The main point I wish to make from this very brief review is that all these considerations constitute ecological factors that bear on selection from among competing variants for the same communicative functions.

An important dimension of competition and selection is that, as noted above, new users find it more cost-effective to adopt the extant system and adapt it to their communicative needs than to develop a new one from scratch. In the case of incipient pidgins, emerging under conditions of sporadic contact (therefore of limited exposure to the target language) and of minimal communication, the structures of the lexifier are reduced to a bare skeleton under the influence of the languages previously spoken by the speakers. This explains why they have often been defined as “broken languages”. In the case of creoles, where the lexifier is being appropriated under conditions of regular exposure to it, the system remains relatively complex, though it is restructured in markedly divergent ways. The systemic divergence of the emergent creole is due to recombination of forms and structures from different dialects of the lexifier and to the concurrent selective hybridization of the latter with some of different languages it came in contact with, although structures of the lexifier are privileged (Mufwene, 2001, 2005; Aboh, 2006). *Pace Bickerton (1981f)*, no creole has developed its system *ex nihilo*. I submit that, at least in kind, much of the same exaptations of current communicative devices observed in the emergence of creoles and pidgins has also occurred in the phylogenetic evolution of language at least up to the emergence of modern languages. In both cases, forms and strategies already in use are exapted for new functions, although more conspicuous innovations are also enabled by the extant communicative system. Because different individual speakers or signers, and even groups, innovate in varying ways, competition and selection also apply.

Much of this expansive phylogenetic evolution of language can be discussed from the point of view of scaffolding as most explicitly articulated by Wimsatt & Griesemer (2007). As argued above and in Mufwene (to appear), I submit that modern human language (spoken and signed) has evolved gradually and incrementally, thanks to changes in the anatomical and mental structures of the Homo species and the increasing complexification of its interactive social life. (See also Wang et al., 2005 for a similar position.) Although bipedalism freed the hands for gesturing, we must note that it still took over 2 million years for communicative gestures, the ancestors of signed language, to evolve since the emergence of the Australopithecine hominin, just about the same time it took speech to emerge. This suggests that the hominin brain still had to evolve the relevant structures necessary to develop the necessary physiological skills and mental power to produce and use language. That is, some mental capacity to communicate intentionally had to evolve before our hominin ancestors felt the need to exapt some of their anatomical structures and physiological capacities to meet their communicative needs. Both internal and external scaffolding came into play here.

From a language-internal perspective, note that the ability to vocalize and gesture, which appear to have evolved quite early (as suggested by other primates' ability to do the same), was coopted early to develop spoken and signed symbols. However, the increasing complexification of the hominin mind called for a more and more complex communicative system, as different hominin communities endeavored to solve their communicative challenges. Responding to this need, language would have gradually evolved from a presumably primitive referential symbolic system to a more and more complex one thanks to the incremental emergence of an increasingly complex syntax in the way hypothesized by Jackendoff (2002). It may have started as a minimal referential system that was primarily reflexive, as among other primates. Then it would have evolved into an intentional symbolic system, with minimal world-creating power, to express feelings and wishes and to describe particular states of affairs about their environments.

The initial symbolic system may have consisted exclusively of labels identifying and directing attention to different entities in and states of the environment, including the hominin themselves.

Soon the need to convey more information about the environment would have arisen, leading to the distinction between NOUNS and VERBS, with the former used to identify arguments and the latter to express relations between them or simply to predicate ACTIVITIES and STATES about the referents of the nouns. Ways of identifying person deictics would also facilitate more informative expressions of intentions, desires, advice, and the like. With the increasing complexification of hominin cognition, it would thus also have become necessary to specify reference in more precise ways and to situate predication in time, a property that has been identified as displacement and found lacking in other animals' means of communication. This evolution would have entailed the emergence of nominal and verbal specifiers to express, for instance, NUMBER, CLASS/GENDER, PERSON AND NUMBER, and TENSE/ASPECT. It would have occurred most likely after the cognitively more complex hominins had developed ways of situating themselves and their experiences spatially and temporally, through non-personal deictics (e.g., "here", "there", "this", "that", "those", "today", "yesterday", "tomorrow"). It would also become necessary to situate reported events and states or expressed intentions or desires relative to each other, which would have called for a more and more complex syntax, starting with coordination, serialization, and/or subordination. There is indirect evidence for this conjecture in the ontogenetic development of language (more specifically in L1 "acquisition") and in the expansion of pidgins into structures that can function as vernaculars and meet day-to-day communication needs in a stable population, the so-called "expanded pidgins".

