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Przemysław Żywiczyński

Language Origins

From Mythology to Science

PETER LANG

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Contents

Introduction

Language evolution is an interdisciplinary area of research concerned with the evolutionary processes that brought about language in our phylogeny and the evolutionary processes that are responsible for language change.[1] The term "evolution" in "language evolution" has three principal meanings, all of which are derived from modern evolutionism:

- the evolutionary emergence of language as a human-specific trait (as in Pinker and Bloom 1990 or McMahon and McMahon 2012),
- language change viewed as a culturally adaptive process (as in Croft 2000, Blevins 2004 and Ritt 2004) and
- language variation, particularly with a focus on how the natural as well as social environment impacts patterns of linguistic variation (e.g. Lupyan and Dale 2010, Dediu et al. 2017).[2]

Language evolution appeared at the end of the last century but topically belongs to **language origins** – the domain of investigation that is concerned with the beginnings and diversification of language. The youth of language evolution as a research area contrasts with the antiquity of language origins, which can be traced back to the earliest forms of traditional reflection. Language evolution emphasises its empirical and scientific orientation, whereas throughout most of its history language origins constituted a complex mixture of mythology, philosophy of language, as well as religiously and scientifically inspired speculation.

In a decade or so since its inception, language evolution, or **the science of language evolution** as it perhaps should and will be referred to in this book (henceforth also **SLE**),[3] became ripe for synthesis into secondary and tertiary literatures, which include monographs devoted to various problems investigated by SLE researchers (e.g. two books by Hurford: Hurford 2007 devoted to the evolution of meaning and Hurford 2011 to the evolution of grammar) as well as

1 For the difference between this area of language evolution (sometimes referred to as evolutionary linguistics) and historical linguistics, see 6.7.

2 Haspelmath, http://dlc.hypotheses.org/894 (DOA: 9 Jan 2018.); see also the ensuing discussion.

3 The relation between the terms "language origins" and "the science of language evolution" (SLE) is discussed in detail in 6.7. Now, it suffices to note that in this book "language origins" are inclusive of both the science of language evolution and prescientific reflection on beginnings and diversification of language.

textbooks (Johansson 2005, Fitch 2010, Hurford 2014) and a handbook (Gibson and Tallerman 2012). The synthesising works have appeared in both English and other languages: French (Dessalles 2000), Italian (Ferretti 2010), Polish (Żywiczyński and Wacewicz 2015) and Russian (Burlak 2011). These publications testify to the fact that the dynamic growth of SLE is accompanied by an increasing need to subject its research to internal reflection.

However, this internal reflection has not yet included the historical context out of which the science of language evolution grew. Textbooks or introductory literature are either completely silent about pre-scientific language origins (Johansson 2005; Hurford 2014) or limit treatment of the subject to cursory mentions (Fitch 2010). Among these works, only the Polish introduction to SLE by Żywiczyński and Wacewicz (2015) dedicates a separate chapter to discussing reflections on language origins that preceded the appearance of the science of language evolution. There is also a volume of articles focused on language origins *The Origins and Development of Language: A Historical Perspective*, edited by Gensini (2016), but given its form it is able to present only a fragmentary picture of this very rich and long tradition. Initially, a lack of comprehensive treatments of pre-scientific language origins was understandable, as SLE was trying to assert its scientific character, often in opposition to earlier, more speculative approaches to the problem. Today, however, when it possesses all the hallmarks of a mature scientific enterprise, this lack is less excusable.

Does this mean that a history of language origins should contain an extensive discussion of various views that are unrelated to the problems and methods used in the modern science of language evolution? Someone may answer "no" because – to use an analogy – no one expects a history of chemistry to contain an extensive discussion of alchemy. There is however an important difference between the two: chemistry is not part of alchemy, whereas SLE topically belongs to language origins and hence a book on language origins should present a whole history of this area of investigation, also including elements that have little do with modern theoretical commitments or research practices. Even more importantly, the success of a science in giving a viable explanation of a selected research issue does not merely depend on the quality of research. It equally depends on a sense of belonging that comes with the realisation that one is engaging in a scientific programme together with other researchers. Knowledge of predecessors' efforts in such a programme or its previous versions constitutes an important factor that generates this sense of belonging. That's why the science of language evolution needs a dose of reflection on historical language origins, and the present work is the first attempt to administer it.

0.1 Motivation for the book

This book is primarily directed to language evolution scientists, and as such it ends where most of the literature mentioned above begins – with the appearance of the science of language evolution. It provides an overview of various intellectual traditions that form the history that eventually culminates in this appearance. In doing so, it seeks to provide contexts in which views on the origins of language were formulated, along with analyses of detailed discussions of the views themselves and the consequences they had for views formulated later. The manner of presentation is also designed to offer readers a chance to formulate their own interpretations and to facilitate the use of the material included here in their research – hence, there are numerous and often lengthy quotations, as well as a bulky bibliography of both primary and secondary sources.

But this work has also a riskier agenda, which consists in reconstructing the dynamics of the reflection on language origins. As such it is not only concerned with documenting historical views, but also with how such historical views are organised into larger motifs and how these motifs compete with and promote each other, disappear and reappear, evolve and give birth to new motifs. The goal of describing these processes is risky because it necessarily involves the presentation of a particular vision of language origins and its development. The most important assumption lying behind this project is that language origins have always constituted an independent area of reflection. Of course, they have been part of many different intellectual traditions: theologically inspired reflection, philosophy of language, and – after the inception of science – language origins have been discussed within such disciplines as linguistics, psychology, anthropology or comparative studies. But language origins have nevertheless constituted a distinct area of investigation, having distinct explanatory targets and often distinct explanatory methods. Specifically, the history of language origins should be seen as distinct from the history of linguistics, although – as it will be shown – the paths of these histories often criss-cross. Hence, histories of linguistics (e.g. Robins 1967, Helbig 1973, Itkonen 1991) are of limited applicability in presenting the history of language origins, unless they focus on the express relation between language origins and linguistic theories (see 5.2, 6.1, 6.2). Next, since the endpoint of the story to be presented here is the science of language evolution, the story will only focus on the motifs belonging to the historical course that finishes there. Therefore, non-Occidental reflection on language origins, apart from a survey of mythologies, will not be discussed in this book, except for a few comments of a comparative nature (see 1.1, 1.2, 4.8). Finally, when discussing historical views, references will occasionally be made to contemporary positions,

for example, to Chomsky in the context of the stoical notion of logos (3.3), to Lakoff in the context of Vico's idea of original language (4.1), or to Mithen in the context of Humboldt's musical conception of language origins (5.1). These references serve to highlight either recurrent motifs (as in the cases of Chomsky or Mithen) or more local similarities (as in the case of Lakoff). In either case, readers should consider the similarities between historical and contemporary views *critically*, giving due consideration to the historical and theoretical contingencies of each position discussed here.

0.2 Organisation of the material

The book sets out with **mythological narratives** (Chapter 1). As we are going to see, language origins constitute an important and universal motif of creation myths. Specifically, myths are preoccupied with two problems – the **glottogonic problem** related to the origin of language and the **glossogenetic problem** related to diversification of language. Glottogonic myths usually highlight the divine provenance of language and report its origin as part of the creation process uniquely dealing with the appearance of human beings (1.1). The most common version of glossogeny describes the original state of linguistic and ethnic unity, which is brought to an end by divine fiat; additionally, glossogenetic myths often provide a supernatural explanation of the ethnic identity of a group and its claims to a particular territory (1.2). This chapter serves to show that the biblical glottogonic and glossogenetic myths on which the Occidental tradition is founded – Adam's naming of the animals in the Garden of Eden and the fall of Babel – do not differ much from other mythological narratives.

Viewed from the historical perspective, the content of these myths does not explain the subsequent popularity of language origins in the Occidental intellectual traditions. In the next chapter, we identify **the problem of the Adamic language** as the motif responsible for promoting language origins to the position of a key area of Western reflection on human nature. Although Adamic debates (i.e. debates about the properties of the language used by Adam in the Garden) primarily relied on biblical exegesis, which sometimes involved sophisticated methods of text analysis (as in the Kabbalah, 2.2), they also sought inspiration in pseudo empirical methods of investigation, for example traditional etymology (2.5) or deprivation experiments (i.e. the forbidden experiment, 2.3). The Adamic line of reflection resulted in the discussion of more general problems pertaining to the nature of meaning and the requirements that a perfect language should meet (2.1, 2.4, 2.7).

Adamic reflection co-existed and interacted with the developing philosophical tradition, in which language was discussed in an increasingly sophisticated way (Chapter 3). Language origins did not lie at the centre of this tradition (though see, for example, the epicurean and stoical conceptions of language emergence, 3.3), but **the philosophy of ancient and medieval Europe established an infrastructure of ideas and theories that was used in debates about language origins**. The foundational text, Plato's *Cratylus*, began a philosophical debate about linguistic meaning (3.1), which has ever since engaged successive generations of thinkers. Reflection on meaning uncovered a range of concerns that were of great interest to language origins, such as the **relation between language, reality and mind** (see the debate on universals, 3.4, and the work of speculative grammarians, 3.6), and the related question about the **limits of linguistic description** (3.5).

Language origins in modern times combined a depth of philosophical reflection with the flare characteristic of Adamic debates. However, inspiration came from **science**, which was then being born in Europe. The origin of language started to be discussed as a larger debate about grand scientific problems, most notably in the context of a search for a new, scientifically acceptable definition of man (4.2). These changes gave rise to a unique form of language origins – naturalistic speculation about the beginnings of language. This **naturalistic glottogony**, as it is referred to in Chapter 4, gained prominence during the Enlightenment, when innumerable thinkers of varying abilities and philosophical persuasions used the form of the thought-experiment to describe how language could have been invented without divine intervention (see the thought-experiments by Condillac, 4.5, Rousseau, 4.6, and Herder, 4.7). Naturalistic glottogony had a strong philosophical bent: it appealed to ancient thought (4.1) but, more importantly, it actively participated in the contemporaneous discussions, such as the great epistemological debate between empiricism and rationalism (4.4). Certainly, speculativeness was its greatest weakness, but in the 17th and 18th centuries comparative studies (4.2) and anthropology (4.2, 4.8) were in a state of infancy and could not inform debates about language origins to any significant degree. Besides, no scientifically viable proposal had yet appeared that could be used in explaining the origin of language.

Such a proposal was formulated only in the mid-19th century by **Darwin** in *The Origin of Species* (1859), which explained the mechanism of natural selection (1859), and *The Descent of Man* (1871), where he discussed sexual selection (5.2.1, 5.3). **The application of Darwinian principles to discussions about language origins ushered in truly scientific attempts to build scenarios of language emergence**, as evidenced by Darwin's own account (5.3), Jespersen's

proposal (5.5) or less mainstream lines of thinking such as the orofacial hypothesis inspired by Tylor's anthropological work (5.6). In the meantime, **the rise of linguistics** and specifically **comparative philology** contributed to the understanding of developmental processes of language (5.2). Soon, however, linguists realised that their newly developed methodology (such as the comparative method, 5.2) was not able to shed light on the beginnings of language (5.2.2). In the course of time, this realisation generated a feeling of distrust towards attempts to address glottogonic problems within linguistics (5.4). On the other hand, comparative linguists were quite hopeful about the application of Darwinism to explain language changes, but **with the shift in linguistic theory initiated by de Saussure's *Course in General Linguistics* evolutionary thinking was ousted from the mainstream of this discipline** (5.4).

A resurgence of interest came in the second half of the last century mainly thanks to **the new conception of language formulated by Chomsky** (6.2). Its appearance coincided with major advances in evolutionism, related to the **neo-Darwinian synthesis** of traditional Darwinism and genetics (6.3.2, 6.4), **primatology**, including the study of non-human apes' linguistic abilities (6.3.1), **palaeoanthropology** and **archaeology** (6.3.3) as well as the development of **neuroscience** (6.3.4). Accordingly, evolutionary explanations of language emergence could at last be supported with a significant amount of empirical evidence and rely on the conceptualisation of language that was accepting of such explanations. And this is how the science of language evolution was born.

0.3 Methodological problems

Language origins have their own history, related to, but independent of, the respective histories of theology, philosophy or science. Therefore, squeezing it into the divisions used in describing these other histories would be detrimental to this project. The organisation of the material in the book, which is presented above, seems to exclude the possibility of using a history-of-ideas approach. For example, applying its traditional format espoused by Lovejoy (1923a) would compromise the main objective of this book – capturing the developmental dynamics of language origins from its mythological beginnings to the modern-day science of language evolution. Of course, analysing intellectual motifs into elementary ideas, or unit ideas (Lovejoy 1923a), promises to be a worthwhile project, but it would be a different project to this one. Take for example one candidate for such a unit – "universal language": it is present in the ancient debate between analogists and anomalists (3.1), the Hebrew monogenetic hypothesis (2.2–2.5), the Port-Royal Grammar (4.4), Tylor's natural language (5.6) or

Chomsky's universal grammar (6.2). If we were to describe its history, and then take up the task of describing another elementary idea, and then the history of yet another elementary idea, and so on, readers might find it extremely difficult to see the developmental trajectory of language origins as a whole area. What is needed then is an approach that is more sensitive to historical and intellectual contexts and that is able to give more of a bird's-eye view of the area. It seems that these requirements are met by the approach of *intellectual history*, with its focus on the contextual embeddedness of ideas (Grafton 2006) as well as its concern with both their continuity and changeability (Skinner 1969).

This said, there is also an emotionally charged element to this book. I hope that by describing historical language origins it will contribute to consolidating the identity of researchers associated with the science of language evolution. In this respect, its goal may be seen – *ceteris paribus* – as similar to that which Chomsky pursued in *Cartesian Linguistics* (1966). There is however a fundamental difference between Chomsky's project and the one undertaken here. Chomsky's work came in for a lot of criticism for what was seen as manipulation, which consisted in selecting a group of intellectual giants of the past and presenting their views in a way that fitted Chomsky's enterprise (4.4, 6.2). Here, the intention is to present the topic of language origins in its entirety – both in its intellectual grandeur and shabbiness. Therefore, in this book, readers will encounter Plato, Aristotle, Humboldt or, indeed, Chomsky but also Llull, Kircher, van Helmont or Becanus, whose views occupy the outskirts of contemporary intellectual discourse. This inclusive attitude is necessary for the completeness of the project. But for "immunological" purposes, to use Eco's dictum, it is equally important that modern readers should see views currently deemed as nonsensical in contexts in which they arose and in which they very often made sense:

> It is only when we reconsider past projects revealed as utopian or as failures that we are apprised of the dangers and possibilities for failure for our allegedly new projects. The study of the deeds of our ancestors is thus more than an antiquarian pastime, it is an immunological precaution. (1995: 316)

0.4 Main sources

As noted above, both primary and secondary sources will be used in this work. Regarding the latter, the historical course of events presented here largely follows that found in the first chapter of Żywiczyński and Wacewicz's introduction to the science of language evolution (2015: 19–85), which was published in Polish but which will soon appear in English. But the last chapter of this book (Chapter 6) is largely based on the third chapter of Żywiczyński and

Wacewicz's introduction (2015: 129–190). The discussion of the Adamic tradition (Chapter 2) is greatly indebted to Eco's excellent monograph *The Search for the Perfect Language* (1995). Another work of superb quality, Harris and Taylor's *Landmarks in Linguistic Thought* (1989), has been an important source of insight into the views on language of Plato (3.1), Aristotle (3.2), the Port-Royal grammarians (4.4), Locke (4.4), Humboldt (5.1) and Max Müller (5.2). Finally, Andrzejewski's book *Philosophy of the Word* (published in Polish as *Filozofia słowa*, 2016) informs the presentation and provides an interpretation of ancient and medieval philosophy (Chapter 3) as well as Herder's thought-experiment (4.7).

1 Divine origins of language and languages

Myths about language origins are preoccupied with two problems: the glottogonic problem, related to the very origin of language, and the glossogenetic problem, related to the origin of many, mutually unintelligible languages.

1.1 Glottogonic myths

The glottogonic problem is commonly solved by appealing to divine intervention, whereby language is an endowment that humans receive from supernatural powers. Commonly, glottogonic myths are part of creation myths. The biblical account does not contain an express mention of the divine gift of language; however, Adam's naming ability shows that he did not develop language on his own but, rather, was equipped with it by the creator:

> 1:26 And God said, Let us make man in our image, after our likeness: and let them have dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing that creepeth upon the earth.
>
> 1:27 So God created man in his own image, in the image of God created he him; male and female created he them.
>
> …
>
> 2:19 And out of the ground the LORD God formed every beast of the field, and every fowl of the air; and brought them unto Adam to see what he would call them: and whatsoever Adam called every living creature, that was the name thereof. (Genesis 1:26–27, 2:19)

The passages from Genesis are paradigmatic of language origin myths, where humans are distinguished from all the creation by the gift of language that is not just a list of terms for things in the world but, more importantly, the cognitive-linguistic ability to appropriately identify and name them (cf. Allison 1971). For example, in *Popol Vuh*, the mythological narrative of Quiché-Mayan Indians of Guatemala, a congregation of gods[4] makes a number of attempts to create humans (see Fig. 1). When the gods gave creatures only voice, "they only hissed and screamed and cackled; they were unable to make words, and each screamed in a different way"; and this was the origin of animals. But when the gods gave

4 Common names referring to supernatural agents, such as "god", "deity", etc., are not capitalised unless they appear capitalised in quotations.

rise to creatures and endowed them with both voice and intelligence, they finally succeeded in forming men:

> And as they had the appearance of men, they were men; they talked, conversed, saw and heard, walked, grasped things; …
>
> They were endowed with intelligence; they saw and instantly they could see far, they succeeded in seeing, they succeeded in knowing all that there is in the world. When they looked, instantly they saw all around them, and they contemplated in turn the arch of heaven and the round face of the earth.
> (*Popol Vuh* 1950: 168)

Fig. 1: Popol Vuh*: Gods creating humans*

Source: http://www.theeventchronicle.com/study/popol-vuh-the-sacred-book-of-the-ancient-maya-other-beings-created-mankind/ (DOA: 15 Mar 2017.)

