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John Haiman
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1 The Gestural Origins of Human Language

> "Common sense contradicts itself at every turn: mathematics is a consistent science."
>
> Peter S., 1967, loyally quoting some professor

> "Mathematics is the extension of common sense by other means."
>
> Jordan Ellenberg 2014, paraphrasing Clausewitz

It is impossible to take your own language for granted once you hear another one. You will realize that 'the way things are' for you and your neighbors is not the way they have to be, and that your own language, like every other one, therefore cannot be a natural object but must be an artificial human institution. Like Rousseau or Engels contemplating other human institutions, you may speculate on what the state of nature was that they must have all arisen from. You may wonder about why other human languages are the way they are, why there are so many of them (The Summer Institute of Linguistics' Ethnologue currently lists '7,102'), whether they are all in fact completely artificial, and, finally, how they all got to be the ways they are. This book is a contribution toward answering the last question. The story I will flesh out with new data in the following pages was anticipated by George Orwell in a now forgotten essay on language planning:

> Primitive man, before he had words, would rely upon gesture, and like any other animal he would cry out at the moment of gesticulating, in order to attract attention. Now one instinctively makes the gesture that is appropriate to one's meaning, and all the parts of the body follow suit, including the tongue. Hence certain tongue movements – i.e. certain sounds – would come to be associated with certain meanings. ([1940]/1968:11)

I will call this 'Orwell's story', although he is of course not the first person to have subscribed to it, and in fact he alludes to it as an 'accepted and plausible theory'. Like Orwell, I believe that this story, or something very close to it, is the best one we now have, and I am bringing a mite of novel evidence in support of it, but unfortunately I will never know whether it is true. All I can claim is that the story is plausible and free of internal inconsistencies (as I hope you will come to agree), and that, like all other accounts of the origin of language since Genesis, it is currently both logically and empirically

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More Information

unfalsifiable. In particular, there is no competent knowledgeable authority on the subject who can either support or refute it on an empirical basis (this much I'm totally sure of). This is good news for me, of course, and for my equally ignorant opponents. We can say what we like. But it reflects poorly on the current state of the art, most definitely no science, of theorizing about language origins.

1.1 What We Do Not Know about the Evolution of Language

The state of the art of a field of knowledge can be inferred from the amount of training it takes to become an expert in it. The more that is already known, both logically and empirically, about a subject, and the greater the technical skill that we need in order to apply this knowledge, the greater the distance the hopeful expert must traverse before s/he can reach the frontiers of the discipline and even ask, let alone answer, its ultimate questions. It is safe to say that our perimeter of illumination is vastly smaller, the bar for entry to the community of scholars vastly lower, for a field like the evolution of language than it is for, say, the apparently far more humble field of historical linguistics, the distance from first principles to the frontier, vastly shorter. To make an original contribution to the origins and development of just English, or of Indo-European, for example, a serious student must spend half a lifetime becoming an expert by learning dozens of languages, and catching up on several centuries of philological scholarship. I have always regarded such experts with awe, and, although myself a native speaker of one Indo-European language, I would not dream of pretending to make any such contribution. To make a certifiably true and original contribution to the origins of all of human speech, on the other hand, may well be impossible at this point. But the entry qualifications for pundits, at least, are virtually non-existent: at the present state of our knowledge we can get to the ultimate questions in this field with such embarrassing speed, in fact, that we may question whether it exists as a legitimate scientific field at all, any more than do common sense, theology, or aesthetics.

The vast majority of working linguists today, in fact, if asked for the last word on the evolution of language, will cheerfully confess that they haven't a clue about such matters, that they know nobody who knows any more than they do, and that their ignorance is no subject for embarrassment. On the contrary, a majority will probably say that not wasting time on a field so utterly without empirical content should count as a badge of honor.