There is an important external dimension of scaffolding that cannot be overlooked, viz. social interaction and the need for members of a social group to work collaboratively and cooperatively (Tomasello et al., 2005). Bickerton's position that language evolved to enhance humans' capacity for complex thought does not seem plausible from an evolutionary perspective. There is no evidence, even among modern humans, that the language of thought is structurally the same and is constrained by the same syntactic principles as spoken or signed language. It functions at a level where it need not be subject to the constraints of physical modalities of spoken or signed language, such as being linear and having predominantly

arbitrary symbols. It could be imagistic or more abstract and even both. Misspeaking and the inter-translatability of different languages can be considered as evidence for the hypothesis that the language of thought is structurally different in its units and combinatorial principles from spoken language. Some sort of translation takes place between thought and its spoken or signed expression.

If anything, intra-group communication, rather than complex thought, is what was enhanced by the evolutionary emergence of language. The ability to interact socially appears to have been an important scaffold of language as a social phenomenon. It provided the motivation for developing, through exaptive kluges, means of enhancing individual hominins' ability to collaborate and cooperate toward common goals within their groups. Social organization appears to have been facilitated by this, with its more complex forms having further benefited from the invention of writing and the technology that ensued. Language also empowered less altruistic members or those who excel socially to lead in the formation of alliances or to control their conspecifics through persuasion, as in politics.

While social life is an important ecological factor in the emergence of spoken or signed language, it is also in it that lies the answer to why there is language diversity or how this emerged. For this, we must remember that human populations are aggregates of individuals likely to interact with each other. Most of the time, they communicate dyadically and triadically, and only occasionally in larger aggregates, when planning large projects. Individuals are naturally different from each other. They differ physically and mentally, despite the common traits they share anatomically. They are more alike, on the family resemblance model, than they can be claimed to be the same. While they copy from each other in the way they encode information linguistically, they do not necessarily innovate in identical ways, nor do they draw on exactly the same resources. Although their innovations converge and normalize toward some communal conventions, these are not necessarily identical from one group to another.

An appropriate question to ask about the emergence of linguistic diversity is whether discussing the phylogenetic evolution of language

preempts focusing on the emergence of languages. Can it be plausibly assumed that through the two million years or so of the gradual evolution of language all the way to dispersal of *Homo sapiens* from eastern Africa our hominin ancestors had spoken just one language variety common to all of them? Since it is more likely that they had not lived in the same village prior to the dispersal and had probably interacted very little across groups, at least during the earlier stages, what justification is there for assuming that only one language (variety) had evolved into the kind of common “proto-language” from which Ruhlen (1994) claims modern languages have emerged?

I submit that today’s linguistic diversity is the consequence of the different new pools of variants (differing in contents and/or strengths of the variants) that the migrants took with them out of eastern Africa, how they innovated in the new physical ecologies of their existence, and how they negotiated their communicative practices when they came in contact with other linguistic communities. What we have learned recently about the rearticulation of the world’s linguistic diversity through language birth and death (as is evident from the emergence of creoles) should give us hints about what has happened in the phylogenetic history of mankind, perhaps since the first signs of the emergence of language as a social phenomenon.

To make better sense of the whole subject matter of the phylogenetic evolution of language, we must also address the following question: Did populations consciously invent language, which would justify Hockett’s (1960) term “design feature” (suggesting that the “inventors” anticipated how the different components would be integrated)? Or did language (as an abstraction for various languages and varieties thereof) emerge as the ultimate outcome of interacting individuals solving their communicative problems without any foresight of the systems that linguists would detect in the cumulation of the interactants’ communicative habits? Considering what modern humans still do, innovating when necessary but also deviating from established norms (because learning does not proceed faithfully), I submit that languages are emergent systems, being always reshaped by their users (see also Steels, 2000, 2003). The whole process of the evolution of language as considered today appears to be the ultimate outcome

of the successive attempts by members of the hominin species to solve their communicative challenges. We can speak of “language” as a nonindividuated phenomenon, in abstraction, simply because similar minds resorted to similar strategies under similar ecological conditions. There is diversity because neither the anatomical structures nor the minds involved were identical and there was naturally room for variation.⁸ Population structure and migrations worked on variation in ways that produced linguistic diversity, through local processes of conventionalization and normalization.