It is indeed a recurrent mythological theme that what distinguishes humans from the rest of creation is both language and intelligence, or perhaps that the gift of language entails intelligence – as the passages from Genesis and *Popol Vuh* could be interpreted. We find similar stories in Greek mythology, which identifies the twin god and goddess of ingenuity, Philarios and Philarion, as responsible for imparting the gift of language onto humans (Maher 2017), or in the Andaman mythology, where the god Pūluga created the first couple, taught them skills necessary for survival: making fire, hunting and fishing, making arrows, bows, baskets, and also language (Radcliffe-Brown 2013). However, there are also mythological accounts in which language is not included among intellectual or spiritual qualities imparted to humans by gods, but among more physical endowments, whereby language itself seems part of the fully

functional human body. We find such an account in the Norse myth of the three sons of the god Borr – Odin, Vili and Vé – who shaped men from trees, with the third son giving the creatures language together with physical form, sight and hearing:

> When the sons of Borr were walking along the sea-strand, they found two trees, and took up the trees and shaped men of them: the first gave them spirit and life; the second, wit and feeling; the third, form, speech, hearing, and sight. (Sturluson et al. 2016: 97)

Although the glottogonic problem is at the centre of many creation myths, there are narratives that do not mention it at all. In these cases, human linguistic capacities are shown to be directly inherited from gods. Such an inheritance may be the effect of a "genetic" continuity between humans and gods, as in the Babylonian myth in which Marduk defeats another god, Kingu, and uses his blood to create the race of men (Bottéro 2001); or it may take place during the act of creating, as in one of the Chinese accounts of creation, where the goddess Nüwa makes male and female figurines from clay by hand to infuse them with life and her own qualities (Birrell 1999); or the Maori myth about Tāne, the god of forests, who formed – from red ochre – the first human, a female, and breathed life into her (Reed 1999).

Language occupies a singular place in Hindu mythology. The traditional Hindu culture believes in the divine nature of language, particularly when it takes the form of the Vedic Sanskrit, for Hindus a language *par excellence*, whose structure and phonetic realisation was meticulously recorded by the grammarian Pāṇini (c. 6th–4th century BCE) in the treatise *Aṣṭādhyāyī* (Dreyfus 1997). This deep appreciation for Sanskrit is expressed in the cult of the goddess of speech, Vāc (Fig. 2), mentioned in the hymns of *Rigveda*, the old part of the Vedic cycle (completed before 1200 BCE). According to a later myth, the world emerged from the union of Prajāpati, lord of creatures, with Vāc (Daniélou 1964/1991). On a metaphysical plane, Vāc is understood as the intelligible principle of the world, not unlike logos in Greek philosophy; in contrast to the Greek notion, Vāc is not an abstract principle but takes concrete form as stanzas of the Vedic revelation (Dreyfus 1997).

Fig. 2: Vāc identified with Sarasvati. An illustration from the lyric poem Meghaduta *written by Kālidāsa (c. 4/5 century CE)*

Source: https://www. britannica.com/topic/Sarasvati#ref33935 (DOA: 15 Mar 2017.)

1.2 Glossogenetic myths

Interestingly, the glossogenetic problem, pertaining to the emergence of many distinct languages, tends to receive a more emphatic treatment in mythologies than, it seems, the more basic problem of glottogony. Frequently, mythological traditions that lack any reference to the latter present an account of glossogeny, as is the case in many North American, Mesoamerican and Amazonian mythologies (e.g. Kaska from the Athabaskan group, Iroquois, Salishan tribes, Aztecs or Ticunas form the Amazon), some African mythologies (e.g. Wa-Sania from the Tana river region in Eastern Africa and Fon of Benin) and aboriginal mythologies (see, for example, Carneiro 2001). This suggests that **glossogenesis, implicated in the more general problem of ethnogenesis, represents a more fundamental problem to traditional societies than the problem of how humans came to possess the general capacity for language.** Furthermore, glossogenetic myths

seem much more similar to each other than glottogonic ones: they usually appeal to the idea of a golden age, when the first people lived together in harmony and spoke the same language. Hence, glossogenetic myths are stories of dispersion and the resultant confusion of tongues. Only a few mythological accounts challenge this monogenetic scenario. One of them is the story from the narratives of the Yuki People of California, which purports that Taikomol, the creator of the world, brought to life many different peoples in different localities and gave them different customs and languages:

> Then follows a long journey of the creator, still accompanied by Coyote, in the course of which he makes tribes in different localities, in each case by laying sticks in the house over night, gives them their customs and mode of life, and each their language. (Kroeber 1907: 184–185)

There is also an aboriginal story in the Kunwinjku language from Northern Australia, which appeals to a common dreamtime motif of the rainbow serpent. In this version, the rainbow serpent carried children in bags that represent different tribes and their languages (see Fig. 3). When it was travelling, it gradually emptied the bags, placing each tribe in its proper location.[5]

Fig. 3: The rainbow serpent carrying bags with children

Source: http://www.aboriginal-bark-painting.com/wp/index.php/2014/02/25/lofty-nabadayal/ (DOA: 15 Mar 2017.)

5 See: http://www.kunwinjku-aboriginal-art.com/yingarna-dreamtime-story.html (DOA: 13 Oct 2017.)

However, as noted above, most creation myths show the beginnings of humanity in terms of linguistic and cultural unity. Dispersion of the original population and the ensuing emergence of mutually unintelligible languages is reported as the effect of an act of god or gods, distraught by the sight of what humans can achieve when working together towards the same goal. All of these motifs are captured by the story of the Tower of Babel, one of the most important Occidental myths:

> 11.1 Now the whole world had one language and a common speech.
> 11.2 As people moved eastward, they found a plain in Shinar and settled there.
> 11.3 They said to each other, "Come, let's make bricks and bake them thoroughly." They used brick instead of stone, and tar for mortar.
> 11.4 Then they said, "Come, let us build ourselves a city, with a tower that reaches to the heavens, so that we may make a name for ourselves; otherwise we will be scattered over the face of the whole earth."
> 11.5 But the LORD came down to see the city and the tower the people were building.
> 11.6 The LORD said, "If as one people speaking the same language they have begun to do this, then nothing they plan to do will be impossible for them.
> 11.7 Come, let us go down and confuse their language so they will not understand each other."
> 11.8 So the LORD scattered them from there over all the earth, and they stopped building the city.
> 11.9 That is why it was called Babel—because there the LORD confused the language of the whole world. From there the LORD scattered them over the face of the whole earth. (Genesis 11.1-9)

The point of the story is encapsulated in the meaning of the Hebrew word for Babel *balal* – to confuse or bewilder (Cesare 2011: 56–57). According to influential Jewish sources, the original language was saved by Abraham's forefathers, who had travelled from Babel to Canaan before the destruction of the Tower (Sherwin 2014: 83–84, see 2.1 and 2.2. for details). But there are also Torah commentators who are of the opinion that the confusion of tongues led to the complete loss of the original language (Cesare 2011).

The Hindu myth about the diversification of language is very similar to the biblical account, perhaps not in narrative detail but certainly in general import. Here, instead of the tower, the focal element is another common mythological motif, the tree – the Tree of the World (Sanskrit *aśvatthah vṛksha*, often identified with *Ficus religiosa*). To prevent the dispersion of people, the tree decides to grow as much as is necessary to shelter humans under its branches. God Brahma, worried that this may disturb the order of things (Sanskrit *dharma*), punishes the tree by cutting its branches and throwing them all around the world. These branches sprout as numerous banyan trees, giving rise to different

customs and languages (Doane 1910: 36). The representatives of the Hindu orthodoxy (Sanskrit *āstika*) claim that the original language of humanity was saved from the dispersion and identify this language as Sanskrit.

The *Popol Vuh* narrative does not expressly implicate gods in the confusion of tongues, nor does it explain what was the cause of the confusion; however, the instantaneous development of mutually unintelligible languages suggests divine intervention:

> Then all the people arrived [to the sacred city of Tulán], those from Rabinal, the Cakchiquel, those from Tziquinahá, and the people who now are called the Yaqui. And there it was that the speech of the tribes changed; their tongues became different. They could no longer understand each other clearly after arriving at Tulán. There also they separated, there were some who had to go to the East, but many came here. (*Popol Vuh* 1950: 176)

Lack of thorough motivation for the confusion brings to mind the motif of the trickster gods who challenge the divine order or make people's life difficult, for example by confusing languages. Probably, the best-known example comes from Greek mythology and concerns the god Hermes, who is responsible for stirring up linguistic diversity. This is how Hyginus, the Roman mythographer from the 2nd century C.E., tells this story:

> Men for many centuries before lived without town or laws, speaking one tongue under the rule of Jove [Zeus]. But after Mercurius [Hermes] had explained [or created] the languages of men (whence he is called *ermeneutes*, "interpreter", for Mercurius in Greek is called *Ermes*; he too, divided the nations), then discord arose among mortals, which was not pleasing to Jove [Zeus]. (Hyginus, *Fabulae* 1960: 143)

Interestingly, a similar but unrelated trickster motif is found in some African mythologies – for example, incarnated in the god Legba of the Fon people in Benin, the patron of languages and divination who is also believed to bring disorder and confusion (*Encyclopaedia Britannica*, African Religions, 2017).

Dispersion of people and confusion of languages is sometimes given a more naturalistic explanation and attributed to natural disasters, which may or may not be attributed to divine fiat. Myths often appeal to the universal mythological motif of deluge (Carneiro 2001), as in the case of many American mythologies, such as those of the Blackfoot, the Kaska or Aztecs (Gill and Sullivan 1994). The Wa-Sania tribe believe that the calamity that brought about the scattering of the human population was a great famine; it pushed people in different directions, where they settled and developed separate languages (Frazer 1919: 384). There are also stories that prioritise demographic concerns; for example, Andaman mythology reports that the children of the first couple

were so numerous that Pūluga, the god creator, decided to send them into different parts of the world, equipping each traveller with provisions and a separate language (Radcliffe-Brown 2013). A similar narrative is found among the Iroquois, who believe that the six original clans, who spoke the same language, were instructed by Tarenyawago, the holder of heaven, to settle in different parts so as to avoid overcrowding and conflict. The god taught them the particular skills that they would need in the new lands; once they settled in these lands, their languages gradually diverged from one another (Johnson 1881).

There is also an intriguing group of myths that link the emergence of languages to dietary taboos. For example, Ticunas from the Amazon believe that it was caused by the eating of two hummingbird eggs (Carneiro 2001), while in the aboriginal dreamtime literature, there is a rather gruesome story of how an act of cannibalism resulted in the divergence of languages:

> In remote time an old woman, named Wurruri, lived towards the east and generally walked with a large stick in her hand, to scatter the fires round which others were sleeping. Wurruri at length died. Greatly delighted at this circumstance, they sent messengers in all directions to give notice of her death; men, women and children came, not to lament, but to show their joy. The Raminjerar were the first who fell upon the corpse and began eating the flesh, and immediately began to speak intelligibly. The other tribes to the eastward arriving later, ate the contents of the intestines, which caused them to speak a language slightly different. The northern tribes came last and devoured the intestines and all that remained, and immediately spoke a language differing still more from that of the Raminjerar. (Meyer 1846: 14)

The survey of myths about language origins given here does not aspire to ethnographic completeness, neither does it serve to introduce a systematic analysis of these myths. The goal here – motivated by the language origin perspective (rather than that of anthropology, cultural or literary studies) – is to show the recurrent motifs in the traditional reflection on language origins. Following Malinowski's insight that myths represent a living reality for communities whose heritage they are part of (1948), the idea has been to collect myths that determined the ways of thinking about language in the past and, likely, still continue to exert an influence on the way we approach language, both in everyday and scientific contexts. When viewed in this way, what seems **a particularly persistent idea in glottogonic myths is that language is special: it is not a human invention but a divine gift that distinguishes humans from other animals.** This quality is not just related to the fact that humans use language to name things but, more importantly, that humans are able to understand the world through the lens of language. Language also enables humans to have unique forms of coexistence and cooperation, and leads to the accomplishment

of feats that can even challenge the position of gods. This reading of glossogenetic myths, such as the Tower of Babel story, seems much more interesting, at least in the language origin context, than the traditional interpretation related to the motif of the golden age (Carneiro 2001). **Another important idea found in mythological narratives is that the language of one's community, together with its customs and place of residence, constitutes one's second nature.** Linguistic boundaries are commonly believed to have been imposed by divine intervention, either direct or indirect. Often, a language, customs and location are purposefully chosen for a particular community by a deity, whereby they acquire a quasi-biological character – a specification that belongs more to the realm of nature than culture and in this way gives a community a non-arbitrary and emotionally charged sense of togetherness.

2 The problem of the Adamic language

As we have seen, biblical glottogonic and glossogenetic mythology contains elements that generally characterise origin myths – the divine origin of language and the divine intervention that brought about linguistic diversification. The Occidental intellectual and religious tradition, whose identity is to a great extent based on the Bible, explored these mythological motifs in a very intense and elaborate way, and the problem that channelled these explorations was that of the Adamic language. Viewed literally, the Adamic problem concerned the language used by Adam to name everything that god had placed in the Garden of Eden, and more generally, the linguistic situation before and after the destruction of the Tower. When expressed in more philosophical terms, the problem of the Adamic language concerned the design of language or, more precisely, the design of a perfect language. The fact that this problem captivated so many minds for so many centuries may well explain why the issue of language origins has enjoyed such popularity in the Occidental intellectual tradition, becoming one of its perennial themes, if not obsessions (cf. Eco 1995: 1–6).

2.1 Definition of the Adamic problem and its textual basis

The problem of the Adamic language derives from the familiar passages in Genesis 1 and 2, which report on the creation of the world and Adam's naming feats, as well as Genesis 11, which relays the Babel story and the ensuing *confusio linguarum*. The principal questions that arose with respect to the account of the beginnings of language addressed both glottogonic and glossogenetic motifs. With regard to the former, the more concrete question was whether or not Adam, when naming animals, was using a natural language that either is still spoken or is traceable to some language that was spoken in the past. These concerns led to the more theoretical question about the nature of Adam's language, and specifically whether there was something special about the names given by Adam when compared to names in modern languages. The glossogenetic element was again discussed in two ways – more concretely, in terms of tracing a historical development of languages to the destruction of the Tower and the subsequent diaspora. More general questions evoked by the myth concerned the significance of *confusio linguarum* for human linguistic ability and mode of life.

Interestingly, although the story of the Tower constitutes the classic biblical account of glossogenesis, Genesis also presents its more mundane version, when

the emergence of languages is linked to the migration of Japheth's sons, Japheth himself being a son of Noah:

> 10.1 Now this *is* the genealogy of the sons of Noah: Shem, Ham, and Japheth. And sons were born to them after the flood.
> 10.2 The sons of Japheth *were* Gomer, Magog, Madai, Javan, Tubal, Meshech, and Tiras.
> 10.3 The sons of Gomer *were* Ashkenaz, Riphath, and Togarmah.
> 10.4 The sons of Javan *were* Elishah, Tarshish, Kittim, and Dodanim.
> 10.5 From these the coastland *peoples* of the Gentiles were separated into their lands, everyone according to his language, according to their families, into their nations. (Genesis 10, 1–5)

The catastrophic version of glossogenesis from Genesis 11 and the more naturalistic version from Genesis 10 were both appealed to by commentators throughout the ages, particularly in the context of the debate about the nature of glossogenesis. In this context, this debate was intent on the question of whether the fact that people speak mutually incomprehensible languages represents god's will or is an outcome of historical and demographic processes.