This field has in fact become somewhat fashionable over the last ten or twenty years, but unless some genuine breakthroughs are made, its trendiness will probably pass. There are a number of people with strong opinions; genuine empirical advances, however, are very few, and both the correctness and the relevance of all of them are disputed, as we shall see; and as for people

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More Information

recognized for knowing any more than the next person, and holding positions on the subject in academic institutions on the basis of original research, there are none. In spite of the many books that have recently appeared, and in spite of a series of international conferences, all featuring words like 'origin,' 'beginning', 'evolution', and 'language' in their titles, there is still no specialized arcane knowledge on the subject of how human languages came about.

This realistic conclusion can be drawn from scrutiny of one of the most recent contributions to this field (Fitch 2010), a judicious survey of almost every possible theory that has been proposed in the existing literature from several disciplines. Either the last word in the burgeoning scholarship recapitulates common knowledge, or, if it represents any original contribution by some 'authority,' there will be an equally original contribution by another authority that flatly contradicts the first. And choosing between the two will be totally a matter of taste. There are very few speculative accounts in the literature that can be flatly rejected. In fact, we do not need many years of specialized technical training to recognize and explore the profound implications of some familiar (and hence, rather boring) truisms about "the most entirely unique, the most completely diagnostic characteristic" of our species (Simpson 1969:108). Instead, we can all agree on some observations from common experience, and common sense. We are all already then at the frontiers of our knowledge, beyond which everything is speculation. Herewith are listed some of the truisms that constitute the state of the art, in my opinion.

Everybody knows that all children are alike insofar as they can learn any language. Ergo, all languages must also be alike, for the same reason. Infants are born speechless, but long before the time they can comb their hair, tie their shoelaces, use a knife and fork, or ride a bike they can learn whatever human language(s) happen to be spoken around them, a vastly more complicated task. "A baby is good for learning language" – if not much else (Bolinger 1975:2). So good, in fact, that s/he learns without a teacher. With a lot of gifted instruction, discipline, and practice, we can all learn more or less to play the piano, or tennis, or, later on, to speak a second language, but in the matter of our native language, we are all of us apparently born like Schubert, who seemed to 'have learned it directly from God'. There is such a blatant contrast between linguistic and musical ability, incidentally, that there is reason to be wary of the popular hypothesis (Darwin 1871; Jespersen 1922; Mithen 2006; Fenck and Fenck-Oczlon 2009; Fitch 2010) that language and music are particularly closely linked in human evolution – or even that our capacities for each are separate but equal kinds of intellectual ability, as argued by the cognitive scientist Howard Gardner in his well-known *Frames of Mind*. Of course, music and language are willed and replicable auditory productions, but the fact that they happen to share one typical instrument, the voice, and one medium of propagation, sound waves, may be the only important thing they

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More Information

have in common. All other parallels (linearity, rhythm, phrasing, tempo, possibly even the existence of an inventory of discrete combinable elements) may be said to follow. The differences are far more striking. Verbal intelligence is not exclusively the property of poets the way musical ability is the property of composers, as Gardner seems to suggest. Rather, there are two sorts of verbal intelligence: the first, that of the poets, is confined to an elite, and this may be comparable to musical ability; the second, the staggering intelligence that is necessary to speak and understand a human language, like the ability to walk upright, is something that is democratically distributed among all of us, and thus has no congener in music.

Reflecting common wisdom, Dave Barry (1992:20) advised tourists to Japan that:

> The best way to learn Japanese, recommended by experts, is to be born in Japan as a Japanese baby, and be brought up by Japanese parents.

If we follow his experts' advice, we learn Japanese like Schubert learned music. After the so-called critical period, which ends not too long after babyhood, we cease to be Schuberts at language-learning, as all school-taught second language learners know. This is an item of common knowledge that is merely reinforced by the few documented stories of 'wolf children'. We can learn a second language after puberty, but this is like learning the piano for most of us: It requires a lot of huffing and puffing, there are enormous variations in individual talent and motivation that will lead to vastly different outcomes, and a lack of total success is almost guaranteed. Few adults, even with excellent teachers, for all their natural talent, intelligence, discipline, and ambition, can ever come close to native ownership of a 'second' language, and their success rates differ wildly. True mastery, for the happy few, may take a lifetime of total post-adolescent immersion. There is also a phase beyond true mastery: the phase at which people feel in their bones a thousand distinctions, like the difference between *memory* and *remembrance,* or between

