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# 1 Language and mind rethought

This is a book about language, and about its relationship with thought and the mind. It is also a book about how we acquire language, and why different languages are so diverse in their sound systems, vocabularies and grammars. Language is central to our lives, and is arguably the cultural tool that sets humans, us, apart from any other species. And on some accounts, language is *the* symbolic behaviour that allowed human singularities – art, religion and science – to occur.[1] In her Nobel Prize acceptance speech, the celebrated African-American writer, Toni Morrison, put things this way: "We die. That may be the meaning of life. But we do language. That may be the measure of our lives."[2] Language is clearly a big deal.

This book addresses a controversy that has raged in the behavioural and brain sciences since the middle of the last century: is language innate, something we are born with? Or does language emerge from use, based on more general mental skills and abilities? The dominant view, until recently, has been the former: we come into the world hard-wired with the rudiments of language. But this view now looks to be on increasingly shaky ground.

But what might it mean to claim that language is innate? Clearly our species, *Homo sapiens*, is biologically pre-prepared to acquire language in a way no other species is: we have evolved the articulatory capabilities to produce a complex set of distinct and discrete sound units – and these sound units vary from language to language; we have the musculature to control and facilitate the production of these sounds; we have the memory capabilities to produce and recall sequences of sounds in order to facilitate well-formed strings of sounds, making grammatically well-formed sentences; and we have complex statistical processing abilities allowing us both to perceive and to recognise sequences of

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sounds. Crucially, we recognise fellow humans as being intentional agents, and, hence, are predisposed to interpret their sound sequences as meaningful. And, most significant of all, any given speech community has *agreed* a bewilderingly complex set of linguistic conventions – a language is nothing more than a set of linguistic conventions – allowing us to transmit and comprehend complex ideas: in English we agree that the sound units that make up the word *cat* represent the idea that is associated with the sound segments that in French are signalled orthographically as *chat*, or in Hindi as *billi*.

Conventional wisdom has maintained, over and above this physiological pre-preparedness for language, that we are born with a set of grammatical rules (universal knowledge structures), stored somewhere in our minds, that allow us to acquire grammar almost effortlessly. The idea is that the grammar that underlies all of the 7,000 or so of the world's languages is essentially the same. In short, our species has evolved a specialised grammar module, embedded in our brains, and genetically encoded. And this provides us with the ability to acquire language in the first place: our grammar faculty is in place at birth.

This idea is often referred to as Universal Grammar: all human languages, no matter the variety we happen to end up speaking, are essentially the same. Whether someone learns English, Japanese, Swahili, Tongan or whatever, when you get down to it, they are all alike. Sure, each of these languages has different vocabularies. And each language makes use of a different, although partially overlapping, set of sounds. But underneath it all, the essential ingredient of language – our grammar – is pre-programmed in the human genome: we are all born to produce language because of our common genetic heritage, our Universal Grammar. Just as all of us grow distinctively human organs – brains, livers, hearts and kidneys – so too we develop language: a consequence of our grammar organ, which grows in the human brain, and which no other species possesses. And it is this innately specified knowledge of grammar that underpins our ability to develop and acquire language – any language – in the first place.

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This book, and the range of ideas I cover, are presented from the perspective of linguistics – the scientific study of language – my home discipline. While linguistics covers many more areas and sub-disciplines than are represented here, I've chosen the range of topics on show, in the chapters to follow, for a very specific reason. The majority of the evidence, viewed with objective eyes, now appears to show that language is not innate in the way just outlined.

In a nutshell, I aim to convince you of the following: language *doesn't* arise from innately programmed knowledge of human grammar, a so-called 'Universal Grammar'. I will argue that language reflects and builds upon general properties and abilities of the human mind – specifically our species-specific cultural intelligence; it reflects human pro-social inclinations for inter-subjective communication. I will seek to persuade you that when we acquire language in infancy, we do so by acquiring the language of our parents and caregivers, painstakingly, and by making many mistakes in the process. Language is not something that emerges automatically, and effortlessly. It arises primarily from the language input we are exposed to, from which we construct our mother tongue. Moreover, human infants, I will show, are not empty vessels that come empty-handed to the language learning process. We come ready-equipped with a battery of various general learning mechanisms that make us adept at acquiring our mother tongue(s).

But why should this discussion matter at all? Why should we care? The study of language, for perhaps obvious reasons, is central to a great many other disciplines; after all, if language is the hallmark of what it means to be human, if it is the measure of our lives, then this stands to reason. And because of the centrality of language to all else, it is crucial our understanding of it is accurate. It is also critical that we understand how language relates to other aspects of mental function and social life. And perhaps more than this: language is an index of our very humanity. What would Shakespeare be without his ability to invent, and re-invent the human psyche through language? Language is more

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than the paradigm example of cultural behaviour, one that sets us apart from any other species on the planet. We all have a vested interest in it: it makes us who we are, and allows us to explore ourselves: our emotional highs and lows. We should all care about language, even when we take it for granted, for without it we are barely human.

And here is the *really* important part. While I, and a great many other professional linguists, now think the old view is wrong, nevertheless, the old view – Universal Grammar: the eponymous 'language myth' – still lingers; despite being *completely* wrong, it is alive and kicking. I have written this book to demonstrate exactly why the old view is a myth; and to show what the reality is. This book is thus a users' manual for all language users, and for all thinking people. And, it is also, I hope, a reasonably accessible overview of the way language really works.