The Christian tradition until the end of Middle Ages stuck to the idea that since the language of the Old Testament (roughly equivalent to the *Tanakh* scriptures in the Jewish tradition) was Biblical Hebrew,[6] this language was the original language of humanity (i.e. the language used by Adam to name animals), which survived unscathed the *confusio linguarum*. Notably, this was the opinion of the Church Fathers, with the only major dissenting voice coming from Gregory of Nyssa (c. 335–c. 395), who says: "… the Hebrew tongue is not even ancient like the others, but … after the Exodus from Egypt, the language was hastily improvised for the use of the nation" (Gregory of Nyssa 1995: 276; cf. Eco 1995: 74). Exemplary for the Christian orthodoxy of the time is the position of Augustine (354–430), who although believing that Hebrew was the original language and hence the oldest one, did not think that it is in any way superior to other languages:

> Wherefore, as the fact of all using one language did not secure the absence of sin-infected men from the race – for even before the deluge there was one language, and yet all but the single family of just Noah were found worthy of destruction by the flood, so when the nations, by a prouder godlessness, earned the punishment of the dispersion and the confusion of tongues, and the city of the godless was called Confusion or Babylon, there was still the house of Heber in which the primitive language of the race survived. And therefore, as I have already mentioned, when an enumeration is made of the sons of Shem, who each founded a nation, Heber is first mentioned, although he was

6 Actually, a few of the *Tanakh* books, most notably the books of *Daniel* and *Ezra*, were composed in Biblical Aramaic (cf. Rowley 1929).

> of the fifth generation from Shem. And because, when the other races were divided by their own peculiar languages, his family preserved that language which is not unreasonably believed to have been the common language of the race, it was on this account thenceforth named Hebrew. (Augustine *The City of God* XVI, 11)[7]

In his philosophical and ecclesiastical work, Augustine relied on both *Vetus Latina* (the Old Latin translation of the Bible) and the *Vulgate*, Jerome's Latin translation (c. 347–420), and a limited knowledge of Greek – he did not know Hebrew, nor did he think that the knowledge of Hebrew was necessary to unlock any major religious mysteries (see Eco 1995: 14–16 for a discussion of this point).[8] More generally speaking, although Christianity grew out of the Jewish religious world, until the Renaissance it was difficult for Christian thinkers – due to cultural but also political reasons – to acknowledge direct inspiration drawn from Judaic sources,[9] where the problem of the Adamic language was being discussed in an increasingly sophisticated way (Eco 1995: 14–16). This, at least partly, explains the absence of Adamic debates in Christian literature up to the Renaissance.

2.2 The Kabbalah

In early Rabbinic Judaism, the midrash tradition – *midrashim* being commentaries on the *Tanakh*, often in an allegorical form – articulated the view that god equipped Adam with a particular language and that this language was Hebrew, whereby it enjoys a special place among the languages of the world (Rosik and Rapoport 2009). The belief in the sacred character of Hebrew became the leitmotif of the *Kabbalah* – an esoteric movement in Judaism that first flourished in medieval Spain among Sephardic Jews, where its foundational text, *Zohar*, appeared in the 13th century (for details see Dennis 2007). The key concept in the Kabbalah is that of the eternal Torah, which is differently understood as the creation plan announced to angels before the actual act of creation or as ten Sefirots describing the stages of the creation process (see Scholem 1996). The messages of the eternal Torah are hidden in the textual *Torah* and uncovering them requires special decipherment techniques, the most important of which are *notarikon*,

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7 http://www.unilibrary.com/ebooks/Saint%20Augustine%20-%20City%20of%20God.pdf (DOA: 20 Dec 2017.)

8 This said, it should be acknowledged that Augustine encouraged his students to learn Hebrew and Greek, mainly in order to avoid the misunderstandings that reading translated texts could cause (see, for example, *De Doctrina Christiana* II, 11).

9 But there seems to have been a wave interest in Hebrew at the beginning of the 5th century C.E., as can be deduced from Jerome's letters see, for example, Mews 2007).

gematria and *temurah*. The first of these usually consists in the use of initial or final letters of Hebrew words to derive new words or sentences. To give a classic example, Moses' question in *Deuteronomy* 30:12 "Who shall go up for us to heaven?" in Hebrew is represented by four words, whose initial letters are MYLH and the final ones – YHWH (Biblical Hebrew is written without diacritics indicating vowels and accents). The first means "circumcision" and the other is the famous tetragrammaton, the most sacred of god's names in the *Torah*, which gives the Kabbalistic interpretation of Moses' question: "the circumcised will go up to God" (after Eco 1995: 27). *Gematria* makes use of the fact that in Hebrew, numbers are indicated by letters; hence, each word can be given a numerical value, which allows Kabbalists to search for relationships between words that have the same numerical value. One of the famous examples concerns the interpretation of *Elohim*, another of god's names, whose numerical value – 86 – is the same as that of *hateva*, i.e. "nature". In Kabbalists' opinion, this fact reveals the hidden meaning of *Elohim* as designating god's presence in the physical world (cf. Scholem 1996). Finally, *temurah* consists in re-combining letters and words, for example by exchanging a word's initial and final letters or replacing a letter with a preceding or following one. For example, the Hebrew word for "I" – *ani* – consists of three letters *alef*, *nun* and *yod*; when recombined into *nun*, *yod* and *alef*, they give *ayin*, "nothing", which is taken to mean that from god's perspective the personal self is nothing (Dunn 2008: 147).

Kabbalists treat language, or rather the Hebrew language, with utmost seriousness, which according to them is justified by the role Hebrew played in the act of creation. On this account, the 22 letters of the Hebrew alphabet and the *Torah* verses literally constitute god's breath (Hebrew: *ruach elohim*) that once brought the world into existence (Cesare 2011: 89). It is also a popular Kabbalistic belief that at the beginning of creation the text of the eternal Torah was inscribed by god's breath in the form of black flames on white fire (Eco 1995: 26), hence the Biblical Hebrew script is sometimes referred to as the *fiery alphabet*. An even more common metaphor for understanding the role of the Hebrew letters in the act of creation is through reference to the building material: the Hebrew letters are here 22 stones, or building blocks, used by god to construct the world. Probably the earliest text of Jewish mysticism, *Sefer Yetzirah*[10] (*The Book of Creation*), contains the following passage:

10 *The Book of Creation*, differently dated to late antiquity or early Middle Ages, see Kohler and Ginzberg (1906).

> Twenty-two foundation letters: He ordained them, He hewed them, He combined them, He weighed them, He interchanged them. And He created with them the whole creation and everything to be created in the future. (II, 2)
>
> Twenty-two foundation letters: He fixed them on a wheel like a wall with 231 gates and He turns the wheel forward and backward. (II, 4)
>
> How did He combine, weigh, and interchange them? Aleph with all and all with Aleph; Beth with all and all with Beth; and so each in turn. There are 231 gates. And all creation and all language come from one name. (II, 5)
>
> How did He combine them? Two stones build two houses, three stones build six houses, four stones build twenty-four houses, five stones build a hundred and twenty houses, six stones build seven hundred and twenty houses, seven stones build five thousand and forty houses. Begin from here and think of what the mouth is unable to say and the ear unable to hear. (IV, 16) (*The Book of Creation* 1977 quoted after Eco 1995: 29)

Viewed in this way, Hebrew, at least in its biblical idiom, is not just the language that Adam spoke and that was used for the composition of the sacred texts – it is the language that was used in creating the world and hence was able to express correctly the nature of things in the world. This **radical deification of the language**, not unlike the regard for Sanskrit in Hindu orthodoxy (see 1.1, 1.2, 4.8), **led to a strongly essentialist view of meaning, according to which the names given by Adam are correct names in the sense that they bring out the true nature of designated objects**.[11] There was some communication between the Jewish religious thought and the philosophical traditions of Greece and Rome. As early as at the beginning of the Common Era, Philo of Alexandria (c. 20 BCE–c. 50 CE) was trying to integrate Platonic idealism with the *Torah*'s account of creation and *confusio linguarum*, which brought forth a theory of language clearly inspired by Plato's *Cratylus* (Philo 1993a, 1993b; cf. Reeves 2014; for a discussion for Plato's *Cratylus*, see 3.1). However, the Kabbalistic conception was almost exclusively based on Hebrew sources – specifically, the oral and written traditions of Rabbinic Judaism. In accordance with this, Hebrew, as god's language, was taken not only to be able to capture the true nature of things but also to constitute the matrix of constructional possibilities out of which emerged all the languages of the world, i.e. the languages of the 70 nations founded by Noah's grandsons (Genesis 10). Some Kabbalistic schools put a lot of effort into

11 This goes against many popular interpretations of the biblical glottogonic myth. Fitch for example argues that since god told Adam to name animals in the Garden, it follows that the biblical author subscribes to the view that linguistic meaning is arbitrary *sensu* de Saussure (2010: 390).

proving **the Hebrew monogenetic hypothesis, i.e. the hypothesis that all of the world's languages are ultimately derived from Biblical Hebrew** (Eco 1995); for example, the phonetic differences between Hebrew and other languages were explained to have arisen by loss or mutation of the original Hebrew sounds, or by bastardisation of non-Hebrew languages through the adoption of animal sounds (Eco 1995: 32).

The most mature Kabbalistic conception of language is found in the writings of Abraham Abulafia (1241–1291). In consonance with the Kabbalah mainstream, he believes that the eternal Torah was brought into existence by god's eternal language. This language consists of the 22 letters of the Hebrew alphabet, which are the building blocks of all possible languages (Idel 1989). Abulafia tried to demonstrate this universal constraint by comparative studies of Hebrew, Greek, Arabic and Assyrian (Idel 1989: 1–26; Eco 1995: 32). Regarding the status of Hebrew, Abulafia argues that it is not god's language but enjoys a special place among the languages of the world, as it was used by Adam, at god's behest, to name animals in the Garden. In doing so, Adam resorted to conventions, by ligaturing the Hebrew letters in particular ways; however, these conventions were not arbitrary, as – due to divine inspiration – Adam was able to use such conventions that were able to capture the essential characteristics of named objects. **The view of language** (or the Hebrew language) **as consisting of signs that are conventional but non-arbitrary constitutes the hallmark of Abulafia's theory of meaning** and one of the most intriguing proposals elaborated in the Kabbalistic movement (Idel 1989: 1–26, Eco 33). On a more mystical ground, the Kabbalistic methods of *notarikon*, *gematria* and *temurah* are taken by Abulafia to allow practitioners to catch glimpses of the eternal Torah; however, its full text will be revealed only on the appearance of the messiah, when all languages will be absorbed into an ideal language, non-equivalent with Hebrew (Eco 1995: 33).

After the fall of Granada in 1492, the Christian rulers of Spain ordered the expulsion of Jews from Spain – the Kabbalist lair. As a result, waves of Sephardic immigration spread across the Maghreb, the Ottoman Empire and, most importantly Europe, on whose intellectual culture the Kabbalistic ideas were soon to exert a considerable influence. Before investigating this problem, we will take a look at a more gruesome manifestation of the belief in Hebrew as the Adamic language.

2.3 The forbidden experiment

As already noted, the belief in Hebrew as the original language of humanity was common among Christian thinkers of the Middle Ages as well as – through the growing influence of the Kabbalah but also the more orthodox Rabbinic

tradition – among Jewish thinkers of the period. Many of them transposed the alleged historical primacy of Hebrew onto the ontogenetic place, and claimed that, **as god equipped Adam with the Hebrew language in the garden of Eden, in the same way every human being is born with a knowledge of this language; the corollary of such a position was that a child deprived of linguistic input should naturally understand and speak Hebrew.** Abulafia dismissed this view, arguing that Hebrew, though non-arbitrary, was based on the linguistic conventions established by Adam, and hence its acquisition required learning. However, a sizeable number of Kabbalists accepted **the Hebrew innateness hypothesis** (see a record of the debate between Hillel of Verona and Zerakhya of Barcelona; Eco 1995: 49–50), as did some Christian authors (Eco 1995: 33).

There existed a pseudo-experimental procedure to test this hypothesis, which had already been put to test – the infamous *forbidden experiment* – which consists in the long-term linguistic deprivation of newborn children (Shattuck 1994: 41–46). Its first mention comes from Herodotus, who mentions Pharaoh Psammetichus (who ruled between 664 and 610 BCE) and his attempt to determine the original language. Psammetichus used the experiment in an exploratory way: proceeding on the assumption that the original language is innate, he concluded that linguistic deprivation would demonstrate which language it is:

> Now before Psammetichus became king of Egypt, the Egyptians believed that they were the oldest people on earth. But ever since Psammetichus became king and wished to find out which people were the oldest, they have believed that the Phrygians were older than they, and they than everybody else. Psammetichus, when he was in no way able to learn by inquiry which people had first come into being, devised a plan by which he took two newborn children of the common people and gave them to a shepherd to bring up among his flocks. He gave instructions that no one was to speak a word in their hearing; they were to stay by themselves in a lonely hut, and in due time the shepherd was to bring goats and give the children their milk and do everything else necessary. Psammetichus did this, and gave these instructions, because he wanted to hear what speech would first come from the children, when they were past the age of indistinct babbling. And he had his wish; for one day, when the shepherd had done as he was told for two years, both children ran to him stretching out their hands and calling "Bekos!" as he opened the door and entered. When he first heard this, he kept quiet about it; but when, coming often and paying careful attention, he kept hearing this same word, he told his master at last and brought the children into the king's presence as required. Psammetichus then heard them himself, and asked to what language the word "Bekos" belonged; he found it to be a Phrygian word, signifying bread. Reasoning from this, the Egyptians acknowledged that the Phrygians were older than they. This is the story which I heard from the priests of Hephaestus' temple at Memphis; the Greeks say among many foolish things that Psammetichus had the children reared by women whose tongues he had cut out. (Herodotus, *History* II, I)

When the Holy Roman Emperor Frederick II (1194–1250) decided to repeat the cruel experiment on a much larger scale, he did so to verify the Hebrew innateness hypothesis:

> [He made linguistic experiments on the vile bodies of hapless infants, bidding foster-mothers and nurses to suckle and bathe and wash the children, but in no wise to prattle or speak with them; for he would have learnt whether they would speak the Hebrew language (which had been the first), or Greek, or Latin, or Arabic, or perchance the tongue of their parents of whom they had been born. But he laboured in vain, for the children could not live without clappings of the hands, and gestures, and gladness of countenance, and blandishments.] (quoted after Coulton 1906: 242–243)

Monk Salimbene, who reported the course of the experiment, concludes that it ended up dramatically, with the death of the orphan children. James IV of Scotland (1473–1513) undertook the experiment with the same intention; the experiment was probably staged, as – according to the absurd report – two boys isolated on the island of Inchkeith naturally began speaking "very good Hebrew"[12] (Dalyell 1814: 249–250).

The forbidden experiment, at least in the context of the alleged innateness of Hebrew, was repeatedly criticised by medieval and, later, Renaissance authors. These criticisms sometimes brought out early observations on language acquisition, for example that language does not arise in a child suddenly and *in toto* but develops gradually from inarticulate sounds (similar to the barking of dogs, as noted by Zerakhya of Barcelona; see Eco 1995: 50). Yet, language deprivation experiments, cruel and nonsensical as they were, should be seen as an expression of the standard view in the Middle Ages: language was god's gift to Adam, and for the majority this language was Hebrew. This made Hebrew special and the followers of the Kabbalah sought to make it even more special by claiming that it is a language par excellence, with sounds particularly well-suited for the human articulatory system and words whose meanings bear an essential relation to things they refer to. As we are going to see, these beliefs were very long-lived; for example, **as late as in 1804 the Manchester Philological Society threatened**

12 Even contemporary commentators were very critical of these claims. For example, Robert Lindsay of Pitscottie (c. 1532–1580) in *The Historie and Chronicles of Scotland, 1436–1565* described the experiment in the following way: "He caused tak ane dumb woman, and pat hir in Inchkeith and gave hir two bairnes [children] with hir, and gart furnish hir with all necessares thingis perteaning to theiar nourischment, desiring heirby to know what language they had when they cam to the aige of perfyte speach. Some say they spak guid Hebrew; but I know not by authoris rehearse" (see Dalyell 1814: 249–250).

to exclude anyone who questioned the divine origin of language described in the Bible, for example by using comparative evidence to talk about the Indo-European language family (Eco 1995: 114).

2.4 Dante's "illustrious vernacular"

However, towards the end of the Middle Ages, new philosophical and artistic trends were beginning to emerge in Europe. They were destined to instigate the humanistic revolution of the Renaissance, and the problem of language and its origins was an important element of this intellectual turnover. Dante Alighieri (1265–1321) was a key figure of these movements, whose views on language contributed to the foundation of a novel, humanistic conception of man.