> *how green was my valley* and
> *how green my valley was,*

for example, and this kind of discrimination is out of reach for every non-native speaker, period. Orwell remarks in one of his letters that his grandmother lived in Burma for forty years, and never learned a word of Burmese. His observation was intended as a commentary on colonialism rather than on linguistics, but it is a familiar story. Orwell's grandmother, it could be said, flunked out of Burmese. But it does not need saying that she aced English, and so did everybody else growing up in England. Of course, everyone knows that you can't teach an old dog new tricks, and there is a neurological basis for this (Edelman 2001; Lane 2009:246) but there seems to be something special about this particular trick that distinguishes it from all others. Even mathematicians,

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More Information

who notoriously become old dogs and burn out by age thirty, are less affected by the loss of synaptic plasticity after their formative years than are language learners, who burn out by around age thirteen.

And of course, to learn Japanese, or any of the other dialects of Human, the baby has to be one of us. In universal folklore, talking animals are the norm, but in the real world, everybody knows that this is wishful thinking: animals undoubtedly communicate, but not in Japanese or any other one of the 7102 human languages recognized by *Ethnologue*. This continues to be the common experience of untold millions of disappointed pet owners, a finding that primatologists like Yerkes and Yerkes (1929), Kellogg and Kellogg (1933), and Hayes (1951) have belatedly confirmed. (It is very possible that animal researchers, if such exist, might equally bewail the hominid inability to learn to speak even the most rudimentary dialect of whale, octopus, or wolf, but that is not our topic.)

We don't really know why the ability to learn Japanese should be so nearly exclusively the preserve of human children, but thanks to the heroic efforts of authors like Yerkes, Kellogg, and Hayes, we now think it has only a little to do with the traditional factors peculiar to childhood such as total immersion and TLC: unlike the L2 learner, the L1 learner is admittedly totally immersed in her mother tongue, and her speech, after an initial period of total unconditional encouragement, enters into another formative period, perhaps no less important, of selectional pressure: exposure of many of her deviations to the incomprehension, ridicule, and ostracism of her peers. Jespersen (1922) emphasized the importance of both. We now also acknowledge (as Jespersen did not, but could easily have done on the basis of observing lesser mortals than himself) that a native human language is only acquired during a crucial initial critical period that ends with adolescence. Beyond this, our propensity for languages has something, but clearly not that much, to do with the auditory medium of propagation and the human vocal apparatus (chimpanzees can learn much more language using gestures and tokens than spoken signals, and deaf-mute people can learn totally adequate sign language substitutes for spoken languages); but most of all, the human capacity has something to do with peculiar circuitry of the human brain. At this point, we clearly know nothing about such circuitry or how it atrophies.

Other traditional accounts of our uniqueness could also be enumerated. Maybe humans can learn languages because we are the only animals to have socially transmitted learned knowledge, or culture, to the extent we do. This is certainly true: although it is now clear that there is some culturally transmitted knowledge among some other animals (Kawai 1965; Bonner 1980; Waal 2001; Safina 2015), the variety of human cultures and the tremendous speed of cultural change among humans is something that has no parallels elsewhere. For the most part, each non-human species has its own single culture, and can

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Excerpt
More Information

be as easily recognized from its behavior as from its morphology. Elephants and rhinos have been evolving for exactly as long as humans have, and as far as we can guess, they have not materially changed their social organization or the way they make a living since they've been elephants and rhinos. Nor will they, although clearly it would be enormously advantageous for them to make some drastic adjustments immediately. (Humans, under comparable anthropogenic threats of extinction, are at least talking about possible changes we need to make in order to survive.) Moreover, we do know that local cultural variations even among our nearest relatives the chimpanzees are minor. But human societies clearly have made enormous changes over even the last several hundred years, and the local variations are sizable. But to say that only animals with human culture can have human language seems to beg the question: perhaps it's true we have language because we have culture, but isn't it mainly true that we can only have culture if we have language first? That is, culture doesn't really explain why we have language: rather it is surely language which explains the whole phenomenon of culture in the first place. Language and culture do seem to go hand in hand, however, which has led to some ingenious hypotheses, which I will return to presently, about the antiquity of the first.