This book surveys discoveries from a broad array of disciplines; these include linguistics, psychology, philosophy, neurobiology, primatology, ethology and cognitive anthropology. And these discoveries – which have emerged since the mid-1980s – have thrown into relief long-held assumptions about the nature and structure of language, as well as the mind, and the way we acquire our native tongue(s). In this book, I present the emerging reality.

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Linguistics is a relatively new discipline compared to others, especially compared to long-established subjects such as philosophy and rhetoric, or even more recent sciences such as astronomy and medicine. Its founding father is often taken to be the eminent Swiss linguist, Ferdinand de Saussure, whose *Course in General Linguistics* (2013) was published posthumously in 1916. The Zeitgeist for much of the second half of the twentieth century, however, was an extreme form of rationalism, which assumed that language is an instinct, something wholly unrelated to any other form of non-human communication. This language myth assumed that all human languages are governed by a single set of

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universals buried in the recesses of the human mind, with which we are born.

The reasons for taking this sort of perspective were based on a number of assumptions about the nature of language, in most cases before actual detailed research had been carried out. But today, we now know a vast amount about the diversity exhibited by the languages of the world – although acknowledging that we still only know something about a fraction of the world's 7,000 or so languages. We also know a vast amount about how children acquire language, much more than we did when the *language-as-instinct thesis*, as I shall call the language myth, was formulated, originally in the 1950s and 1960s. Indeed, the preponderance of evidence now leads a great many linguists, myself included, to the incontrovertible conclusion that language reflects, in important ways, more general, and generalizable, properties of mind. And, importantly, we learn language from our parents and caregivers, through painstaking practice and use. This, for ease, I refer to as the *language-as-use thesis*. In contrast, the language-as-instinct thesis, I will seek to persuade you, is a myth; and, it is made up of a number of component sub-myths.

## Taking stock of language

Before moving on, let's get a preliminary sense of what language is for, and how it is organised. Language is integral to our lives. We use it to buy groceries in the supermarket, to get a job, to hire or fire an employee, to buy train tickets, and to compose an email. We use it to make a telephone call, to flirt, to invite someone out on a date, to propose marriage, to get married, to quarrel, and to make up afterwards. Language allows us to make friends, and enemies, to pass the time of day, and so on. In our everyday lives, we produce and comprehend language with such apparent ease that we take it for granted. Yet the ease with which we use language belies a level of complexity of immense proportions. You might not know a preposition from an adverb, or the

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difference between the passive voice and the indicative, nor what the double object construction is. You might also be at a loss if I asked you how to conjugate the copula in English, or what perfective aspect is. Yet like around 400 million other native speakers of English around the world, you and I deploy the copula and successfully conjugate it countless times every day. In other words, our knowledge of language is implicit rather than explicit. While you might not be able to explain to a foreigner, should they ask, how to conjugate the copula without the aid of a book of English grammar, you can do it with your hands tied behind your back. Each of us carries around in our heads a 'mental grammar' far more impressive than any written grammar. In short, you or I don't have to know that the verb *be* is the copula to know how to use it.

Another sobering fact about spoken – and indeed signed – language is this: unlike other forms of cultural behaviour, it is blind to demographics, socioeconomics and ethnic difference.[3] I, you and every other cognitively normal human being in the world uses (or comes to use) language with the apparent ease that we take for granted. Put another way, it doesn't matter whether you are rich or poor, black or white or what the colour of your eyes are. You are destined to acquire at least one language – although the majority of the world's nearly 7 billion people grow up speaking two or more languages. In this, the pattern of monolingualism amongst English-speaking populations is not the norm. And, by around 4 years of age, each normally developing human child is a linguistic genius. Nevertheless, we carry on 'learning' our mother tongue, throughout our lives. This is the case not least because the language we speak changes and evolves, often in quite short periods of time.

In virtually all of the situations in which we find ourselves in our daily lives, language allows quick and effective expression, and provides a well-developed means of encoding and transmitting complex and subtle ideas. Language does this by fulfilling two key functions, functions that underpin linguistic communication.

The first is that language enables us to express our wishes, feelings, likes, dislikes and ideas. This language achieves by encoding

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and externalising our thoughts. To do this, language uses symbols. Symbols are meaningful bits of language. These include sub-parts of words, such as *un-* and *-ed* in *uninterested*, whole words like *walk*, *yesterday* and *knickers* or groups of words which form clauses, such as *behind the sofa*, and groups of clauses which form sentences, like *She left her knickers behind the sofa*.

The symbols that make up English, or any language, consist of two parts, a form and a meaning. Forms may be spoken, written or signed – as in British Sign Language, the sign language of the British deaf community – while the meanings are the ideas, or concepts, that are conventionally associated with them. For instance, in spoken English, the word *cat* is made up of the three distinct sound segments, technically known as phonemes /k/, /æ/ and /t/ which combine to give the form /kæt/. The meaning unit conventionally paired with this form constitutes the stable knowledge that you and I have relating to cats: that they have four legs, whiskers, a tail, make sounds of particular sorts, exhibit quirky, cat-like behaviour of particular kinds, and so on.