His *De Vulgari Eloquentia* is exclusively devoted to the problem of language. The work explores the concept of the *Illustrious Vernacular*, "an ideal form, approached by the best poets, and it was according to this ideal form that all the vulgar dialects needed to be judged" (Eco 1995: 34). Scholars are still engaged in debating the significance of this concept – some claim that Dante suggested the creation of a uniform and refined language for the whole of Italy; others, that he believed in the existence of a perfect language, the glimpses of which can be seen in the works of best poets and philosophers (for discussion see Mazzocco 1993: 108–158 and Eco 1995: 134–151). *De Vulgari Eloquentia* abounds in comparative linguistic analyses, too anecdotal to be of any linguistic value, which however lead Dante to mostly correct claims about the relatedness of the Romance languages with other languages of Europe. They also introduce the problem of the mutability of languages and the processes responsible for it. Dante traces this problem back to Horace's *Ars Poetica* and identifies "man's fancy" – the changeability of human customs and habits – as the principal instigator of linguistic change (Mazzocco 1993: 119–122). This rather modern attitude, heralding the humanistic spirit of the Renaissance, contrasts with his very traditional stance on the problem of the Adamic language. Accordingly, Dante insists that the first language was not invented by Adam but created by god alongside the creation of man, and that it was the Hebrew language:

> Therefore it is reasonable to believe that the power of speech was given first to Adam, by Him who had just created him. As to what was first pronounced by the voice of the first speaker, that will readily be apparent to anyone in their right mind, and I have no doubt that it was the name of God or El, in the form either of a question or of an answer. It is manifestly absurd, and an offence against reason, to think that anything should have been named by a human being before God, when he had been made human by Him and for Him. (*De Vulgari Eloquentia* I, IV)

Hebrew was the only language saved from *confusion linguarum* and, as Dante wrongly assumed, was the language spoken by Jesus:

> In this form of language Adam spoke; in this form of language spoke all his descendants until the building of the Tower of Babel (which is interpreted as "tower of confusion"); this is the form of language inherited by the sons of Heber, who are called Hebrews because of it. To these alone it remained after the confusion, so that our redeemer, who was to descend from them (in so far as He was human), should not speak the language of confusion, but that of grace. So the Hebrew language was that which the lips of the first speaker moulded. (*De Vulgari Eloquentia* I, VI)

On a more theoretical plane, the treatment of the Adamic language is implicated in Dante's reflection on *gramatica* – an immutable language that is exempt from mutability because it has arisen for special purposes or under special circumstances and whose use requires "lengthy and assiduous study" (Mazzocco 1993: 161). He identifies Greek and Latin as *gramaticae* that emerged for special purposes, i.e. to facilitate communication of peoples from different areas and later also from different times (Mazzocco 1993: 197). Greek and Latin are then *gramaticae* that arose through people's common consent; on the other hand, Hebrew enjoys the status of *gramatica* because it was created under special circumstances, i.e. by god, and being the sacred language it is able to resist the changeability characteristic of other languages (Mazzocco 1993: 197).

Later, in his best-known work, the *Divine Comedy*, Dante radically alters his view on the Adamic language. In the Eighth Sphere of Heaven, Dante meets Adam, who makes the following revelation:

> The language that I spake was quite extinct
> Before that in the work interminable
> The people under Nimrod were employed;
>
> For nevermore result of reasoning
> (Because of human pleasure that doth change,
> Obedient to the heavens) was durable.
>
> A natural action is it that man speaks;
> But whether thus or thus, doth nature leave
> To your own art, as seemeth best to you.
>
> Ere I descended to the infernal anguish,
> El was on earth the name of the Chief Good,
> From whom comes all the joy that wraps me round
>
> Eli he then was called, and that is proper,
> Because the use of men is like a leaf
> On bough, which goeth and another cometh.

Upon the mount that highest o'er the wave
Rises was I, in life or pure or sinful,
From the first hour to that which is the second,
As the sun changes quadrant, to the sixth. (*The Divine Comedy*, Paradise, XXVI)

Thus, Adam's language is said to have changed until it reached Nimrod's time. The pseudo-linguistic reconstruction of the term *Eli* from the ancient Eli serves to illustrate that Hebrew as any natural language undergoes change "[b]ecause the use of men is like a leaf [o]n bough, which goeth and another cometh". Dante's re-evaluation of Hebrew could have been a result of a direct or indirect influence of Abulafia, who had exposed problems with treating Hebrew as the language conceived by god (see Eco 1995: 46–52). Although, as already noted, the view that Hebrew had been spared from the confusion of tongues was held by the majority of medieval Christian authors, there were Christian sources that supported Dante's account in the *Divine Comedy*. Most notably, many representatives of the scholastic tradition including Thomas Aquinas (1225–1274) argued that all languages had been invented by people, and that the divine gift of language consists in the uniquely human capacity to learn language (see Mazzocco 1993: 164). Be this as it may, Dante's naturalistic conception of the emergence and diversification of language exerted a lasting influence on the Occidental reflection on language origins and prefigured the naturalistic theories of Vico, Condilliac and Herder (4.1, 4.5, 4.7). Eco (1995) expresses the view that Dante is responsible for yet another important conception that was soon to grab the minds of European thinkers. Certainly, Dante borrowed from a number of sources, including the Kabbalah and the scholastics; however, he was particularly indebted to the Modistae, or followers of the speculative grammar, who contended that god had not equipped Adam with a particular language but with a set of principles (or modes) that enabled him to design language (Eco 1995: 43–44; for more on the Modists, see 3.6). Putting together Dante's appraisal of the Illustrious Vernacular from *De Vulgari Eloquentia* and the naturalistic turn he took in the *Divine Comedy*, Eco argues that Dante could have contemplated the possibility of constructing a perfect language, endowed with both the highest clarity of expression and aesthetic quality (Eco 1995: 134–151). On this reading, Dante can be seen to be the father of a long line of scholars who set themselves the task of constructing a language, or *gramatica* to use his own dictum, that in at least some respect outmatches natural languages (for a discussion, see for example Eco 1995: 317–336).

2.5 Etymological eccentricities

At the end of the 15th and throughout the 16th century, the problem of the Adamic language became one of the most hotly debated issues, and these debates were not confined to Kabbalistic circles but impressed on Europe's overall intellectual climate and contributed to the popularity of language origins. This was not the doing of the biggest intellectual giants of the era but thinkers of smaller stature whose works, however, were then read widely and with attention. The reasons for this rise of interest included a variety of factors – religious, philosophical as well as social. The Renaissance is popularly believed to be the period of renewed interest in antiquity, but it was equally the period of great geographical discoveries, the period of budding science but also of unprecedented fascination with the occult as well as of great religious turmoil (Hale 1995). The Reformation abolished the uniform Roman Catholic exegesis of the Bible, together with its model translation – Jerome's *Vulgate*. As a result, Catholics and Protestants alike began grappling with the original biblical texts, which gave rise to an interest in the Hebrew language and Jewish religious thought (Eco 1995: 74–75).

A number of Renaissance thinkers subscribed the Hebrew monogenetic hypothesis. As we have seen, there were some attempts in the Kabbalistic tradition to corroborate this hypothesis by linguistic comparison (see above), but the comparative projects undertaken by Renaissance scholars were much more extensive. What guided many of these works was the conviction, again found in medieval Cabbalism, that Hebrew is not just the oldest language but that its design is unique as Hebrew words non-arbitrarily relate to the objects they designate. The view found in Abulafia's account of meaning could be referred to as *essentialistic conventionalism* because it holds that although Adam invented naming conventions – thanks to divine inspiration – the Hebrew names given by him are able to capture the essential characteristics of named objects (see 2.2, and 3.1 for Plato's mimetic naturalism). Renaissance Christian writers who argued for a motivated connection between Hebrew words and referents (and occasionally words of other languages) tended to highlight the iconic similarity – usually of a sound-symbolic nature – between the form of a word and the object it designates. Eco (1995), after Genette (1976), describes this position as *mimological*, i.e. based on "imitation of nature". There is a direct link between this view and the position ascribed by Plato to Cratylus in the dialogue of the same name, whereby names are understood to be copies of designated objects; here, the link between words and referents is not conventional but natural, which allows words to capture some essential properties of referents. In contrast to Abulafia's and his followers' *essentialistic conventionalism*, the position of these Christian Renaissance

authors who defended the special status of Hebrew could be described as *essentialistic naturalism*.

Frequently, these thinkers directly appealed to the *Cratylus* (see 3.1). However, the strategy they used did not rely on philosophical argumentation but was much more reminiscent of the medieval etymological tradition, whose best-known, or rather most notorious, representative was Isidore of Seville (560–636). One of the most persistent motifs in Isidore's voluminous *Libiri Etimologiarum* (also *Codex Etimologiarum*), designed to be a compendium of all the existing knowledge, was exposing motivated connections between words and their meanings, as in the following examples: *corpus* (body) comes from *corruptus perit* as our body goes to corruption; *homo* (man) derives from the *humus* or mud from which he is born; *iumenta* (mare) comes from *iuvat* (the form of the verb *iuvāre* for "help") because horses help men; *agnus* is a lamb because it recognises (*agnoscit*) its own mother (after Eco 1995: 80–81). The ultimate type of analysis that Isidore proposes is to uncover the onomatopoeic root of a word, as in: "[They are called] … lashes (*flagrum*) and floggings and scourges (*flagellum*) because they resound on the body with a whistling (*flatus*) and a crack" (Barney et al. 2006: 124).

When commenting on the etymological works of Renaissance authors, Eco (1995: 81–82) distinguishes between two methods used by them: *retrospective etymologising*, designed to show how Hebrew terms are able to express the nature of named objects, and *prospective etymologising*, aimed to corroborate *the Hebrew monogenetic hypothesis* by "projecting Hebrew words forwards to show how they transmuted themselves into the words of all other languages". Probably the most extensive application of retrospective etymologising is found in **Claude Duret** (1570–1611), a truly Renaissance man whose interests ranged from botany through political history to the Kabbalah. He set out to substantiate Abulafia's view that Hebrew names capture the essential characteristics of named objects. However, instead of resorting to mystical exegesis, Duret used retrospective etymologising, in the spirit of Isidore's linguistic feats. In *Thrésor de l'histoire des langues de cest univers*, where in a sweeping fashion Duret discusses the nature, origin and diversification of human and animal languages, the etymological analyses focus on animal names with a view to showing that Hebrew terms are able to express the important characteristics of named animals:

> The Eagle is called *Nescher*, a word formed by the combination of *Schor* and *Isachar*, the first meaning to look and the second to be straight because, above all others, the eagle is a bird of firm sight whose gaze is always directed towards the sun […] The Lion has three names, that is *Aryeh*, *Labi*, and *Layisch*. The first name comes from another which means tear or lacerate; the second is related to the word *leb* which means heart, and *laab*, which means to live in solitude. The third name usually means a great and furious lion,

> and bears an analogy with the verb *yosh*, which means trample […] because this animal tramples and damages its prey. (Duret 1613/ 1972: 39–40, quoted after Eco 1995: 81)

An early example of prospective etymologising is provided by **Conrad Gessner** (also Gesner, 1516–1565), an accomplished naturalist, who advanced **the thesis that languages of the world retained original Hebrew words but in a corrupt state** (Eco 1995: 80). He laid out this thesis in the work *Mithridates de Differentis Linguis*, named after the polyglot king of Pontus, Mithridates VI (35–63 BCE), where he attempted to identify Hebrew corrupt roots in a variety of ancient and contemporary languages by comparing versions of the Lord's Prayer (Jankowsky 1995). A much more laboured application of the prospective method is found in *L'harmonie étymologique des langues* by **Étienne Guichard**, a Christian Kabbalist (fl. late 15th/early 16th century). Guichard starts from Gessner's assumption that **Hebrew is the oldest language, spoken by Adam in paradise**, and that **all languages of the world are derived from it by corruption** (Guichard 1606). His particular thesis that Hebrew is the simplest language is based on the alleged simplicity of Hebrew morphology. Guichard stresses the fact that most Hebrew roots consist of three consonants, sometimes referred as radical consonants (Eco 1995: 82; cf. Velan et al. 2005), and shows that words in non-Hebrew languages are derived from Hebrew ones by the manipulation of these radical consonants according to the Kabbalistic art of *temurah* (Eco 1995). The fragment below captures the nature of Guichard's numerous analyses of Chaldean, Syrian, Greek or Latin words:

> In Hebrew, the verb *batar* means to divide. How can we prove that Latin *dividere* comes from *batar*? Simple: by inversion, *batar* produces tarab; *tarab* then becomes the Latin *tribus* and, from there, turns into *distribuo* and *dividere* (p. 147). *Zacen* means old. Rearranging the radicals, we get *zanec* from which derives Latin *senex*. A further rearrangement and we have *cazen*, from which derives the Oscan word *casnar*, which is the root of the Latin *canus*, elder (p. 247). (Eco 1995: 82)

Flemish alchemist **Franciscus van Helmont** (1614–1699) was also concerned with the simplicity of Hebrew. A son of Jan van Helmont – one of the founders of modern chemistry – Franciscus was friends with Locke, Boyle, and Leibniz and devoted most of his scholarly efforts to demonstrating the uniqueness of Hebrew. In *Alphabeti veri naturalis Hebraici brevissima delineatio*, van Helmont tries to prove it, focusing not on Hebrew morphology – as Guichard did – but on its phonetic repertoire. Proceeding on the assumption that Hebrew is the god-given language, he reasons that the human vocal system must have been designed so as to facilitate the articulation of the Hebrew sounds. Similar ideas can be found in Kabbalist works, but van Helmont goes much farther and claims that

the shape of Hebrew letters corresponds to the configuration of the articulators – the tongue, palate, uvula or glottis – during the articulation of corresponding sounds (Anderson 1998: 177, Wilson 2016). In his view then, the special status of Hebrew as the god-given language is confirmed by both the ease with which its sounds are allegedly articulated and the fact that its alphabet provides users with a type of pronunciation atlas (see Fig. 4).

Fig. 4: Engravings from van Helmont's Alphabeti veri naturalis Hebraici brevissima delineatio *(1667: 109, 111, 113, 115)*

Source: https://archive.org/details/bub_gb_lvxSAAAAcAAJ.%20DOA:%207%20Nov%202017 (DOA: 15 Mar 2017.)

Arguably, the idea that "Hebrew characters [are] … engraved inside us, physically wedded to our mouths" is traceable to the alchemistic idea of microcosms (Wilson 2016). More generally, van Helmont's emphasis on an intimate, non-arbitrary relation between the Hebrew sounds and letters is symptomatic of

the way language was conceptualised during this period. As observed by Eco (1995: 74), many authors failed to acknowledge the distinction – already described by Aristotle – between speech and its graphemic representation. In this respect, van Helmont's idea may be seen as an extreme manifestation of this more general error, the scale of which can only be matched by the efforts of Georg Wachter, who in the tellingly named *Naturae et Scripturae Concordia*, tried to prove the same point for Latin sounds and letters. It should also be stressed that until the advent of linguistics at the end of the 18th century, many thinkers and writers – possibly because of the philological predilection for written texts – found it difficult to understand that graphemes are parasitic on speech and that speech constitutes the proper plane of linguistic expression (see 5.2).

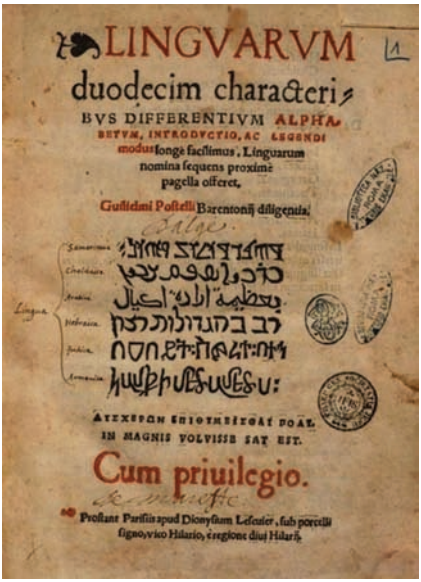
An interestingly modern element in *Alphabeti veri naturalis* is an attempt to verify the theory by experimentation. Van Helmont came to the conclusion that Hebrew sounds, being best-suited to human articulatory capabilities, should be easily learnt even by deaf-mutes. He then proceeded to train a deaf-mute, using illustrations of cross-sections of the head with the articulators assuming positions for the production of Hebrew sounds and corresponding Hebrew letters; on the author's own account, the subject – trained in this way for three weeks – was able to produce well-articulated Hebrew (Anderson 1998: 177).

Finally, there is a utopian motif in van Helmont's work. The author of *Alphabeti veri naturalis*, who was twice imprisoned by the Holy Inquisition and who remembered the atrocities of the Thirty Years' War (1618–1648), believed that a continent-wide return to the sacred Hebrew language would heal Europe's religious and political divides (Wilson 2016). The utopian idea of using Hebrew as an instrument for promoting continental and global peace had already been proposed a century earlier by **Guillame Postel** (1510–1581). This French diplomat was adept at Semitic, Classical and contemporary languages, and was an accomplished astronomer and geographer; his greatest passion however was for the Kabbalah.[13] The starting point for Postel's utopia is the established conviction that Hebrew is the original language of humanity. In *De originibus seu de Hebraicae linguae et gentis antiquitate*, he argues that Hebrew is the language of Noah's sons saved from the confusion at Babel, from which Arabic, Chaldean, Greek but also Hindi are descended. Furthermore, given to the same error as van Helmont and Wachter (see above), he scrutinised in *Linguarum duodecim characteribus differentium Alphabetum* 12 scripts (including Chaldean, Phoenicio-Punic, Arabic, the Brahmic script, Greek, Georgian, Armenia and

13 The reconstruction of Postel's views is based on Eco 1995: 80–75.

Latin) and came to the conclusion that they are all derived from the Hebrew writing system, which – in his view – meant that all these languages likewise descend from Hebrew (see Fig. 5).