The learning and maintenance of human languages clearly build on our hypertrophied capacity for cultural transmission. Every language is recognized to be a *cultural* monument whose intricacy far surpasses that of every other kind of learned behavior. Like all cultural knowledge, the words and rules of the local language that we speak are acquired knowledge that is passed down in a Lamarckian fashion, through a combination of observation, imitation, inference, and pedagogy. One's language has been compared in some ways to a city map, whose speakers are its seasoned cab drivers. Feeling at home and knowing how to get around in the labyrinth of one's native language is categorically the most intricate cultural knowledge that any of us will ever own. Schubert himself was no more fluent (or even creative?) in music than any native speaker of a human language is in that language. Using one's language, moreover, is to make one's own infinitesimal (or perhaps sizable, for usage-based grammarians) contribution to the metropolis by scuffing the pavement, adding, breaking, or removing a brick, writing graffiti, smashing windows, repainting or remodeling one's corner, planting a tree, or just littering, spitting, dumping garbage, and using the plumbing.

Of course, the major builders of the city are its contractors, architects, and engineers, and languages as anonymous social products have none of these – or we have to recognize that the efforts of would-be language planners, even when they are 'thought leaders' like G.B. Shaw and Orwell, have gone nowhere. The analogy between cities and languages continues, however, even into unanticipated details, for example, when we consider 'linguistic planning'

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More Information

as a possible counterpart of 'urban planning'. In sharp contradistinction to individual inventions like Esperanto and Pascal, the so-called natural human languages studied by linguists – even, surprisingly, the signed languages of the deaf (Sutton-Spence and Woll 1999:37) – are largely an unplanned and anonymous social product. Cities, it would seem, are not: hence the very existence of the practice (and academic discipline) of 'urban planning'. But the differences between cities and languages are perhaps not so great. Granted, discounting such rare and spectacular examples as Eliezer ben Yehuda, who spearheaded the restoration of Hebrew in the twentieth century (Fellman 1973) and Kemal Ataturk, who inspired and led the Turkish language reform of the 1930s (Lewis 1999), it is very hard for us to come up with the names of any individuals who can be named as originators of significant language change. Moreover, we know that would-be language planners hardly ever make an impact. But notwithstanding 'urban planning' as an academic discipline and zoning codes as a practice, this observation applies almost as well to most cities, and even individual buildings with any history, whose infrastructure 'just grew' in a random and sporadic fashion (cf. Macaulay 1976:40; Shubin 2008:86). Figures like Eliezer Ben Yehuda and Kemal Ataturk are indeed rare, but they are no more rare, relative to Hebrew and Turkish, than are Baron Haussmann and Robert Moses relative to Paris and New York. For the most part, human institutions such as cities and languages, like plants, seem to take shape haphazardly.

So much for languages as cultural traditions comparable to cities, and the maps, recipes, and blueprints that represent their structures. But our ability to learn and use maps of this sort before puberty is also manifestly a *biological* endowment that seems to set us apart from the rest of the animal kingdom. The English language is one such cultural tradition. But the capacity to learn it, or any other language, is passed on genetically. Moreover, our capacity for doing this had to begin in some natural fashion (and not by divine fiat) a very short time ago. Only six or seven million years and less than 2 percent of our DNA separate us from our closest living relatives.