However, for language to function effectively as a means of communication, it is not enough that it employs symbols in order to associate forms and meanings. In addition, these form-meaning pairings must be recognised by, and accessible to, others in our community. After all, we use language in order to get our ideas across: to communicate. This involves a process of transmission by the speaker, and decoding and interpretation by the hearer. In short, language fulfils a symbolic or communicative function.

But in addition, the messages we choose to encode symbolically in language invariably perform an interactive and hence social role – the second function of language. For instance, we can use language to change the way the world is. When a member of the clergy makes the utterance: *I now pronounce you husband and wife*, in an appropriate setting, and addressed to two consenting adults, the utterance changes an aspect of the world in a rather special way. From the moment the utterance has been made, the legal, social and moral status holding between the two individuals is irrevocably altered. The newly created husband and wife have obligations

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and potential claims towards and against each other that they didn't have prior to the utterance of these words. In some countries, even their tax status is altered. In short, language can be used to perform *actions* which have consequences in the real world.

But one doesn't need the special status of a member of the clergy, a Prime Minister or a sovereign to be able to alter aspects of the world through language. An everyday expression such as *Shut that door on the way out!* also represents an action performed through language – in this, language bestows complete equality: we can all do it. This expression is an attempt to have someone do something, thereby altering an aspect of the world to suit our own wishes or desires.

Another way in which language fulfils its interactive function is by enabling us to express our thoughts and feelings about the world. The expressions *terrorist* and *freedom fighter* might be used to describe the same individual by different people with different perspectives, and different agendas. Using language to speak of a *war on terror* or describing the campaign to criminalise abortion as *Pro-life* is more than mere wordplay. Language carries with it systems of ideas: words have concepts attached to them. Language use helps to frame, or reframe particular issues, and this framing can be both positive and negative.[4] Language has been described as a loaded weapon: it brings with it real-world consequences.[5]

Language also plays a role in how we affect other people, and how we make others feel, achieved just by our choice of words. Expressions such as *Shut up!* versus *I'm terribly sorry to interrupt you*, while ostensibly conveying the same meaning, affect our addressee in very different ways. This is because the way in which we present our public selves is conveyed, in large part, through language. The nature of the language we choose to use signals information about our attitudes towards others, ourselves and the situations in which we find ourselves.

I've already intimated that a key function of language is social interaction. For instance, we use language to engage in gossip, to get to know someone, to conduct business, to make a purchase in a shop, to attract members of the same or opposite sex, to declare

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undying love, and so forth. But how, exactly, do we make use of language in order to facilitate these social functions? We do so by engaging in culturally recognised activities in order to achieve (what are at least usually) mutually understood goals. Moreover, language use arises *in* these joint activities, which are often extremely difficult without it.

For example, imagine going to a shoe shop in order to purchase a pair of John Wayne cowboy boots. This involves a sales assistant approaching you and offering help, interacting with a sales assistant in order to have your feet measured, the assistant fetching the required cowboy boots from the stock room for you to try on, agreeing the purchase, making payment, and the assistant boxing or wrapping the boots. This service encounter is an example of a culturally recognised joint activity. And, crucially, it relies on language use in order to accomplish the desired outcome: the purchase of the boots.

But in addition to using language during the course of a service encounter of this kind, we have to build a mental representation of what is going on, in order to keep track of what stage we are at in proceedings. This involves integrating information we get from language, with information derived from other cues, such as seeing that the sales assistant has brought the wrong colour boots from the store room, or that uncomfortable feeling when the boots are too tight, as you try them on. The information which accumulates, during joint activities of this sort, is gleaned from our discourse – our use of language – and from the ongoing and ever-changing situation(s) in which we find ourselves.

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Recall that I said that words consist of symbols: form–meaning pairings. Language encompasses a wide range of different types of knowledge which serve to support symbol use. One kind of knowledge concerns the individual sounds that make up a particular language, and the rules that govern the way these sounds can be combined. While there is a finite inventory of all the possible

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sounds a human being can make, different languages draw on different numbers of these in producing the words that make up a language. This is why a French speaker finds it difficult to pronounce the *th* sound in English, and why a Chinese speaker often cannot pronounce the *r* sound: *fried rice* becomes *flied lice*. These sounds simply don't exist in French, or Mandarin. Indeed, English speakers often sound equally absurd when speaking other languages, as I can attest from years of mangling the French language. A number of French sounds simply don't exist in English.

Standard English consists of twelve simple vowel sounds. These include the /ɪ/ in *pit* and the /e/ in *pet*. There are, in addition, a further eight two-vowel sound sequences, known as diphthongs, such as the /eI/ in *day*. English also has twenty-four consonants like the /z/ in zip and the /ŋ/ in *ring*. This makes a total of forty-four distinct sound segments from which all English words are derived – at least in standard British Received Pronunciation (RP). This total, may, on the face of it be somewhat surprising, given that the alphabet consists of only twenty-six letters. Yet the English spelling system is, in fact, the Latin spelling system, and as applied to English is notoriously treacherous, as is made abundantly clear by the following poem by T. S. Watt:

> I take it you already know
> Of tough and bough and cough and dough?
> Others may stumble but not you
> On hiccough, thorough, slough and through.
> Well done! And now you wish perhaps,
> To learn of less familiar traps?
> Beware of heard, a dreadful word
> That looks like beard and sounds like bird.
> And dead, it's said like bed, not bead
> for goodness' sake don't call it 'deed'!
> Watch out for meat and great and threat
> (they rhyme with suite and straight and debt).[6]

A second type of knowledge involves word structure. Each of us intuitively knows how simple words are combined to make complex words – and the meanings associated with the parts of

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words involved. We know the difference between *teaching*, *teacher* and *teachable*. A teacher is a person who carries out the activity of teaching, while a subject is teachable (or not). We add the suffixes *-er*, *-ing* and *-able* to the verb stem *teach* at will in order to derive the requisite meaning. We also know that while a *teacher* is someone who teaches, we can't necessarily add *-er* willy nilly to create similar meanings. Much of our knowledge appears to be word-specific. For instance, a *villager* is not someone who 'villages' and a *bestseller* is not someone who 'bestsells'. In fact, a bestseller is not a person at all.

Another type of knowledge relates to the range of meanings associated with words and other linguistic expressions. Knowledge of this kind is not the restricted definitional kind that you might find given as concise definitions in a desk dictionary, for instance. The sort of meanings associated with words that you carry around in your head is better likened to an encyclopaedia. In fact, knowledge of this type is commonly referred to as encyclopaedic knowledge. For instance, consider everything you must know in order to understand what *open* means in the following expressions: *open a book*, *open your briefcase*, *open the curtains*, *open your mouth* and *open her blouse*. The kind of knowledge you must have access to, stuffed somewhere in your head, concerns the range of scenarios in which very different sorts of things can be 'opened'. After all, we apply 'open' to very different sorts of 'containers' such as a briefcase, a mouth and a blouse, with apertures of different kinds, whose opening is achieved in different ways and for different purposes. It is less clear that a book is a container, and it is not at all clear that there is a container that is opened by virtue of opening curtains. We conventionally use *open* in relation to these very different scenarios, and many others, including such things as 'opening' a bank account. The word meanings that are stuffed into our heads appear not to resemble the narrow, precise definitions of a dictionary at all. Rather, they relate to the sorts of things and situations with respect to which *open* can apply, the way the opening occurs, and the purposes for the 'opening' event.

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Consider how you would go about opening a blouse versus a briefcase, the different sorts of entities you would be likely to find inside each (!), and the reasons for the 'opening' event.

Another kind of knowledge concerns our ability to combine words using knowledge of regular patterns in order to make a seemingly infinite number of novel sentences; we possess knowledge of the abstract rules that make up everything you and I know about English sentence structure. Part of this involves our knowledge regarding word order. We know, intuitively, that in the expression *The window cleaner nervously kissed the supermodel*, the window cleaner did the kissing. But if we reverse the window cleaner and the supermodel – *The supermodel confidently kissed the window cleaner* – now we have a different 'kisser' and 'kissee'. Part of what you, and I, know about a language, then, involves knowing the order in which words are positioned in a sentence. The order, after all, determines the role we attribute to the window cleaner and the supermodel in the kissing event. Of course, other languages vary in quite remarkable ways. Hungarian, for instance, has no fixed word order. Each language represents a unique system replete with its own conventions.

In addition, we possess a large inventory of idioms which are an essential part of any language, and which often pose problems for the language learner. For instance, try explaining to a foreign student why, in English, we can sleep *tight*, *soundly* and *deeply*, but we don't sleep *wide*! *To bend over backwards* means, somewhat bizarrely, to try very hard, rather than to bend over backwards, and *to jump down someone's throat* means something quite different from what it literally says. And *to kick the bucket*, which means 'to die', changes its meaning entirely even if we replace just one of the words. For instance, *to kick the mop* refers, presumably, to a frustrated janitor rather than death.

The final kind of knowledge that I'll touch on relates to what we might think of as contextualisation cues. These include the gestures which accompany our utterances, our facial expression, and cues relating to features of stress, intonation and pitch. For instance, whether the pitch of an utterance rises or falls can

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determine whether we interpret the utterance to be a question or a statement. Moreover, even a well-judged pause or glance can provide an effective means of signalling meaning; for instance, Marina Hyde, the journalist, writing in *The Guardian*, once noted that the appeal of Alistair Campbell – Tony Blair's once fearsome spin doctor – was "based entirely on the look he wore – a look which said: 'I'd like to shag you, if only I had the time.'"[7]

## Myths and realities

In this book I present a number of myths, associated with the language-as-instinct thesis. I contrast these with what I suggest are the more plausible realities, given current knowledge. These realities suggest a wholly different thesis: language-as-use. Beginning with Chapter 2, each chapter commences with a succinct statement of the myth, and then presents the reasons for thinking that the reality lies away from the position maintained by it. The focus, then, is on debunking the myths, in part by presenting the evidence which supports the realities. And in so doing, I aim to show what contemporary research reveals about the nature of language, its function and organisation: how language is learned, and the way it reflects fundamental aspects of the human mind.