Fig. 5: Postel's 12 alphabets: The title page from Linguarum duodecim characteribus differentium Alphabetum *(1538)*


LINGVARVM
duodecim characteri
BVS DIFFERENTIVM ALPHA
BETVM, INTRODVCTIO, AC LEGENDI
modus longè facilimus, Linguarum
nomina sequens proximè
pagella offeret,
Guilielmi Postelli Barentonij diligentia.
Cum priuilegio.
Prostant Parisiis apud Dionysium Lescuier, sub porcelli
signo, vico Hilario, regione diui Hilarij.

Source: https://archive.org/stream/bub_gb_hUuhdzJNTGYC#page/n1/mode/2up (DOA: 15 Mar 2017.)

Postel's linguistic utopia was tightly connected with his religious universalism. Although – in the spirit of the Christian Kabbalah – Postel insisted that the *Torah* and the traditional Jewish Kabbalah identify Christ as the messiah, he generally tended to bring out common elements in religions and denominations and obliterate differences between them. For example, he was of the opinion that to be a good Christian, one should observe Jewish law, that Muslims were to a degree Christians, and the denominational differences between Catholicism and Protestantism were doctrinally unimportant. In 16th-century Europe, such liberal views inevitably brought suspicion on their author, and Postel's occasional eccentricities (such as proclaiming Johanna, a nurse he befriended in Venice, as the second messiah) changed these suspicions into problems. On a number of occasions, he had to recant his views publicly and he was once imprisoned

and put on trial by the Holy Inquisition, who however declared him *non malus sed amens* – "not dangerous but insane". The most complete political idea presented in *De orbis terrae Concordia*, was Postel's call for the establishment of a linguistic commonwealth, with Hebrew as the lingua franca. He believed that the use of Hebrew, the god-given language, would inspire the future inhabitants of this commonwealth to end religious and political discord, while for outsiders it would constitute a living proof that the message of Christianity is god's true word (1995: 76). To acquire political patronage for his project, Postel hit upon a rather extravagant idea that the linguistic commonwealth could only be successful under the protection of French monarchs because they are direct descendants "of Noah, through Gomer, son of Japheth, founder of the Gallic and Celtic races" (*Les raisons de la monarchie*, 1552; Eco 1995: 77). All attempts to convince the French court to treat these musings seriously failed, and Postel spent his final days interned in the monastery of Saint-Martin-des-Champs in Paris.

However extravagant and politically naïve Postel's and van Helmont's conceptions of linguistic universalism may seem now, they testify to the appearance of an important and long-lived idea. After the disintegration of the medieval European scholarship based on Latin, many thinkers were searching for a new universal language, which in contrast to the Latin *gramatica*, was expected to be a living language able to express artistic, scientific and everyday concepts. The hankering after such an idiom is visible in Dante's idea of the Illustrious Vernacular. For Christian Kabbalists, such as Postel and van Helmont, Hebrew was an apparent candidate for a universal language – it was the original language of humanity, endowed with unique qualities, which could facilitate its use as the lingua franca. Stripped of any religious and mystical guise, the idea of a universal language reached prominence in the Enlightenment, when it was particularly championed by the French encyclopaedists (see 4.8), but persisted much longer; for example it can be seen in the late 19th and early 20th century trend for artificially created natural languages, such as Volapük and Esperanto, which – it was hoped – would bypass ethnic prejudice and become universally used (Eco 1995: 317–336).

The last noteworthy expression of the Hebrew monogenetic hypothesis is found in Athanasius Kircher's (1602–1680) *Turris Babel* (1679). Kircher was a Jesuit and a polymath, who produced forty volumes on subjects ranging from geology to music theory and who – as his biographer wryly notes – "got so many things wrong" (Glassie 2012). For example, he argued for the divine nature of magnetism, believed that the sun produces universal sperm, and concluded that there must be a "network of fires and oceans leading to the center of the Earth" (Glassie 2012). Such a man cannot have been silent about the Adamic language

and the Hebrew hypothesis. In *Turris Babel*, he spends a lot of time surveying the works of other authors, both Christian and Jewish, and afterwards lays out his own views. Kircher's position is neither more novel nor more extreme than the others presented above, but it usefully captures the most important elements of the debate on Hebrew monogenesis. Kircher abides by the view that Hebrew was the language used by Adam, which survived *confusio linguarum* and gave rise to the ancient languages, among which he enumerates Chaldean, Samaritan, Syriac, Arabic and Ethiopic. By means of etymology and linguistic comparison, he then tries to show how the ancient languages gradually changed into modern ones. In his comparative pseudo-analyses, like many before and after him, Kircher confuses phonetic expression with graphemic representation. Finally, he subscribes to essentialistic naturalism when explaining Hebrew vocabulary. With regard to the last point, Kircher is interested in the details of the strategy Adam used when naming animals: "Adam, knowing the nature of each and every beast, had named them accordingly … 'sometimes conjoining, sometimes separating, sometimes permutating the letters of the divers names, he recombined them according to the nature and properties of the various animals' (III, 1, 8)" (Eco 1995: 83). He also explains that Adam first selected letters that mimic some quality of an animal to be named and then recombined these letters in accordance with the art of *temurah*:

> [L]ion, for example, is written ARYH in Hebrew; and Kircher takes the letters AHY as miming the heavy sound of a lion panting. After naming the lion ARYH, Adam rearranged these letters according to the kabbalist technique of *temurah*. Nor did he limit himself to anagrams: by interpolating letters, he constructed entire sentences in which every word contained one or more of the letters of the Hebrew word. Thus Kircher was able to generate a sentence which showed that the lion was *monstrans*, that is, able to strike terror by his sole glance; that he was luminous as if a light were shining from his face, which, among other things, resembled a mirror (Eco 1995: 84–85)

At the time when Kircher was writing, the Hebrew hypothesis was giving way to new ideas. The 17th century brought both a rapid development and popularisation of science. For example, at the beginning of Kircher's life, Copernicus' views were still regarded with great suspicion and almost everybody believed that the Earth was the centre of the solar system; at its end, almost every educated person believed the opposite (Glassie 2012: xvi).

2.6 Babel reinterpreted

Although the attachment to the biblical myths was still very strong, there were attempts to modify the interpretation of these myths to fit new contexts. One such context was introduced by the Reformation. As already noted, the Reformation

generated interest in Hebrew among Christian scholars. But, it had an even more lasting influence on language study and language awareness in that it increased the appreciation of ethnic languages. Martin Luther (1483–1586) not only translated the Bible into German, but argued that the connection between a people and their language is so profound that god's word is best understood in one's own native tongue (*Declamationes in Genesim*, 1527; Eco 1995: 341). Hebrew may have been the original language, or the original language may have been lost (as Dante declared in the *Divine Comedy*), Latin was for many sanctified by hundreds of years of church rite, but – as Luther argued – it is in a native language that one's thoughts and feelings were best expressed. His view, prefigured by Dante, marks an important change in the evaluation of the myth of Babel. The tradition of long and intense preoccupation with the problem of the Adamic language interpreted Babel as a tragedy, and a return to the original language, commonly identified with Hebrew, was believed to be able to overcome Babel's curse, as was forcefully asserted by the authors of linguistic utopias such as Postel and van Helmont. Sentiments towards language introduced by **Luther contributed to re-assessing the Babel myth, whereby one's native language was seen as selected by god for one's community, and hence special.**

This re-assessment can be seen as related to the glossogenetic mythological motif, described in Chapter 1. If the search for the original language exemplifies the glottogonic mythological motif, the glossogenetic motif often takes the view that the language and customs of one's ethnic community are imposed by divine intervention. In 15th-century Europe, this sentiment, introduced by the Reformation, combined with the old conviction that languages are not equal. As we have seen, a lot of debates about Hebrew concentrated on its special qualities, usually highlighting Hebrew's special origin (the belief that Hebrew was designed or at least inspired by god) and its special expressive potential (as expounded by various essentialistic doctrines of meaning). The new attitude brought analogous attempts to exalt the qualities of ethnic languages, by showing that they are special with regard to their origin, design or some aesthetic characteristics.

Luther himself fell prey to this attitude and asserted that German is the language closest to god (Eco 1995: 99). Authors, most of the time of lesser note, soon followed, praising the special qualities of their own languages. In doing so, they commonly appealed to the myth of Babel and gave the biblical account rather fantastic interpretations. The common strategy was to use Genesis 10, which delineates the genealogies of Noah's sons before the construction of Babel (see 2.1), and then propose a line of descent of one's ethnic group from one of Noah's offspring – preferentially, Japheth, whose children formed "the coastland

peoples of the Gentiles" and "were separated into their lands, everyone according to his language, according to their families, into their nations" (Genesis 10.5). Authors who claimed such a pedigree for their race could then argue that their language was saved from the confusion at Babel. This line of reasoning was taken up by Kircher, who tried to show that the French royal line came from Japheth through his son Gomer – the founder of Gaul (see 2.1). He supported this claim with the etymological demonstration that "in Hebrew, the term *gallus* meant 'he who overcame the waves'; thus, the Gauls were the people who had survived the waters of the Flood" (Eco 1995: 77). As a matter of fact, a plea for the special status of Celtic languages, in the case of Irish, had been made much earlier – in the 7th-century Irish text *Auraicept na n-Éces* (or *The Scholars' Primer*, 1917), a work on Irish grammar, mythology and poetry. Although *Auraicept* acknowledges the status of Hebrew as the lingua sacra that "was in the world before any building of the Tower, and it is it too that will be after doomsday", it also gives a special significance to Irish. The text relays a popular myth of Fénius Farsaid, a legendary king of Scythia, inventor of the Ogham script and the Old Irish language. Probably through the influence of Isidore of Seville, the author asserts that Fénius Farsaid came from Japheth's line through Gomer (see above for Kircher's claim about Gomer and the French royalty), and after the fall of Babel, he gathered 72 sages from 72 races that had emerged after the confusion to construct the Gaelic language out of the best elements found in the 72 languages (cf. Eco 1995: 16–17):

> Now after the disciples came to Fenius from learning, and after showing their journeys, to wit, their wanderings, and their works, to wit, their studies, then they asked the sage, to wit, Fenius to select for them out of the many languages, a language that no one else should have but which might belong to them alone. Wherefore on that account for them was invented the Select Language with its superadditions, the Language of the Irish, and the Additional Language, and the Language Parted among the principal letters as he has related in the Great Book of Woods, and the Language of the Poets whereby each one of them converses with another, and the Common Language which serves for every one from many races. (*Auraicept na n-Éces* 1917: 17)

In making the connection between Celts and Scythians, *Auraicept* prefigures a much later Celto-Scythian theory, which traced the origins of the Celts back to the Scythians, an ethnic group inhabiting the north of the Black Sea in ancient times (see a discussion in Campbell and Poser 2008: 18–23). In the Renaissance, it was sometimes claimed that Scythians had come for Japheth's stock and had given rise to Europe's nations and languages. The semi-mythological Celto-Scythian hypothesis persisted well into the 18th century until it was successfully challenged by William Jones's Indo-European hypothesis. Among its steadfast

supporters was Gottfried Leibniz (1646–1716), who reconstructed the origins of European languages in the following way:

> And going back further for understanding the origins as much of Celtic and Latin as of Greek, which have as many common roots with the Germanic or Celtic languages, one can guess that this comes from the common origin of all these peoples descended from the Scyths, having come from the Black Sea, who crossed the Danube and the Vistula, of which a part could have gone to Greece, and the other may have filled Germany and the Gauls … The Sarmatic (supposed to be Slavic) in half at least of an either German origin or one in common with Germanic. (Leibniz 1709: 259, quoted after Campbell and Poser 2008: 22–23)

Furthermore, Leibniz argues that German, together with modern Celtic languages, descended from a Celtic protolanguage. The philosopher, very much in Luther's spirit, contends that thanks to this origin and its later development, German is superior to any European language:

> [T]he German nation has priority over all Christian peoples … we Germans have a peculiar touchstone for thoughts, which is unknown to others; and, when [others] are eager to know something about this, I tell them it is our very language; for what can be said in it intelligibly without loaned or unusual words is really something solid; but empty words, with nothing at the back of them, which are only the light froth of idle thoughts, these the pure German language will not accept. (Leibniz 1838 I: 449, 452–3; quoted after Edwards 2009)

By Leibniz's time, nationalistic pride in the German language had already taken root. The special status of German was claimed on mythological grounds, with some authors claiming that Japheth himself had settled in Germany. Others came up with more ingenious ideas; for example, the poet Georg Harsdörffer (1607–1658) argued that German retained the iconic qualities of ancient languages ("… nature speaks in our own German tongue") because Germans had never been subjected to foreign rule and hence the German language was largely free from foreign influences (Eco 1995: 99).

However, in the 16th and 17th century the Genesis 10 reference constituted the favourite strategy of ennobling one's language. As a result, Noah's descendants were being tracked down in Europe's every nook and cranny. Already, Annius of Viterbo (1432–1502), known for his forgeries of allegedly ancient Greek and Latin texts, maintained that Etruria, his natal region of Italy, was settled by Noah and his sons. The same line of descent was claimed by Florentines – as argued by Florence's writers Giambattista Gelli (1498–1563) and Pier Francesco Giambullari (1495–1555), the Tuscan dialect emerged through Etruscan from the language of Noah (Eco 1995: 95). A very strong claim to Noah's heredity emerged in Flanders,

where Johannes Goropius Becanus (1519–1572) devoted the work *Origines Antwerpianae* to showing that Dutch, and specifically the dialect of Antwerp, directly descended from the language of Japheth and his progeny, who – under the name Cimbir – settled in Flanders. Resorting to both retrospective and prospective etymologising, Goropius tried to demonstrate that Dutch retained the characteristics of the original, Adamic language, for example by claiming that "Dutch had the highest number of monosyllabic words, possessed a richness of sounds superior to all other languages, and favoured in the highest degree the formation of compound words" (Eco 1995: 96–97). The Flemish thesis was later defended by Abraham Mylius (1536–1637), who maintained that Dutch had managed to resist all change, and Adrain Schrickius (1560–1621), who argued that, after Hebrew, Dutch was the most ancient language (Lincoln 1999: 78–79, Eco 1995: 97). Similarly, a number of Swedish authors dwelt on the mythologised grandeur of their language. Georg Stiernhielm (1598–1672) in *De linguarum origine praefatio* insisted that Sweden was the birthplace of humanity, and Gothic, which he wrongly identified with Old Norse, was the fountainhead of all languages. One of his successors, Olaus Rudbeck (1630–1702), identified Sweden with Atlantis, where – as he argued – Japheth had settled and whose language (which he maintained was Gothic) is the parent language of both Latin and Hebrew (Eco 1995: 97–98, Lincoln 1999: 78).

At that time, similar mixtures of arguments appealing to mythological descent, etymology and linguistic comparison were being used to show the superiority of many other languages and ethnicities, including Catalan, Hungarian, Breton and Polish (Eco 1995: 95–100). The myth of the Adamic language was being replaced by the glossogenetic myths, on which emerging national states were building their identities. As pointed out by Eco (1995), during Romanticism this attitude matured into the influential idea that language expresses the genius of an ethnic group, and this exerted an influence on the modern way of thinking about language and identity found in Wilhelm von Humboldt (see 5.1) or Edward Sapir and Benjamin Whorf. Another important outcome of nationalistic glossogenetic speculation was the generation of interest in comparing and typologising languages. These attempts were very far from scientifically rigorous, but towards the end of the 18th century – with an increased amount of data and methodological awareness – they contributed to the inception of comparative linguistics (5.2).

2.7 Beyond Adam and Babel

Another important factor that had a bearing on glossogenetic reflection from the 15th century onwards were geographical discoveries and resultant colonial expeditions, which brought Europeans into close and intense contact with

representatives of foreign cultures. This occasioned questions about the definition of humanity: which of our biological[14] and cultural characteristics are universal and which are subject to variation. The problems of language universals and language variation were part of this intellectual ferment, and before they came to be articulated in scientific, or at least naturalistic, ways, there had been attempts to squeeze these problems into the biblical narrative or, sometimes, to stretch the biblical narrative to accommodate these problems.

At the forefront of these endeavours, we again find the polymath Jesuit Athanasius Kircher. Thanks to the reports of Jesuit missionaries to China such as Matteo Ricci or Michael Boym, Kircher developed a keen interest in the Middle Kingdom and gained some understanding of Chinese culture, religion and language. In the work *China Illustrata*, Europe's first encyclopaedic work on China, he collected these facts, mixing them profusely with his own fanciful theories. One of these concerned Chinese ancestry, which Kircher traced back to Noah's son Ham (cf. Eco 1995: 160–162). His interest in the Chinese language was limited to the ideographic writing system, which he declared in a different work (*Oedipus Aegyptiacus*) to be related to the Egyptian hieroglyphics and Amerindian pictographic writings (Eco 1995: 59–63). A similar claim was made by John Webb (1611–1672), best remembered for his architectural work, who argued that Noah's ark had landed in China after the flood.[15] According to Webb, Noah's descendants who settled in China still spoke the Adamic language, and since they did not participate in the construction of the Tower of Babel, they avoided *confusio linguarum* and retained the original language, Chinese, until modern times (Ramsey 2001, cf. Eco 1995: 91).