The grammars and dictionaries from which we learn foreign languages or codify what we know about our own (our maps and blueprints of the city) are our best attempts to codify a small part of our ability, or to account for it. But none of these attempts can be considered successful. This is not because of the conventional reason that is usually given: that no grammar ever yet written can be regarded as 'complete'. (Nor should it be: A 'complete' grammar or dictionary, on reflection, would preclude the possibility of change in unexpected directions, something that all languages undergo. This fact may account for the remarkable fact that some of the most ambitious grammars ever written have been of languages that are safely dead.) It is mainly because grammars and dictionaries, well as they may characterize the words and rules of a

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More Information

language, do not account for our freakish ability *to learn* these words and rules. None of our grammatical characterizations of complex languages correspond even remotely to anything we can yet say about the far more complex structure and workings of the brain. In this way, we can say that language is different from other high level cognitive capacities like memory: It has not yet met its Eric Kandel.

Noam Chomsky ([1959]/1964) debunked the apparently safe and boring nostrum of Leonard Bloomfield ([1933]/1973: chapter 2) and B.F. Skinner (1957) that we acquire a native language through exposure, habit, and 'reenforcement' (or simply 'practice and coaching'). How else, after all? Chomsky responded with the equally commonsense empirical observation that although rats and pigeons (and adult second language learners) are capable of learning a great deal in this way, *only young humans* respond to exposure and 'reenforcement' by learning a native language as completely as they do, and this without instruction, drills, and rewards. But it is striking to see that what Chomsky offered in the place of 'lots and lots and lots of practice' was, very sensibly, absolutely nothing at all, as we can see from the following passages (emphasis added):

> As far as acquisition of language is concerned, it seems clear that reinforcement, casual observation, and natural inquisitiveness (coupled with a strong tendency to imitate) are important factors, as is the remarkable capacity of the child to generalize, hypothesize, and "process information" in a variety of very special and apparently highly complex ways *which we cannot yet describe or begin to understand*, and which may be largely innate, or may develop through some sort of learning or through maturation of the nervous system. *The manner in which such factors operate and interact in language acquisition is completely unknown* . . . (Chomsky [1959]/1964:563)

> There is of course no known neural structure capable of performing this task in the specific ways that observation of the resulting behaviour might lead us to postulate; but for that matter, *the structures capable of accounting for even the simplest kinds of learning have similarly defied detection* . . . (565)

> The behaviour of the speaker, listener, and learner of language constitutes, of course, the actual data for any study of language. The construction of a grammar which enumerates sentences in such a way that a meaningful structural description can be determined for each sentence *does not in itself provide an account of this actual behavior*. (576)

> The fact that all normal children acquire essentially comparable grammars of great complexity with remarkable rapidity suggests that human beings are somehow specially designed to do this, with data-handling or "hypothesis-formulating" ability of unknown character and complexity . . . The study of linguistic structure may ultimately lead to some significant insights into this matter. *At the moment the question cannot be seriously posed* . . . (578)

In spite of all the progress that either has been made, or has not been made, in the writing of descriptive grammars and dictionaries over the last 2500 years, it

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Excerpt
More Information

seems to me that Chomsky's modest assessment continues to be totally realistic. The psychologist Merlin Donald, summarizing two generations of neurological research since the appearance of Chomsky's review, simply paraphrases Chomsky's passages above when he says that:

> The search for a fixed localizable brain module for language has been a failure. After a century of searching there is still no identifiable cortical subsystem, no special Brodmann area, no commissure or fasciculus, no characteristic laminar organization, no distinctive cellular structure, no special linguistic neurotransmitter system, indeed no known feature of the cortex or any other part of the brain that can be identified universally and exclusively with language. (Donald 1999:46–7)

In the same way that only young human language learners 'respond' to unaided exposure and conditioned habit, only young humans 'respond' to grammatical theories of any type, or, for that matter, to dictionaries, and no brain theorist has yet succeeded in offering a clue as to why this should be so: among grammarians, to paraphrase Sapir, "the tagmemicist walks with the minimalist" (as Plato walked with the Macedonian swineherd in their common mastery of Greek), and both walk together with any lexicographer, in their total inability to account for the connections between our formal characterizations of language on the one hand, and our language-learning ability when young, and the structure and operations of the (human) brain, on the other. This is no less true of the humble dictionary than it is of sophisticated theories of syntax. A dictionary, like a grammar, is a characterization of our knowledge – of individual words. It likewise tells us nothing about the fact that over several years we effortlessly acquire about ten words or more a day in our native language (Clark 1993:13–14), a feat that few proud parents (for all their diligence) can even monitor for very long among their offspring, and none of us can manage to replicate later on in learning a second language.