In view of this, a reasonable question to ask is: what exactly do I mean by a 'myth'? And, equally, what do I mean by a 'reality'? A myth, for my purposes, is an unproven account of a linguistic phenomenon that appears to be at odds with actual findings relating to language, the mind, and so on. The myth may derive from a best-guess attempt to account for an observed phenomenon. Moreover, what makes something a myth is that it relates to a speculative approach to understanding language. For instance, the basis for the language-as-instinct thesis derives from the proposals made by the famous (or perhaps infamous) American researcher Noam Chomsky, beginning in the 1950s and 1960s. Chomsky made a number of observations about the nature of language, and speculated that as language emerges apparently effortlessly, and

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all humans appear to be capable of acquiring language, then there must be an innately specified Universal Grammar that allows language to grow in the minds of humans, but no other species: language is an instinct.

But some readers may be surprised to learn that the language-as-instinct thesis is not based on actual findings. Nor is it based on detailed observations about how children appear to acquire language. Even today, over fifty years after it was first proposed, there is a paucity of cross-linguistic studies that have been conducted by Chomsky and his colleagues aiming to substantiate the claims of the language-as-instinct thesis. Chomsky's arguments were largely logical in nature, and to him (and his followers) self-evident: evidence was not required. And myths do have a tendency of becoming immune to evidence – that's what a myth is: plausible, institutionalised through ritual retelling, and the worst possible nightmare for 'truth'. But putting Chomsky's cult-status aside, progress in any field of science requires hard evidence, rather than the word of a 'great man'. Good theories, ultimately, ensure that reality bites, in the form of evidence for or against. And a good theory should, at least in principle, have a way of being proved wrong.[8] As the scientific findings have accrued, these increasingly make it very hard indeed to maintain the language-as-instinct thesis, as I hope to show you.

A reality, in contrast, consists of an account following detailed observations, data collection and analysis relating to the linguistic phenomenon. In other words, the realities I describe in this book follow from findings of fact, and analyses based on them, rather than being due to speculative arm-chair theorising.

My presentation of myths and realities focuses on some of the burning questions in the study of language and mind. These include the following.

*Is human language unrelated to animal communication systems?*

The myth maintains that language is the preserve of humans, and humans alone; it cannot be compared to anything found amongst

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non-humans, and is unrelated to any non-human communicative capability. And the myth reinforces a view that there is an immense divide that separates human language from the communicative systems of other species. And more generally, it separates humans from all other species. But recent findings on the way other species communicate, from apes to whales, from vervets to starlings, increasingly suggest that such a view may overstate the divide that separates human language and non-human communicative systems. Indeed, many of the characteristics exhibited by human language are found, to varying degrees, across a broad spectrum of animal communication systems. In point of fact, we can learn more about human language, and what makes it special, by seeking to understand how it relates to and is derived from the communication systems of other species. This suggests that, although human language is qualitatively different, it is related to other non-human communication systems.

### *Are there language universals?*

The language-as-instinct thesis claims that human babies enter the world pre-equipped to learn language. Language emerges effortlessly and automatically. And this is because we are all born with a Universal Grammar: a pre-specified listing of language universals – a universal being a feature of grammar that is shared by all languages. Moreover, as all languages are assumed to derive from this Universal Grammar, the study of a single language can reveal its design. In other words, despite having different sound systems and vocabularies, all languages are basically like English. Hence, we don't in fact need to learn or study any of the exotic languages out there – we need only focus on English, which contains the answers to how all other languages work. But, like the myth that language is unrelated to animal forms of communication, the myth of language universals is contradicted by the evidence. I argue that language emerges and diversifies, in and during specific instances

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of language use. Once I've reviewed some of the evidence for linguistic diversity, evidence that is incompatible with the language-as-instinct worldview, I present some of the usage-based pressures that collectively conspire to give rise to linguistic diversity.

### *Is language innate?*

No one disputes that human children come into the world biologically prepared for language – from speech production apparatus, to information processing capacity, to memory storage, we are neurobiologically equipped to acquire spoken or signed language in a way no other species is. But the issue under the microscope is this: the language-as-instinct thesis proposes that a special kind of knowledge – grammatical knowledge – must be present at birth. Linguistic knowledge – a Universal Grammar that all humans are born with – is hard-wired into the microcircuitry of the human brain. The view that language is innate is, in a number of respects, highly attractive – at a stroke, it solves the problem of trying to account for how children acquire language without receiving negative feedback, from their parents and caregivers, when they make mistakes – it has been widely reported that parents, for the most part, don't systematically correct errors children make as they acquire language. And children can and do acquire their mother tongue without correction of any sort.[9] Moreover, children have acquired spoken language before they begin formal schooling: children are not *taught* spoken language, they just acquire it, seemingly automatically. But such a strong view eliminates the need for learning – apart from the relatively trivial task of learning the words of whatever language it is we end up speaking. The essentials of language, common to all languages, are present in our brains prior to birth, so the language myth contends. But we now know that these specific assumptions are incorrect, as I shall show.