Kircher and Webb certainly presented non-standard interpretations of the biblical myth, but their stories could still be incorporated within the biblical account of dispersion, particularly given the contradiction between Genesis 10 and 11 (see 1.2, 2.1). The view that was gaining popularity and that could hardly be reconciled with Genesis was pre-Adamism. It rejected the belief that Adam was the first man, from whom all humanity descended. Its most common form asserted Adamic polygenesis or co-Adamism, which held that humanity comes from many different Adams or forefathers of humanity (Graves 2003). Pre-Adamism was discussed by early Christians, as evidenced by Augustine's critique of this view in *The City of God* (Book XII, Chapter 11). It also appears

14 See 4.2 for early taxonomic attempts to define *Homo sapiens*.

15 In the work entitled *An Historical Essay Endeavoring a Probability that the Language of the Empire of China is the Primitive Language* (1669).

in medieval Judaism; for example, Moses Maimonides (1138–1204) condemns it in the famous *Guide for the Perplexed* (Popkin 1987: 26–30). Later, the view was revived by Giordano Bruno (1548–1600), who on considering the differences between Europeans, Africans and Amerindians, came to the conclusion that they must be descended from different Adams. But it gained the greatest publicity through the work *Systema theologicum ex prae-Adamitarum hypothesi* by Isaac La Peyrère (1596–1676), a theologian coming from a Jewish family who had converted to Christianity.[16] La Peyrère's pre-Adamism was an expression of the appreciation of the rich non-European cultures of America and Asia. This sentiment led him to the proposition that before Adam there had been a people who had been untouched by original sin and had not featured in the account given in Genesis, including the construction of the Tower and *confusio linguarum* (Popkin 1987).

In doing so, La Peyrère was probably the first modern thinker to suggest that the Bible presents a fragment of history – a fragment concerning only the biblical Adam and his descendants (Eco 1995: 89). This demonstrated how, in Europe of the 17th century, the confines imposed by the biblical myths were crumbling. The leading minds of the era – Vico, Simon, Casaubon and Leibniz – claimed that the original language, if it had ever existed, must have been lost, and were beginning to discuss language origins in a new, naturalistic spirit. To fully appreciate these developments, we first need to take a look at how language was discussed in European philosophy, particularly in antiquity and the Middle Ages. By and large, the Adamic debates occupied the periphery of the Western intellectual tradition. They did spawn interesting and long-lasting ideas, such as Aubulfia's essentialism or Dante's Illustrious Vernacular, but the mainstream of philosophical reflection had in the meantime managed to elaborate theory and technical terminology with the help of which language was discussed in a very sophisticated way. Since naturalistic glottogony of the 17th and 18th century tended to appeal to this tradition rather than that of Adamic literature, and we must survey it with a special focus on elements that are of interest to language origins.

It is impossible to end this chapter without a comment on the significance of the Adamic debates for language origins. Is it not the case that reflection on the Adamic problem, apart from notable exceptions, led to an intellectual dead-end? It certainly did, but in doing so, it also served discussions about language origins well. First of all, it showed the limitations of the mythological-inspired approach

16 La Peyrère was probably a Marrano; Marranos were Sephardic Jews from Spain who adopted Christianity and in secrecy practiced Judaism (Popkin 1987: 21–25).

to the problem. For us, these limitations seem obvious, but for 16th- or 17th-century thinkers, the futility of this approach may have constituted an important lesson. Even more importantly, the Adamic debates attracted considerable attention. The flair with which for example the Hebrew monogenetic hypothesis was disputed may have been looked down on by the intellectual avant-garde, but it certainly helped promote the popularity of language origin problems. When the Adamic debates subsided, these problems remained as superb mysteries that were waiting to be solved, and naturally attracted new thinkers equipped with new ideas and theoretical sensitivities.

3 Language and language origins in ancient and medieval philosophy

Roy Harris and Talbot Taylor identify three questions about language that ancient thinkers found particularly interesting: "(i) whether language was natural or conventional, (ii) whether or not language was based on a fundamental principle of regularity, and (iii) how many parts of speech there were" (1989: xiii). The last of these created the least durable impact, and was considered to be solved by Greek and Roman grammarians with the definitive answer given in Priscian's (c. 500 CE) *Institutes of Grammar*.[17] The first two, more philosophically oriented, questions proved to be much more enduring and entered both medieval and modern thinking about language (cf. Harris and Taylor 1989: xiii–xiv). This said, it should be stressed that questions pertaining to language, such as the one above, did not constitute the core philosophical problems of ancient thought. If language was discussed, the discussion was in the context of other problems, mostly of an ontological and epistemological nature.

This tendency manifests itself very early in the Ionian and Eleatic schools of the Greek philosophy of language. Here, language is identified with *logos*, which in Greek symptomatically stands for both speech and reason. It is interesting that Heraclitus (c. 535–c. 475 BCE) and Parmenides (late 6th or early 5th century BCE), who subscribe to very different ontological positions, both argue that language/logos is responsible for the intelligibility of human experience. For Heraclitus, language constitutes an individuated expression of logos understood as the fundamental principle of change; for Parmenides, the stability of language *sensu* logos, unlike the changeable inputs produced by the senses, points to an underlying stable reality (see Andrzejewski 2016: 21–24). In this way, both thinkers address the second of the above questions, both by adopting a version of the analogist position whereby language is taken to be regular because it reflects reality (cf. Harris and Taylor 1989: xiii–xiv).

3.1 Plato's mimetic naturalism

A much more elaborate version of the analogist stance is found in Plato (428/427 BCE–348/347). Plato believes in the pre-existence of knowledge in

17 Priscian enumerates six cases: nominative, genitive, dative, accusative, ablative and vocative.

the form of innate ideas (*eidoi*; sing. *eidos*) that can be brought out by recollection (*anamnesis*). This position is expressed in many of his dialogues, for example *Meno* or the *Republic*, and relates in an important way to Plato's understanding of linguistic meaning. Accordingly, words (*onomata*) and the sentences in which they are used do not have a bearing on the concrete manifestations of ideas, i.e. particulars, but on generalities – or ideas themselves – of which particulars are reflections (cf. Andrzejewski 2016: 26–28). On the one hand, verbal description represents the lowest type of cognition, by being tightly linked to the world of the senses; on the other hand, it represents the only way to gain knowledge (*episteme*) and the ultimate insight into the world of ideas (cf. Andrzejewski 2016: 31). This is how Plato explains the hierarchy of different types of cognitive states in one of his later works, *The Seventh Letter*:

> For everything that exists there are three instruments by which the knowledge of it is necessarily imparted; fourth, there is the knowledge itself, and, as fifth, we must count the thing itself which is known and truly exists. The first is the name, the second, the definition, the third, the image, and the fourth the knowledge. If you wish to learn what I mean, take these in the case of one instance, and so understand them in the case of all. A circle is a thing spoken of, and its name is that very word which we have just uttered. The second thing belonging to it is its definition, made up names and verbal forms. For that which has the name "round," "annular," or, "circle," might be defined as that which has the distance from its circumference to its centre everywhere equal. Third, comes that which is drawn and rubbed out again, or turned on a lathe and broken up – none of which things can happen to the circle itself – to which the other things, mentioned have reference; for it is something of a different order from them. Fourth, comes knowledge, intelligence and right opinion about these things. Under this one head we must group everything which has its existence, not in words nor in bodily shapes, but in souls – from which it is dear that it is something different from the nature of the circle itself and from the three things mentioned before. Of these things intelligence comes closest in kinship and likeness to the fifth, and the others are farther distant.

Plato opened the debate on the nature of meaning (see Harris and Taylor's question (i) above), with the *Cratylus* dialogue being the *locus classicus* of the controversy between conventionalism and naturalism in European philosophy.[18] The debate has a familiar dialectical format and is presided over by Socrates. The opposing sides are Hermogenes, a supporter of conventionalism, and the eponymous Cratylus, a supporter of naturalism. The specific problem of the debate is the

18 The dialogue is often considered as the beginning of Occidental linguistic reflection. The main linguistic topics of *Cratylus* – the appropriateness of names and word-formation processes – became important motifs in works on language in antiquity (see for example Tuszyńska-Maciejewska 1990).

correctness of names – *onomata* – the term, which in Greek refers to both proper and common nouns (cf. Harris and Taylor 1989: 3). The key to understanding this context is the Sophists' contribution to the Greek reflection on language. The philosophers of this movement, such as Protagoras (c. 490–c. 420 BC) or Gorgias (c. 485–c. 380 BC), developed a radically different perspective on the relation between language and reality than the analogist views articulated by Heraclitus, Parmenides, and later by Plato. The Sophists claim that language/logos does not have a bearing on the structure of reality, but expresses private experiences and goals (Nerczuk 2016). This leads them to adopt the anomalist position in the debate about the principle of regularity in language (see above). The volatile nature of experience is reflected in the volatile way language is used – according to this view, language is not confronted with the ontological criterion of truth but with the pragmatic criterion of *dynamis*, i.e. the degree to which words impress on the mind of the hearer (cf. Nerczuk 2016).

In the *Cratylus*, Hermogenes, who argues that the link between names and objects is both arbitrary and conventional, is construed by Plato as a mouthpiece for the Sophists (cf. Andrzejewski 2016: 29):

> For my part, Socrates, I have often talked with Cratylus and many others, and cannot come to the conclusion that there is any correctness of names other than convention and agreement. For it seems to me that whatever name you give to a thing is its right name; and if you give up that name and change it for another, the latter name is no less correct than the earlier, just as we change the names of our servants; for I think no name belongs to any particular thing by nature, but only by the habit and custom of those who employ it and who established the usage. (*Cratylus* 384).

Such a position represents a threat to Plato's idealism because if names referring to things are arbitrary and conventional, it may be argued that things themselves can be relativised to sensations of particular subjects or conventions of interpreting these sensations. For Plato, however, the existence of things is founded upon ideas, which impose their appropriate natures on things. This motivates Socrates' retort:

> [T]hings have some fixed reality of their own, not in relation to us nor caused by us; they do not vary, sway one way or another in accordance with our fancy, but exist of themselves in relation to their own reality imposed by nature. (*Cratylus* 386)

This leads to spelling out the conception of meaning in which – just as things are reflections of ideas – names are imitations of things they name:

> A name, then, it appears, is a vocal imitation of that which is imitated, and then who imitates with his voice names that which he imitates. (*Cratylus* 423)

In this way, Plato asserts linguistic naturalism, whereby the characteristics of named objects are reflected in names; and, as should be remembered, he takes the analogists' position, whereby the structure of language, or in this case the structure of the lexicon, is regular, as it reflects objects, which themselves are reflections of the world of ideas. But how is the link between names and things established, or rather, what does Plato mean when he says that words imitate named things? Many Renaissance thinkers seem to have thought that Plato in the *Cratylus* argues along iconic lines; according to such an account, the form of a word would stand in a sound-imitative relation – as in an onomatopoeia – for its referent (see 2.5). However, the passages from the *Cratylus* point to a much more general understanding of the imitative relation between names and things. Particularly, when on a number of occasions Plato compares names to pictures, what comes to mind is the modern understanding of the term "mimetic" as specifying semantic relations in terms of the generally construed "invention of intentional representation" (Donald 1991, Zlatev 2008, cf. Harris and Taylor 1989: 10–12):

> [J]ust as painters, when they wish to produce an imitation, sometimes use only red, sometimes some other color, and sometimes mix many colors, as when they are making a picture of a man or something of that sort, employing each color, I suppose, as they think the particular picture demands it. In just this way we, too, shall apply letters to things, using one letter for one thing, when that seems to be required, or many letters together, forming syllables, as they are called, and in turn combining syllables. (*Cratylus* 424)

Elsewhere, there is a more specific proposal that the link between names and referents is a sound-symbolic with sounds but also letters and facial configurations standing for fairly abstract components of meaning, which in turn is somewhat reminiscent of the modern understanding of sound-symbolism (see for example Morton 1977, and Ohala 1983, 1994):

> First, then, the letter rho seems to me to be an instrument expressing all motion. We have not as yet said why motion has the name κίνησις; but it evidently should be ἴεσις, for in old times we did not employ eta, but epsilon. And the beginning of κίνησις is from κίειν, a foreign word equivalent to ἰέναι (go). So we should find that the ancient word corresponding to our modern form would be ἴεσις; but now by the employment of the foreign word κίειν, change of epsilon to eta, and the insertion of nu it has become κίνησις, though it ought to be κιείνεσις or εἶσις. And στάσις (rest) signifies the negation of motion, but is called στάσις for euphony. Well, the letter rho, as I was saying, appeared to be a fine instrument expressive of motion to the name-giver who wished to imitate rapidity, and he often applies it to motion. In the first place, in the words ῥεῖν (flow) and ῥοή (current) he imitates their rapidity by this letter, then in τρόμος (trembling) and in τρέχειν (run), and also in such words as κρούειν (strike), θραύειν (break), ἐρείκειν (rend), θρύπτειν (crush), κερματίζειν (crumble), ῥυμβεῖν (whirl), he expresses the action of them all chiefly by means of the letter rho; for he observed, I suppose, that the

> tongue is least at rest and most agitated in pronouncing this letter, and that is probably the reason why he employed it for these words. Iota again, he employs for everything subtle, which can most readily pass through all things. (*Cratylus* 426)

Unlike with semantic naturalism, Plato is not too emphatic about the mimetic, sound-symbolic element of his theory of meaning, and concedes that sometimes it is difficult to posit any relation between names and their designata, that some names are better in capturing the qualities of named things, and finally that occasionally the mythological name-giver may have been wrong when inventing the original names. It seems that posterity treated the mimetic element much more seriously, as evidenced by the arguments raised by Renaissance thinkers (2.5) or even by Max Müller (5.2.2). Importantly in this context, Plato in the *Cratylus* considers ancient names to be more saturated with mimetic qualities than their modern versions. This idea provided an additional boost to the Renaissance etymological tradition, although – as was noted – it derived most of its inspiration from other sources, most importantly from Isidore of Seville and the Kabbalah (see 2.2, 2.5). However, the overriding significance of the *Cratylus* lies in that it was the first theory of meaning,[19] and the alternatives of conventionalism and naturalism spelt out by Plato constituted a reference point for following attempts to discuss the nature of meaning, including those that have attended to the problems of language origins (see for example 4.5–4.7, 5.1).

3.2 Aristotle's linguistic conventionalism and objectivism

Given the huge impact of Aristotle's work on both ancient and, particularly, medieval philosophy, it is interesting to note that any bearing of his own theories of language and meaning on language origins is completely insignificant, and hence it can safely be concluded that the problem of language origins did not trouble him at all. Yet, it is not possible to ignore Aristotle in a work such as this for the simple reason that he lay the foundation for what could, for the Western philosophical tradition, be called a commonsensical understanding of language and meaning. In this respect, Harris and Taylor comment on Aristotle's role in the Occidental conceptualisation of language:

> [W]hat now seems merely common sense to us is doubtless so in part because the Aristotelian view of language was incorporated lock, stock and barrel into the Western

19 Like many of Plato's dialogue (see *Meno*), the *Cratylus* ends in *aporia*, which has led some commentators, most importantly Gadamer (1989), to argue that such an ending serves to indicate that Plato does not embrace neither conventionalism nor naturalism (see Carpenter 1994).

> educational tradition which has shaped our own assumptions about linguistic "common sense". To dismiss Aristotle as a purveyor of commonplaces about language would be to make a mistake of the same order as accusing Newton of making a song and dance about a gravitational principle obvious to every country bumpkin who had ever been hit on the head by a falling apple. (Harris and Taylor 1989: 24).

As in the case of Plato, Aristotle's view of language is implicated in ontological and epistemological concerns. Using the doctrine of *hylemorphism*, Aristotle argues that logos is able to apprehend forms (*morhpa*) on the basis of their particular material manifestations (*hyle*). This is accomplished through the ability of logos to abstract from what is accidental:

> Now, given that which is spoken of in as many ways as this, it is patently the case that the primary thing-that-is is what something is, which picks out the substance. (Whenever we say that a given thing is of a certain type, we say that is good or bad, or as it may be, but not that it is three feet long or that it is a man, whereas whenever we say what something is, we do not say that it is white or that it is hot or that is three feet long, but that it is a man or that it is a god.) The other items, then, are said to be things-that-are in so far as, given that something is in a certain way, some of them are quantities, some qualities, some affections and some others such. (*Metaphysics* Book Zeta 1998: 168)

Aristotle espouses an objectivist theory of truth; in fact, its classical formulation later expressed by the Latin dictum *adaequatio rei et intellectus* ("the equivalence of things and thoughts") was formulated by Aristotle himself (cf. Andrzejewski 2016: 35). According to this view, the world, consisting of forms and matter, appears in the same way to all its inhabitants, who accordingly form the same representations of the world (Harris and Taylor 1989: 33). Differences in representations result from differences in linguistic conventions that different communities use to communicate these representations (Harris and Taylor 1989: 33). In this way, Aristotle subscribes to the conventionalist theory of meaning but his conventionalism differs in an important way from Hermogenes' position.[20] Hermogenes understands **linguistic convention primarily in volitional terms as the ability to give and change names arbitrarily**, and his motivation is to demonstrate lack of any natural link between a name and named object: "For it seems to me that whatever name you give to a thing is its right name; and if you give up that name and change it for another, the latter name is no less correct than the earlier, just as we change the names of our servants; for I think no name belongs to any particular thing by nature, but only by the habit and

20 The following account of Aristotle's theory of meaning is based on Harris and Taylor (1989: 20–34).

custom of those who employ it and who established the usage" (*Cratylus* 384; see above). **For Aristotle, convention secures the stability of reference, i.e. the stability that ensures that within a particular community, a particular entity is consistently referred to by a particular name.** This is of crucial importance to Aristotle because only such referential stability guarantees that language can be used to perform logical operations. Take the best-known example of the syllogistic argumentation:

> All men are mortal.
> Socrates is a man.
> Therefore Socrates is mortal.