Chomsky claimed that we don't need to work to "acquire" a *language* because we "already have" a language *faculty*, or some language acquisition device, but what it is and how it relates to our anatomy and physiology is still totally unknown. Chomsky has been claiming for decades that first, languages themselves, then later, our ability to learn them, are like an "organ" (Chomsky 1975), but it is obvious that comparing language acquisition to an organ like the heart, lungs, or pancreas is simply a vivid comparison – as suggestive, as provocative, and as inadequate as every other explanatory metaphor.

We tend to think of metaphors as poetic, and the jargon of behaviorist psychology is anything but that, so we overlook the fact that Skinner, no less than Chomsky, was using a metaphorical comparison. He used terms like 'stimulus', 'response', and 'reinforcement' when proposing his own account of how we learn our language: his unspoken metaphor or analogy is that learning one's native language is something like learning another language

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later on. Rather than mistaking a metaphor for an explanation, as Skinner clearly did, we could say that learning one's native language(s) is one of the as yet utterly mysterious things that a part of one organ, the human brain, can do at a fixed phase of its development.

Thanks almost entirely to Chomsky, the explanatory power of Skinnerian behaviorism is now discredited at least among linguists, but Skinner was not alone, nor was he even the first exponent of this theory, and the behaviorist principles he attempted to promote in *Verbal Behaviour* are exactly the same as those promoted by Leonard Bloomfield [1933]/1973 in the second chapter of *Language*. This chapter makes embarrassing reading for admirers of Bloomfield today, but not nearly so embarrassing as is his attempt to reconcile the unabashed behaviorism of chapter two with his expert handling of that eminently idealistic construct, the language-particular phoneme, in a later chapter. There is nothing less empirically based than a phoneme in any language: It is a purely psychological abstraction, which it is safe to say no human being has ever heard, and no machine has ever recorded. Bloomfield, knowing this, was forced to shrug off the miracle of how speakers of every language come to learn these almost Euclidian abstractions as a matter of 'training' and 'habit', and hope that nobody was paying too much attention. (Not that we are currently any wiser than Bloomfield, I believe: we will get back to this issue in Chapter 6).

Behaviorists like Bloomfield and Skinner were motivated first of all by parsimony (avoid sentimental anthropomorphism: Hardly anybody these days wants to impute jubilation to falling stones or telepathy to whales) and second, by a plausible comparison. Surely it is reasonable, after all, to suppose that learning one's own language in childhood is not totally unlike learning a second language later on, where the tenets of behaviorism make a lot more sense. It's hard to fault these scholars for observing parsimony when assessing cognitive capacities. It has been the tradition among comparative psychologists to avoid anthropomorphism and interpret an organism's behavior "at the lowest possible psychological level" (Smith 2009:390, citing C.L. Morgan 1906). This tradition still continues to be the operational norm for almost all ethological studies of cognitive ability in other animals. If anything, there's something refreshingly un-speciesist in Skinner's egalitarianism: In refusing to rely on introspection, he refuses to endorse human exceptionalism and views humanity, impartially, through the same behaviorist goggles that Descartes directed exclusively against the rest of the animal kingdom. Mentalism, one of whose major tools is introspection, tells us that we have thoughts and feel joy and pain, but introspection by itself is a notoriously unreliable witness, and if pursued relentlessly can result only in solipsism. (One can only introspect about oneself.)

A third, anthropomorphic, tradition, distinct from behaviorism and introspection, could be called the Higher Parsimony of Bentham and Darwin.

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