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### *Is language a distinct module in the mind?*

In western thought there has been a venerable tradition in which the mind has been conceived in terms of distinct faculties. With the advent of cognitive science in the 1950s, the digital computer became the analogy of choice for the human mind. While the idea that the mind is a computer has been a central and highly influential heuristic in cognitive science, the radical proposal that the mind, like the computer, is also modular was made by philosopher of mind Jerry Fodor. In a now classic book, *Modularity of Mind*, published in 1983, whose reverberations are felt to this day, Fodor proposed that language is the paradigm example of a mental module. And this view, from the language-as-instinct perspective, makes perfect sense. According to Fodor, a mental module is realised in dedicated neural architecture. It copes with a specific and restricted type of information, and is impervious to the workings of other modules. As a consequence, a module can be selectively impaired, resulting in the breakdown in the behaviour associated with the module. And as a module deals with a specific type of information, the module will emerge at the particular point during the life cycle when it is needed. Hence, a mental module, in developmental terms, follows a characteristic schedule. The notion that the mind is modular might, on the face of it, make intuitive sense. In our everyday lives we associate component parts of artefacts with specific functions. The principle of modularity of design is both a practical and sensible approach to the manufacture not just of computers but of many, many aspects of everyday commodities, from cars to children's toys. However, the evidence, as will become clear, provides very little grounds for thinking that language is a module of mind, or indeed that the mind is modular.

### *Is there a universal Mentalese?*

The language myth contends that meaning in natural languages, such as English or Japanese, derives, ultimately, from a universal

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language of thought: Mentalese. Mentalese is the mind's internal or private language, and makes thought possible. It is universal in the sense that all humans are born with it. It is language-like, consisting of symbols, which can be combined by rules of mental syntax. Without Mentalese we could not learn the meanings of words in any given language – spoken or signed. But as I shall show, Mentalese assumes a view of mind that is wrong-headed: it assumes that human minds are computer-like. It also suffers from a number of other difficulties, which make this supposition deeply problematic.

### *Is thought independent of language?*

While everyone accepts that language affects thought in the sense that we use language to argue, persuade, convince and so on, according to the language myth, thought is, in principle, independent. The idea that systematic patterns in grammatical and semantic representations across languages (a.k.a. linguistic relativity) give rise to corresponding differences in patterns of thought across communities is utterly wrong. As we shall see, the language-as-instinct theorists mischaracterise the thesis of linguistic relativity. Moreover, there is also now a significant amount of scientific evidence suggesting that, in point of fact, the linguistic patterning of our native tongue(s) does indeed have indelible and habitual consequences for how we perceive the world.



From this brief overview of the issues, one salient theme that emerges is, surely, the following. Language and rational thought – so the language-as-instinct myth contends – are too complex and arguably too mysterious to be accounted for without appeal to special knowledge. Such knowledge is 'special' in the sense that we simply don't know where it comes from. Experience, and general learning mechanisms, can't account for these unique features of

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the human mind. Thus, language must be hard-wired, part of our genetic endowment: enter Universal Grammar.

Richard Dawkins describes this type of explanation as an argument from incredulity,[10] while Daniel Everett notes that it boils down, essentially, to a lack of imagination.[11] It proceeds as follows: we (= the extremely clever, tenured professors) can't see how children could possibly learn something as complex as grammar – which underpins language. Therefore, they can't learn it. Thus, grammar must be innate.

The cognitive scientist Anthony Chemero[12] has described such a move as a Hegelian argument after the widely ridiculed 'proof' of Hegel. In 1801, Hegel claimed that the number of planets in the solar system was seven, based on premises which he provided, and had no evidence for. Indeed, we now know that there are eight major planets, and five dwarf planets, including Pluto. The language-as-instinct thesis is precisely this: a Hegelian argument.

But, speculation aside, we know, today, a vast amount about how language is learned, how languages differ, how concepts are formed, and how language interfaces with conceptual knowledge. While we certainly don't know everything there is to know, or even a fraction of everything, at this juncture we are in a position to do far better than the language-as-instinct thesis. In the pages that follow, I will present the case for a nearer approximation to the reality: the language-as-use thesis.

## A straw man?

One of the objections, I anticipate, to this book is that I am attacking a straw man. Surely the 'myths' described above are not taken seriously? Indeed, one colleague has firmly censured me with the following reprimand: "These 'myths' are extreme views that barely anyone subscribes to."

Alas, this is not the case. The views that I classify as myths are presented as established fact in many of the linguistics textbooks

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currently in use in many of the stellar universities throughout the English-speaking world. I was trained using these textbooks, and they are still compulsory reading for today's undergraduate and graduate students – tomorrow's researchers, educators and language professionals – even at the university where I teach and work. University students are regularly told that there *is* a Universal Grammar, that language *is* innate, that language *is* incommensurable with non-human communication systems, and that all languages *are* essentially English-like.

For instance, the world's best-selling university textbook on language is *An Introduction to Language*, written by Professor Victoria Fromkin and colleagues. This book, now in its tenth revised edition, proclaims the following in its very first chapter:

> This business is just what the linguist attempts – to find out the laws of a language, and the laws of all languages. Those laws that pertain to all human languages, representing the universal properties of language, constitute a **Universal Grammar** . . . To discover the nature of this Universal Grammar whose principles characterize all human languages is a major aim of linguistic theory. . .the more we investigate this question, the more evidence accumulates to support Chomsky's view that there is a universal grammar that is part of the human biologically endowed language faculty.[13]

A recently published textbook introduction to the English language, *The Structure of Modern English*, by Professor Laurel Brinton, makes the following claims in its introductory chapter:

> Language is rule-governed, creative, universal, innate and learned, all at the same time . . . A more general set of constraints on language is known as **language universals**. These are features of language that are not language specific . . . Inherent in the notion of universals is the belief that language is innate, that we are born with an inborn capacity for language acquisition.[14]

As we shall see, the claims made in both these representative textbooks are wrong – they fly in the face of, now, several decades of evidence-based research.