As noted by Harris and Taylor, the validity of the reasoning is dependent upon the identity of the entity referred to as Socrates in the minor premise (2nd sentence) and the entity referred to as Socrates in the conclusion (3rd sentence). If one should go along with Hermogenes' suggestion and change names at one's whim (e.g. using the name Socrates to refer to a horse in the conclusion) then the referential stability of language would disappear, and as a result language would lose what for Aristotle is its defining quality.

In laying out his conventionalist account of linguistic meaning, Aristotle is not at all concerned with the problem of the appropriateness of names, the topic which bothered Plato in the *Cratylus*. The apprehension of a form such as "man" produces a thought (*dianoia*) which is linked to its vocal representation (*semeion*); when this vocal representation becomes for a community of speakers an agreed-upon way to indicate this thought (*thesei*), then this vocal representation becomes a name (*onoma*). And it is completely irrelevant for Aristotle if this agreement is reached because there is a similarity between a name and its referent (mediated by a thought) or through mere consensus:

> Words spoken are symbols or signs of affections or impressions of the soul; written words are the signs of words spoken. As writing, so also is speech not the same for all races of men. But the mental affections themselves, of which these words are primarily signs, are the same for the whole of mankind, as are the objects of which those affections are representations or likenesses, images, copies. (*De Interpretatione I*, quoted after Harris and Taylor 1989: 21)

The passage shows that Aristotle was very well aware of the distinction between speech and writing and that the latter is parasitic on the former – a distinction that many European thinkers of the 16th, 17th and 18th centuries failed to understand. More importantly in the present context, **since everybody has the same thoughts (i.e. mental affections caused by external objects), language is able to represent the world in a reliable way. Different races may each use different**

names but these names, or nomenclatures, always refer to the same set of objects (cf. Harris and Taylor 1989: 25–26). According to this objectivist account, language is an appropriate medium for the investigation of truth, which is taken by Aristotle to rely on logic – the *organon* of the mind – and to be communicable by language. Finally, Aristotle was the first to spell out the distinction between human and non-human animals by focusing on the former's unique ability to make sounds stand for mental contents, which then allows mental contents to be communicated to others. He traces the appearance of this ability to the ultra-social mode of human life (cf. Andrzejewski 2016: 41):

> Now, that man is more of a political animal than bees or any other gregarious animals is evident. Nature, as we often say, makes nothing in vain, and man is the only animal whom she has endowed with the gift of speech. And whereas mere voice is but an indication of pleasure or pain, and is therefore found in other animals (for their nature attains to the perception of pleasure and pain and the intimation of them to one another, and no further), the power of speech is intended to set forth the expedient and inexpedient, and therefore likewise the just and the unjust. And it is a characteristic of man that he alone has any sense of good and evil, of just and unjust, and the like, and the association of living beings who have this sense makes a family and a state. (Aristotle, *Politics* I, II).

3.3 Epicureans and Stoics on language and its origin

Later generations of Greek philosophers attempted to reconcile Cratylian naturalism with Aristotle's moderate conventionalism. Alexander the Great's (356–323 BCE) conquests made Greeks acutely aware of the diversity of customs and languages, which promoted philosophical reflection on the origin of linguistic diversity. An influential view was put forward by Epicurus (341–270 BCE), who argues that words (*onomata*) emerged as natural expressions of emotional states and ideas, and later were conventionalised within specific ethnic groups to facilitate communication between their members:

> Hence even the names of things were not originally due to convention, but in the several tribes under the impulse of special feelings and special presentations of sense primitive man uttered special cries. The air thus emitted was moulded by their individual feelings or sense-presentations, and differently according to the difference of the regions which the tribes inhabited. Subsequently whole tribes adopted their own special names, in order that their communications might be less ambiguous to each other and more briefly expressed. And as for things not visible, so far as those who were conscious of them tried to introduce any such notion, they put in circulation certain names for them, either sounds which they were instinctively compelled to utter or which they selected by reason on analogy according to the most general cause there can be for expressing oneself in such a way. (Diogenes Laertius, X, *Letter of Epicurus to Herodotus*, 75–76).

Epicurus defends the naturalistic stance but, for him, **the natural connection between words and denotata obtains only in the genetically primary instances of naming; later, the pressure for communicative success makes community members agree (*thesei*) on specific variants of the primary forms, which leads to a gradual obliteration of the natural connection. Epicurus is then not only a naturalist in the domain of semantics but also in language origins – arguably, the first proponent of the view that language emerged from natural causes without divine intervention.**

Epicurus' naturalistic conception was developed by the Roman philosopher Lucretius (c. 99 BCE–c. 55 BCE) in the poetic treatise *De rerum natura*. Lucretius devotes a lot of space to arguments against the divine origin of language (Atherton 2005), and later attempts to demonstrate how **language could gradually have emerged from emotionally induced cries** (Reinhardt 2008). At this juncture, he draws an interesting analogy between the process of language emergence and language acquisition in children, specifically focusing on the role of gestures in the latter process, as well as animal communication:

> But the various sounds of the tongue nature drove them to utter, and convenience moulded the names for things, not far otherwise than very speechlessness is seen to drive children to the use of gesture, when it makes them point with the finger at things that are before them. For each feels to what purpose he is able to use his own powers. Before the budding horns stand out on the calf's forehead, these are what he uses in anger to butt with and pushes viciously; then panthers' kittens and lions' cubs already fight with claws and feet and bite, even when teeth and claws are as yet scarcely grown. Further, we see that all the winged tribes trust to their wings and seek unsteady aid from their pinions. (Lucretius *De Rerum Natura* 5.1028–40 quoted after Reinhardt 2005: 129).

The motifs of animal cries and communicative gestures were destined to play very important roles in reflections on language origins (see 4.5–4.7).

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Thought about language origins is also indebted to the stoical movement (derived from *Stoa Poikle* – the *Painted Porch* in Athene's Agora, where its members originally used to gather). Stoicism, whose inception coincided with Epicurus' activity, captured – at least in its early form – the spirit of the Hellenistic era, when Greeks were absorbing the cultural diversity introduced into their world by Alexander's conquests. In this respect, Stoicism was particularly interested in the problem of how different languages express the same mental content (cf. Andrzejewski 2016: 43–44). The solution to this problem depends on the stoical theory of signification – the first elaborate proposal of this kind to

appear in ancient Europe. It asserted that the process of signification involves three distinct entities – the voice (*fone*), or the signifying; the object (*pragma*), or the name-bearer that is signified by the voice; and the signification proper, or *lekton* (in Greek "saying" or "sayable"; Frede 1994).

In accordance with the materialistic orientation of Stoicism, the first two elements are understood as material entities. The voice, or the utterance, is a product of the speaker's body that acts upon the hearer's body. On this account, words (*onomata*) are in fact bits of matter (Diogenes Laertius VII, 55–56; Frede 1994, Baltzly 2013; cf. Andrzejewski 2016), while the name-bearer is an individual to which the utterance refers. Such a corporeal definition of language leads to a number of difficulties, for example how to differentiate linguistic vocalisations from non-linguistic ones. Stoic philosophers come up with two explanations – first, unlike non-linguistic vocalisations (such as cries of pain or sounds emitted by animals), articulate speech can be changed into writing (Andrzejewski 2016: 46). The other explanation rests on a more fundamental statement that the distinguishing property of articulate speech is its incorporeal element – the *lekton* defined as "… the content of a rational impression … considered as something articulated or articulable in language-like structures, and thus defined as 'that which subsists in accordance with a rational impression' (D.L. 7.63 (33F2); Sextus M. 8.70 (33C))" (Atherton 2007: 44–45; see also Diogenes Laertius VII, 51).

Lekta connect the material reality of linguistic expression and reference with the reality of the mind (understood as logos), which infuses our experience with intelligibility. This is reflected in the stoical classification of knowledge, where the theory of signification is subsumed under *dialectic* (the science of expression), but a level up dialectic is taken to belong to *logic* (in the broad sense of it being the science of logos), and it is the *lekton* aspect of meaning that Stoics use to motivate this classificatory framework (Diogenes Laertius VII, 40–43; Atherton 2007: 45, cf. Andrzejewski 2016: 45–46). *Lekta* are defined as the contents of rational impressions (see above) in the sense of being linguistic products of logos, to which truth-values can be ascribed (Frede 1994). Several commentators show the similarity between *lekton* and the modern notion of proposition (e.g. Frede 1994, Atherton 2007: 44–47). While such a similarity may exist, the concept of *lekton* is more encompassing and apart from propositions, includes questions and commands as well as incomplete utterances, such as self-standing predicates or sentences lacking an object (Diogenes Laertius, VII, 62–63; Frede 1994; Atherton 2007: 45–46). On the whole, the *lekton* concept seems to represent a mixture of the stoical philosophy of language and logic with more grammatically oriented concerns.

Not many direct references to the problems of language origins have survived in Stoical writings.[21] Stoics probably shared the common Greek belief that first people sprang from the earth and then invented language. There is a number of clues indicating how they could have envisaged the nature of the original language. Early Christian authors, most notably Origen (184/185–253/254) and Augustine, contend that Stoics asserted a naturalistic connection between words and referents, and further claimed that the sounds of the first language imitated the qualities of referents. To illustrate a principle of this original word-formation, Augustine gives the Latin onomatopoeias – *tinnitus* (clanging), *hinnitus* (neighing) or *balatus* (bleating). It seems that Stoics were the first to believe in the power of etymology to uncover ancient roots of words, with Chrysippus (c. 279–c. 206), one of the founding fathers of Stoicism, being probably the inventor of the term. For example, Galen (129 AD–c. 200 CE) reports that Chrysippus derived *kardia*, the Greek word for "heart", from *kratesis* (dominion) and *kureia* (authority), to show that *kardia* captures the important qualities of the concept heart, which some Greeks believed to be the dominant and controlling part of the human body (Galen 2005: 206 in Allen 2005: 33). Such disquisitions are reminiscent of the *Cratylus*; however, there are important differences between the stoical and Platonic positions with regard to etymology. Unlike Plato, Stoics refused to accept that words relate to essences of things, or to use Plato's dictum, that they are reflections of ideas (see above); rather, they saw onomatopoeic similarity as a good starting point for the emergence of linguistic communication. Their stance was then close to Epicurus' in asserting two types of naturalism – one which pertains to the nature of the linguistic form; the other, to naturalistic origins of language. But here too Stoics elaborated an independent solution. For Epicurus, the first forms of language consisted in spontaneous vocalisations triggered off by sensations. One of the cornerstones of the stoical philosophy is a conviction about the rational nature of man. The view of language as "the outward expression of reason" (Allen 2005: 25) is difficult to reconcile with Epicurus' account that puts emphasis on emotive elements. **According to the stoical account, the first people were not particularly predisposed to spontaneous vocalisation but rather, thanks to the power of reason, saw that onomatopoeic imitation would help others understand intended meanings.** The imitative character of some words may still be self-evident today, while in the case of others it has to be uncovered by etymological analyses. However, the most important point for

21 The reconstruction of the stoical account of language origins is closely based on Allen (2005).

Stoics' idea of how language began is that onomatopoeic imitation constituted a rationally designed beginning for linguistic communication and not its essential characteristic.

The idea that language is a reflection of logos, understood as a human-specific intellectual capacity, has exerted a lasting impact on the Western philosophy of language. In a more immediate context, it provided support for the analogist position (see above), with Varro's (116–27 BCE) exemplary application of the stoical philosophy to argue for the regularity of language (see Harris and Taylor 1989). Viewed more broadly, the stoical view of language has been a source of inspiration for those who saw the emergence of language as tightly linked to the emergence of rationality – from the medieval proponents of speculative grammar (see 3.6), thorough rationalism (4.4), to Noam Chomsky (see 6.2). In a recent publication (2016), Chomsky stresses the thesis of "language as instrument of thought", which is essential to this tradition. At this juncture, he does not appeal to Stoics, though he could have, but to Aristotle, whose dictum "language is sound with meaning" he reverses into "language is meaning with sound" (2016: 63). According to this view, the defining element of language is cognitive, with sound being only, what Chomsky calls, a form of exteriorisation (2016: 62–63), and it should be remembered that this way of thinking about language is ultimately derived from the stoical notion of logos.

3.4 The problem of universals

The political and ideological triumph of Christianity towards the end of antiquity constrained reflection on language origins to the biblical account, as documented in the preceding chapter. However, it was during late antiquity and the Middle Ages that the problems related to language came to be discussed at an unprecedented scale and with great philosophical sophistication. Cabezón, a prominent historian of ideas, describes this type of religious preoccupation with language as "scholastic", adopting the name of the influential philosophical method that emerged in medieval Europe and consisted in the extensive use of polemic to defend the position of one's philosophical school (Latin *schola*) against "intellectual assaults" issued by representatives of other schools (Cabezón 1994: 210). Although the topic of language origins did not lie at the heart of the scholastic thought, it spawned ideas that were to ramify language origin debates in the ages to come. In the remaining part of this chapter, we will take a look at the most important of these intellectual developments.

Certainly, the problem of universals – a persistent philosophical motif of scholastic thought – constitutes such a development, but at the same time it illustrates

a formative influence that ancient philosophy kept exerting in the Middle Ages. The debate was opened by philosophers of late antiquity and the early Middle Ages who were concerned with the ontological status of general properties, such as geometrical figures. The first explicit formulation of the problem probably goes to Porphyry (c. 234–c. 305 CE), who in his famous commentary on Aristotle's *Categories* writes:

> (1) Since, Chrysaorius, to teach about Aristotle's *Categories* it is necessary to know what genus and difference are, as well as species, property, and accident, and since reflection on these things is useful for giving definitions, and in general for matters pertaining to division and demonstration, therefore I shall give you a brief account and shall try in a few words, as in the manner of an introduction, to go over what our elders said about these things. I shall abstain from deeper enquiries and aim, as appropriate, at the simpler ones.
> (2) For example, I shall beg off saying anything about (a) whether genera and species are real or are situated in bare thoughts alone, (b) whether as real they are bodies or incorporeals, and (c) whether they are separated or in sensibles and have their reality in connection with them. Such business is profound, and requires another, greater investigation. Instead I shall now try to show how the ancients, the Peripatetics among them most of all, interpreted genus and species and the other matters before us in a more logical fashion. [Porphyry, *Isagoge* in Spade 1994 (henceforth, *Five Texts*), p. 1.] (quoted after Klima 2013)

The most influential definition of universals was later given by Boethius (c. 480–524), who concentrates on the relation between a universal and particulars, whereby:

> A universal has to be common to several particulars
>
> 1. in its entirety, and not only in part
> 2. simultaneously, and not in a temporal succession, and
> 3. it should constitute the substance of its particulars (quoted after Klima 2013).

The major positions of the debate were linked to the views attributed to Plato and Aristotle respectively – to quote Boethius again:

> Plato thinks that genera and species and the rest are not only understood as universals, but also exist and subsist apart from bodies. Aristotle, however, thinks that they are understood as incorporeal and universal, but subsist in sensibles. [*Five Texts*, Spade 1994: 25] (quoted after Klima 2013)

Accordingly, the position attributed to Plato came to be known as extreme realism. Pithily described by the Latin phrase *universale ante rem*, it assumes that universals – identified with *eidoi* – exist before and above their corporeal manifestation in particulars, and as eternal standards constitute the proper

designata of general terms (such as, for example, human-ness; cf. Reale 1997, vol. II: 395–438; Żywiczyński 2004; Dreyfus 1997: 134). The position derived from Aristotelian hylemorphism holds that universals exist substantially but are able to manifest themselves only in particulars; hence, it came to be referred as the *universale in re* position. Both of these are classified as realistic views, as they both affirm the reality of universals; however, due to the difference in strength of this affirmation, the position associated with Plato is often designated as extreme realism (see above), and the position associated with Aristotle as moderate realism (Andrzejewski 2016: 49). They are contrasted with the view that denies the substantial existence of universals. Its beginnings are often linked to the work of Roscellinus[22] (c. 1050–c. 1125), a French philosopher who claimed that there exist only individual things and individual instances of naming (*voces*). On this account, universals are just the effect of *flatus vocis* or the use of names (*nominata*), and do not have any other grounding (cf. Andrzejewski 2016: 49). The position spelt out by Roscellinus was designated nominalism to emphasise that he takes universals to have a purely linguistic nature.