4. Conclusion

I have invoked creoles and pidgins in this essay not because they have a unique empirical contribution to make to research on the phylogenetic evolution of language, or language evolution in general, but because they have prompted me (Mufwene, 2001, 2003, 2005, 2008) and DeGraff (2003, 2005) in particular to question many working assumptions that have led linguists to treat them as “unusual phenomena” or “exceptional,” non-evolutionary developments. I have shown in the same work of mine that many of their putative peculiarities, such as origins in language contact and having mixed structures, which have prompted linguists to treat them as exceptional are regular characteristics of language evolution that have only unjustifiably been overlooked or downplayed in genetic linguistics.

8. The difference between this position and Wang & Minett's (2005) take on Hockett's “design features” is not as important as some readers may construe it. Biological research on racial diversification among modern humans has shown that the variation is significant more culturally than genetically, i.e., that the biological makeup of modern humans is virtually the same all over the world. According to Cavalli-Sforza & Cavalli-Sforza (1995), there is even more genetic variation within than across races. To the extent that many of the linguistic behaviors of humans are consequences of the biological and mental peculiarities that distinguish us from other animals, especially other primates, we can expect similar patterns of communicative behavior to have generated similar structural principles across populations, at least from the perspective of emergence and self-organization. This conclusion is consistent with the fact that the structural architectures of all modern languages are similar within the limits of typological variation known today.

Agreeing especially with Arends (1989, 1996, 2001) and Chaudenson (1979, 2001, 2003), I have also supported the position that creoles have developed gradually, by basilectalization, a word that Chaudenson coined in reference to the divergence evolution of creoles toward their basilects and away from their lexifiers. I argue in Mufwene (2005) that much of the same evolution applies to the emergence of pidgins, started with the closer approximations of the lexifiers spoken by the interpreters of the initial trade colonies.

I have capitalized on these developments in creolistics to highlight the significance of inter-idiolectal variability as a constant in the innovations that speakers and signers make in language behavior and the role that this variability must have played in the phylogenetic evolution of language. I have also linked this to Tomasello et al.'s (2005) position that social collaboration and cooperation are among the features that distinguish humans from other primates. I have argued that they are ecological factors that shed light on how language varieties must have conventionalized and normalized several times in the phylogenetic history of mankind, as hominin populations spread all over the world out of eastern Africa and sometimes came again in contact with each other in the process.

Equally significant must have been the role of scaffolding (Wimsatt & Griesemer, 2007) in the gradual complexification of language in the protracted hominin phylogeny. Language could not have emerged without the incremental gradual emergence of a physiological and mental infrastructure capable of producing and sustaining it. Internally, it appears to have evolved through exaptive kluges that responded to communicative needs of the interactants. The social interactive nature of the hominin populations provided the motivation for communication. The communicative needs evolved concurrently with both the complexification of the hominin mind and changes in the ecologies in which they lived. The interactants' ability to read each other's minds (Sperber & Wilson, 2002) and to learn from each other contributed to convergent evolution (McNeill et al., 2007), while population structure influenced language diversification, as different groups need not have normalized in identical ways.

I agree with Wang et al. (2005) that the phylogenetic evolution of language must thus have been gradual and incremental, depending

on earlier developments both internally and externally. From the perspective of scaffolding, I have in mind here the anatomical and mental structures of the hominins, as well as their population structures, which determined who was most likely to interact with whom and about what, and who was most likely to learn from whom. As in the case of creoles and pidgins, our hominin ancestors must have avoided innovating *ex nihilo* when it was more cost-effective to exapt extant structures. The whole phylogenetic evolution of language can thus be considered from the point of view of emergence. Hockett's (1960) term "design feature" appears to stand for patterns that have emerged out of the cumulation of hominins' communicative exaptations and innovations throughout this protracted history.

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