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More worrying, the educated general public has been treated to a series of best-selling popular books on language by Professor Steven Pinker of Harvard University, no less. Pinker is talented, eloquent and erudite. He presents various views of language and mind adopting the language-as-instinct thesis that he has helped to develop. The educated general public who have read such pop-sci. bestsellers, including *The Language Instinct* (1994), *Words and Rules* (2001), *How the Mind Works* (1997), *The Blank Slate* (2002) and *The Stuff of Thought* (2007), might be forgiven, given Pinker's eloquence, for thinking that Pinker is right, and everything is settled. Far from it: don't be fooled! As we shall see, the language-as-instinct crowd don't always fight fair: ideas can be massaged to fit the claims, and often, too often, the facts are misrepresented, ridiculed or simply not presented at all. Moreover, since Pinker's first popular book appeared, back in 1994, science has moved on. And to end it all, Pinker is largely wrong, about language and about a number of other things too – as we shall see.

So here it is: I will be arguing that there is no Universal Grammar, and language is not innate: at least, not in the way supposed. More than that, the current generation of university students is still being systematically presented, at the very least, with controversial claims for which there is scant empirical evidence. And the general public deserve a proper exposure to the full facts, and the state of the art. This all matters because language is central to such a vast array of disciplines throughout the humanities as well as the cognitive and behavioural sciences. More than that, language is central to virtually everything we do: it *is* the measure of our lives. And, if for no other reason than that, it deserves to be correctly understood and appreciated.

I've written this book precisely because the myths I shall be refuting do not add up to a straw man. The language myth described and debunked in this book is very much alive. The component myths that make it up – that I tackle in each of the chapters to follow – relate to versions of the brand of speculative linguistics argued for by the linguist Noam Chomsky, and

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speculative psychology developed by his collaborator, the philosopher of mind Jerry Fodor – about whom we'll hear later. These myths are now widely believed to constitute established fact. More worryingly, these views are sanctioned by widely adopted textbooks. This all amounts to an object lesson in how retellings of a particular story, however erroneous, can become widely disseminated as established fact. The language-as-instinct thesis is plausible. But plausibility does not amount to reality. The language-as-instinct thesis is a Hegelian argument, without empirical basis, and, worse, a myth. And as J. F. Kennedy once observed, a myth "persistent, persuasive and unrealistic" poses the greatest harm to the quest for truth.

## Lessons from evolution

In the mediaeval Great Chain of Being all life and matter was conceptualised as forming a hierarchy. In the Renaissance worldview, God sat at the pinnacle, with angels located below. Then came humans, followed by animals, vegetation and finally inanimate matter.

This view of existence was radically challenged in the nineteenth century by Darwin's dangerous idea: humans evolved from the Great Apes. The evolutionary picture Darwin presented did more than offend the Creationist myth provided by Christian dogma. It challenged a fundamental presumption that all sensible people held: humans are qualitatively different from all other animals. In fact, humans are so much more than animals that they are not animals at all – or so we often assume, even today. After all, the derogatory use of the term *animal* relates to a crazed beast, devoid of reason, and driven by blind emotion and bodily function. The story of evolution is dangerous not because it is an affront to the power of God, and even his very existence – although it is from the Creationist perspective – but because it challenges our own presumptions about our place in the world; it challenges our fundamental beliefs about our

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relation to the cats, dogs and horses we call pets and use to serve us in our everyday lives.

Today we know that our species, *Homo sapiens* (wise man), shared a common ancestor with modern chimpanzees and bonobos sometime around 6 million years ago. And all three species shared a common ancestor with gorillas and orang-utans around 15 million years ago. Anatomically modern humans – humans that look, more or less, like you and me – are only around 170,000 years old, give or take 30,000 years, the dating margin of error. We know this from carbon dating of fossils, and from genetic dating of mitochondrial DNA found in female humans.[15] And the evidence for evolution shows that the changes that paved the way for modern humans were gradual, and continuous.[16] We didn't evolve from *Homo erectus* (upright man) overnight – *Homo erectus* was one of the earliest species of the genus *Homo*. Around 1.8 million years of gradual change intervened.

That said, the nature of language, and its status as being 'unique', are emotive issues, *especially* for linguists. After all, professional linguists – scholars like me who study language(s) for a living – have gathered a vast amount of information about language. We know far more than any previous generation about how it works: its internal structure, the relation between form and meaning, how it is processed by the brain, and the socio-cultural status of the words and phrases we produce. For many professional linguists, language *is* unique *a priori*. And indeed, human language provides a richness that seemingly is not apparent anywhere else. As Bertrand Russell has pithily put it: "No matter how eloquently a dog may bark, he cannot tell you that his parents were poor but honest." And as George Carlin has joked: "'Meow' means 'woof' in cat." The point, of course, is that cats just have 'meow', and dogs 'woof' – and these vocalisations must serve all the possible mental states the lowly dog or cat seeks to express.

Humans, in contrast, can combine vast numbers of words, forming sentences of incredible grammatical complexity. And this enables us to talk about almost anything we choose, from the consequences of inflation for the national economy to the

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(decidedly odd) dress sense of Superman, who wears his underpants on the outside.

But the danger with emphasising the uniqueness of language is that it can seem to overstate the gap between human language and other forms of communication, such as animal systems of communication – an issue I shall address in the next chapter. After all, if language is unlike anything else, it is then but a small step – and a slippery slope – to claiming that language really must have emerged out of thin air. The language-as-instinct thesis proposes something very much like this. Its progenitor and most extreme proponent, Noam Chomsky, has claimed that language was most likely the result of a genetic mutation. On this account, language emerged all at once in a perfect or near-perfect state, in one lucky individual, who won the greatest linguistic jackpot of all time.[17]

But this account has been criticised by a wide range of scholars on evolutionary grounds. For instance, one prominent expert, the biological anthropologist Terrence Deacon, has described it as a hopeful monster story, after evolutionarily implausible and widely ridiculed claims made by the German geneticist Richard Goldenschmidt in the 1940s. A hopeful monster account of evolution proposes that evolution may involve a sudden very large change from one generation to the next, facilitating the emergence of a new feature.[18] According to Deacon, Chomsky explains away the origin-of-language problem by sleight of hand: like a white rabbit, it is pulled from out of evolution's magic hat. And consequently, this hopeful monster explanation – the language-as-instinct thesis – is completely at odds with the facts of evolution. Language, as we know it today, must have required many changes to the cognitive (re-)organisation, as well as the anatomy, of pre-linguistic hominins, in order to achieve its current level of sophistication. These would have both affected the primate brain plan inherited by ancestral humans, and changed the anatomy of the genus *Homo*. Moreover, the result would have facilitated an anatomy enabling the production of speech in *Homo neanderthalensis* (Neanderthal man) – now extinct, but who probably

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had some form of speech capability – as well as *Homo Heidelbergensis*, the common ancestor of both humans and Neanderthals.[19]

Such changes, at the very, very least, would have necessitated quantitative variations in the pre-human brain such as an expansion of the frontal part of the cortex – the outer layer of the human brain – relative to other regions. Greater direct control by the cortex over the mouth would also have been required, not least to produce the articulatory gestures to facilitate speech: speech is one of the most complex neuromuscular activities we accomplish, involving around an incredible seventy-eight distinct muscles.[20] A further change has been the lowering of the larynx (or voice box), compared even to our forebears, which has taken evolutionary time to accomplish. As I explain in the next chapter, this was required in order to facilitate speech production, but at the risk of death by choking – an unfortunate side effect of being able to talk. In the United Kingdom around 16,000 people are treated in hospitals each year for choking. And status is no barrier: US President George W. Bush hit the headlines in 2002 when he fainted for a few seconds and fell off a couch after choking on a pretzel. Other changes would have been required, such as an expansion of working-memory, required for composing and producing utterances. Increased memory would have been required for developing temporal sequencing skills, essential for human syntax – the ability to produce grammatically well-formed sentences.

In contrast, chimpanzees, for instance, only have a working-memory capability equivalent to that of a two-year-old human infant.[21] But a sophisticated working-memory is essential for human-like grammar, which requires recalling and sequencing strings of words in the correct order. In short, even if an ancestral human being had, by some chance mutation, developed a language gene, without a language-ready brain and body, the gene would have been useless.

Just as language had to be presaged by many other changes to the ancestral human genome, occurring gradually and incrementally, it is likely that language itself emerged gradually. Just as evolution teaches us that changes build upon one another

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incrementally, another lesson relates to the principle of evolutionary natural drift.[22]

Evolution as natural drift nuances the classic Darwinian formulation that evolution involves, more or less, progressive fitness. Evolution as natural drift presumes a co-determining relationship between organism and environment. An organism evolves in order to best obtain advantage from regularities in its environment. From this perspective, evolution involves co-evolution. For instance, honeybees see in the ultraviolet range of the colour spectrum. Flowers have co-evolved with honeybees so that those most likely to be pollinated are the species which provide greatest ultraviolet reflectance.

As ancestral humans were anatomically incapable of speech, it is highly plausible that proto-language emerged via other means. And this involved co-evolution of neuroanatomical changes ultimately resulting in spoken language.[23] A likely suspect is gesture, and as we shall see in the next chapter, chimpanzees and other primates make ready use of gestures for purposes of communication.[24] We thus gain insight into human language by looking for similarities with (and differences from) other forms of animal communication. To paraphrase the metaphysical poet John Donne, no species is an island. And language did not emerge out of thin air. It is grounded in the communicative tendencies apparent in our ancestral forebears.[25] And various forms of proto-language abound, to varying degrees, in many other extant species.

All that said, human language does, nevertheless, achieve the level of sophistication absent elsewhere. And this is because humans have evolved a special kind of intelligence – cultural intelligence – that harnesses the communicative abilities that are apparent elsewhere, about which I shall have more to say later, especially in the final chapter when I fully review the new synthesis: the language-as-use thesis. Nevertheless, this sceptred kind of intelligence facilitates a range of cooperative behaviours of which language is an example *par excellence*. This is the issue to which we now turn.

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