The realistic position in the debate on universals was elaborated by Anselm of Aosta (1033–1109), William of Champeaux (c. 1070–1122) as well the representatives of the cathedral school of Chartres – Bernard of Chartres (c. 1060–c. 1125) and Gilbert de la Porrée (c. 1075–1154). The last of these proposed a distinction of ideas, or Platonic *eidoi*, into *substances* (*substantiae*), which have no connection with particulars, and *substantial forms* (*formae substantiales*), that is forms that substances assume when they are instantiated in particulars. In drawing this distinction, he insisted that substantial forms determine the nature of a particular (e.g. the human-ness of a specific person), without partaking in the accidental qualities of this particular (i.e. the unique characteristics of a specific human being when compared to other humans; cf. Kuksewicz 1973: 154–155).

Probably, the most intriguing proposal to appear in the debate was elaborated by Peter Abelard (1079–1142), who originally studied with Roscellinus. Just like his teacher, Abelard asserted the existence of particular things and particular acts of naming; in contrast to Roscellinus, he paid much more attention to the process of how universal concepts are generated. Abstraction is the foundational concept of his proposal. While sensations apprehend the uniqueness of things, abstraction is a type of cognition that apprehends only selected features of things; for example in the case of human beings, abstraction comprises

22 Roscellinus's writings were lost and his views are mainly known from his correspondence with Anselm of Aosta (see above; Cunningham 1836: 312).

only those features that are shared by humans, thus giving rise to the universal "human-ness" (Kuksewicz 1973: 155–156; King 2015). Abelard further argues that the intersubjective stability of universals is based on the use of words, which highlights certain properties of an individual without pointing to any universal property; for example, calling someone "human" highlights those properties that this individual shares with other individuals to whom the label "human" can be applied, but this is done without indicating some general property "human-ness" (King 2015). Due to its emphasis on the role of linguistic description, Abelard's position on universals is often designated as sermonism, from Latin *sermo* for speech (Andrzejewski 2016: 50). Abelard's work also provided inspiration for the nominalistic version of conceptualism, whereby universals are first and foremost identified with concepts – a view that is often attributed to William Ockham (c. 1287–1347) (cf. Andrzejewski 2016: 50–51).

3.5 Augustine's linguistic scepticism

Although the debate on universals did not *per se* involve problems related to language, it served to bring language into the centre of medieval thought. Specifically, this was done through highlighting the problems of the relation between language and the world, on the one hand, and between language and mind, on the other. The views articulated by scholars involved in the debate were used by philosophers of language in later ages also to discuss, among many other problems, language origins (see for example 4.5, 4.7). In the more immediate context, their influence bore on Aquinas' conception of language and the work of speculative grammarians, as we are soon going to see (3.6). Before this, however, it is important to give an account of the type of linguistic scepticism that came to characterise attitudes towards language in at least some sections of Christian philosophy and theology. The model version of this view was put forward by Augustine. As discussed in the previous chapter, Augustine – although he conceded that Hebrew had been the original language – did not consider it in any way superior to other languages. The principal reason for his distrust in the endeavours of the authors writing about the Adamic problem is laid out in *De Doctrina Christiana* and concerns the interpretation of the story about the fall of Adam. Augustine understands it not in historical terms but primarily in philosophical ones, and his account of the fall highlights the severing of what he takes to be the natural connection between the word (*signum*) and the designated entity (*res*) (cf. Fyler 2010: i). Importantly, this breach was not merely linguistic but had thoroughgoing ontological consequences. These were visible in the very structure of linguistic signification, which was dichotomised into the mental component (*verbum*)

and its physical manifestation (*vox*, *locutio*). Therefore, linguistic communication is indirect, in the sense that all it is able to do is orient language users towards particular mental contents, and it is fallible, as the mental contents of different language users may vary (*De Trinitatae*; cf. Ferretter 1998: 261–264).

Such an attitude towards language is rooted in Augustine's more general – semiotic – views. In the treatise *De magistro*, he distinguishes between two types of signs: natural (*naturalia*) and conventional (*data*). The former are the outcome of natural processes, such as animals leaving spoors on the sand or fire producing smoke (Andrzejewski 2016: 55). Conventional signs are, on the other hand, the outcome of man's cultural activity, and as Augustine insists, they are secondary to the things they designate; for example, one is able to meaningfully use words – all of which are classified as conventional sings – when one has experienced the things designated by them (Andrzejewski 2016: 55). According to this account, conventional signs, and typically words, perform the instrumental function of directing the mind to objects in the world (cf. Andrzejewski 2016: 56), as described in the previous paragraph. Since the successful use of words is founded on the pre-existing knowledge of their designata, what about the use of language to designate entities that are not amenable to the senses, for example truth? Here, Augustine resorts to the famous doctrine of illumination, reminiscent of neoplatonic epistemology, which posits that god himself guides the human soul to apprehend such entities (cf. Mendelson 2016):

> The soul of man bears witness to that Light, but itself is not that Light; but the Word of God is that true Light which enlightens every man who comes into this world. (Augustine, *Soliloques*, II, ii, 2)

With regard to the epistemology of intelligible objects (including god), Augustine argues for the dominance of spiritual experience. Language can still be helpful in directing the mind towards such objects, but is able to do so in a much more perfunctory way than in the case of material objects and is here much more often subject to failure (cf. Andrzejewski 2016: 57–58). Augustine's distrust in the power of linguistic description resonates in the doctrines of medieval mystics, such as Hildegard of Bingen (1098–1179) or Meister Eckhart (c. 1260–c. 1328), who sharply oppose the activity of god's word, which directly imprints on the human soul, with that of words, which are only able to provide us with incomplete knowledge through indirect means (see Andrzejewski 2016: 66–75). However, Augustine's linguistic scepticism has had deeper and longer-lasting repercussions by introducing a line of thinking that questions language-generated knowledge and carefully examines the limits of linguistic expression.

3.6 Aquinas and the speculative grammarians

The towering work of Thomas Aquinas (1225–1274) dictated the course of theology and philosophy of the late Middle Ages. In terms of philosophy, his greatest achievement consisted in elaborating a Christian version of Aristotle's thought. The naturalistic elements present in both Aristotle and highlighted by Aquinas' interpretation thereof were also to play a role in an intellectual breakthrough associated with the beginnings of the Renaissance. Thus, it is interesting to note that his views on language focus on spiritual and theological motifs, in contrast to, for example, Augustine, who is ready to acknowledge the role of the senses in the process of signification (see above). For Aquinas, the point of departure for reflection on the nature of language is set by the Aristotelian definition of truth: *adequatio rei et intellectus* (Andrzejewski 2016: 61–62). In *Disputed Questions on Truth* (*Quaestiones disputatae de Veritate*), an early work, Aquinas makes it clear that truth, for him, has metaphysical provenance, and it is not what the soul (i.e. human intellectual capacity) establishes itself but what is directly imparted to the soul by god (cf. Andrzejewski 2016: 62):

> [T]he mind of man cannot be said to be equal to truth, for it judges everything according to truth. It does not judge everything according to itself. Truth, therefore, must be God Alone, and so there is only one truth. … One could similarly argue that everything created is changeable. But truth is not changeable. Therefore, it is not a creature but is something uncreated. Consequently, there is only one truth. … One could similarly argue that every created thing has some similarity to what is false in so far as it has some defect. Nothing created, therefore, is truth, and so there is only one truth. (Aquinas, *Quaestiones disputatae de Veritate*, Question 1: Truth, Article IV, 5–7)

The corollary of such a view is that truth expressed by linguistic structures cannot be empirically verified. The apprehension of truth and its linguistic expression is possible through the operation of the soul's chief property – intellect – which has the ability to identify essential properties of reality (equivalent to Aristotle's forms), put linguistic tags onto such properties, and build true statements by means of linguistic tags about these properties. Since intellect arises by virtue of the divine intellect, being its blurred reflection (a doctrine fully articulated in *Summa theologiae*), god is the ultimate source of the epistemological and linguistic processes described above (cf. Andrzejewski 2016: 62–63). It is important to see that on this account language is not god's invention in any direct genetic sense, as was the case in many glottogonic myths (1.1) and in works on the Adamic language (2.2, 2.5). Aquinas takes god to be the ultimate cause of language in the double sense: as *truth*, the proper object to which linguistic

descriptions apply, and as the model *intellect*, which instigates and regulates linguistic activity (cf. Andrzejewski 2016: 63).

It is interesting to see how Aquinas stresses the cognitive function of language, as an instrument of thinking, over its more physical manifestation in interpersonal communication. He distinguishes between *verbum exterius*, the physical manifestation of language as speech, and *verbum interius*, which is the object of the intellectual process:

> Speech [*sermo interius*] that is internally expressed is a motion of the soul, produced in the process of thinking, and not orally enunciated. (Aquinas, *Quaestiones disputatae de Veritate*, Question 4: The Divine Word, Article I, 1)

Although neither of the two types of language – external and internal – is able to capture the nature of god, it is the latter, sometimes referred to as *verbum cordis* (word of the heart), that – when contemplated upon – is capable of bringing one's soul closer to god. On the other hand, it is difficult to use *verbum exterius*, a physical event limited in time, to gain any insight into the divine (Andrzejewski 2016: 63):

> If the Word, properly speaking, existed in God, the Word existing eternally in the Father and that which was made Incarnate in time would be the same—just as we say that it is the same Son. But it seems that we cannot say this, because the Incarnate Word is compared to a word vocally expressed; the Word existing in the Father, however, is compared to a mental word. This is clear from what Augustine has written. Now, the word that is vocally expressed is not the same as that existing in the heart. (Aquinas, *Quaestiones disputatae de Veritate*, Question 4: The Divine Word, Article I, 6)

Aquinas's conception of *verbum interius* forms an integral part of the theocentric perspective advocated in all his works; however, when viewed on a more theoretical plane, it does make a very strong claim about the primarily cognitive nature of language. In antiquity, a similar view was put forward by the representatives of Stoicism ("language as a reflection of logos", see 3.3). Aquinas does not acknowledge any such influence and, knowing his philosophical sympathies, it is difficult to posit a direct link between the two positions. Be that as it may, they seem to foreshadow a recurrent motif in Western philosophy that identifies the cognitive layer as the primary substance of language and thinking as its primary function – we are going to see this tendency, for example, in the rationalism of the 17th and 18th centuries (see 4.4, 4.7), in Chomsky's conception of internal language, and in the works of the speculative grammarians.

To some, the affinity between Aquinas and the speculative grammarians was so close that for a long time the famous Doctor Angelicus was identified as the author of *Tractatus de modis significandi seu Grammatica speculativa*, probably

the most influential treatise of the speculative movement, but which was later identified as the work of Thomas of Erfurt (fl. 1300 in Erfurt; Cunningham 1961). Aquinas and the speculative grammarians may have shared a lot of philosophical sentiments; however, the latter's preoccupation with language is clearly distinct from Aquinas' stance, where the subject of language is not something worthy of investigation in itself but only in the context of his grand philosophical programme. Probably the prime motivation for the early speculative grammarians, such as the two Danes Martin of Dacia (1220–1304) and Boethius of Dacia (c. 1240–1280/1290), was to describe intralinguistic relationships (Pinborg 1982). To this end, they adapted the classic Latin grammars by Donatus (mid-4th century CE) and Priscian (5th-6th century CE) and – in the Aristotelian spirit – made attempts to separate the essential properties of grammar (in consonance with the classical models, understood as parts of speech) from accidental ones. Although their project was heavily based on the study of Latin, the grammarians were looking for universals that underpin the workings of all languages, i.e. what each language needs to become a fully expressive grammatical system (Kelly 2002: 11–12). In this respect, the speculative grammarians should be identified as one of the first proponents of universal grammar – another recurrent idea in philosophy of language, whose best-known modern version was formulated by Chomsky (see 6.2) but which can also be found in the works of the French rationalists of the 17th century (most importantly, by the Port-Royal grammarians) or in the Scottish grammarian tradition of the 18th century (see 4.4). It should however be noted that the concept of universal grammar originated with Roger Bacon's (c. 1219/20–c. 1292) *Summa Grammatica*, which was the source of inspiration for the speculative grammarians (cf. Rosier 1997).

The defining idea of the speculative tradition is the view that language interfaces with reality, i.e. that in its universal form at least, language constitutes a mirror (*speculum*, from which the school takes its name) that reflects essential elements of reality. This is done through modes of signifying (*modi significandi*; hence, modism – the alternative name of the school), which specify a fit between the world, mind and language. This leads the speculative grammarians to a tripartite distinction of modes: *modus essendi*, whereby language indicates things (i.e. substances and their properties); *modus intelligendi*, whereby language describes how these things are represented by the mind; and proper *modus significandi*, whereby words designating these things perform their grammatical function (Verburg 1998: 48–56; cf. Kelly 2002: 39–68). For example, Thomas of Erfurt in *Grammatica speculativa* (see above) explains that in the case of verbs

the *modus essendi* indicates the property of change, the *modus intelligendi* consists in mentally abstracting this property from substances, whereas the *modus significandi* refers to the use of verbs to predicate this property of substances (cf. Verburg 1998: 55–56).

The significance of the speculative grammarians for our thinking about language is certainly related to their ideas about universal properties of language, which they adapted from Bacon and transformed into the foundational element of their philosophy. The grammarians also made a strong case for the thesis that language is perfect, which can be found in some glottogonic and glossogenetic myths, and later in many works on the Adamic language (see 2.2, 2.5; for the motif of perfect language see, Eco 1995: 1–6). Instead of appealing to divine fiat, as did the authors engaged in the Adamic debates, they attempted to show that language is perfect by means of philosophical and linguistic investigation, i.e. by trying to show how the structure of language is isomorphic with both the structure of the world and of thought. This motif also exerted a lasting impact on philosophy of language. The unwavering realism of the speculative grammarians, accompanied by the optimism regarding the ability of language to express reality, proved a very attractive formula for generations of thinkers. For example, it was clearly visible in the concept of *a priori* philosophical language, specifically designed for philosophical argumentation, which was discussed by prominent thinkers of the 16th, 17th and 18th centuries, for example Francis Bacon (1561–1626), John Comenius (1592–1670) or René Descartes (1596–1650). There were also actual attempts to construct *a priori* philosophical language, to mention Pierre Laromiguière's work, where pantomimes and gestures – considered by Laromiguière as the universal language of humanity – were used as the foundational element of a novel communication system (see 4.8; cf. Eco 1995: 209–220). But the speculative tradition also inspired somewhat grotesque projects, such as the "thinking machine" described by Ramon Llull (c. 1232–c. 1315) in *Ars Magna*. Llull claimed that his model contained all the concepts of theology and philosophy, and furthermore that it was able to specify all possible relations between them. In *Ars Magna*, related concepts are placed on circumferences, with the superordinate concept located in the middle. For example, in Llull's first analysis, "god", as the superordinate concept, was placed in the middle and his attributes – truth, glory, goodness, etc. – formed two circles (see Figure 6); by manipulating the circles, he derived parings between these concepts, which were visualised in the next figure, and so on (Verburg 1998: 56–59). Llull envisaged that the "thinking machine" should be used in religious debates, with the specific purpose of converting

Muslims and Jews to Christianity. Predictably, it achieved little success and brought a violent end to its inventor, who was stoned to death by an angry mob during one of his missionary excursions into the Muslim world.

Fig. 6: The first figure of Llull's Ars Magna

Source: https://upload.wikimedia.org/wikipedia/commons/thumb/8/8f/Ramon_Llull_-_Ars_Magna_Fig_1.png/600px-Ramon_Llull_-_Ars_Magna_Fig_1.png (DOA: 15 Mar 2017.)

Reflections on the Adamic problem were focused on the relation between language and the divine. Philosophical reflection on language differed from it in that it made language itself an object of study. This perspective brought to light such problems as the relation between language, mind and reality, the nature of meaning and linguistic signification and the limits of linguistic description. Naturalistic glottogony, to be described in the next chapter, would not have been possible without the philosophical culture whose development was documented here, and it similarly would not have been possible without the Adamic tradition, which succeeded in promoting the importance of language origins. We will now turn to the factors that brought together these two very distinct intellectual pursuits to create a new type of glottogonic reflection.

4 Naturalistic glottogony

Naturalistic glottogony is the type of reflection on language origins that developed in the 17th century and flourished in the 18th century, becoming one of the most important topics of the Enlightenment. As the name suggests, it focused on the emergence of language – the glottogonic problem – while diversification of language and language change – the glossogenetic problem – belonged to its more peripheral concerns (but see Herder, 4.7). **Naturalism, out of many meanings of the term, indicates that this line of thinking sought for causes of language emergence that are exhausted in nature, without appealing to supranatural agencies** (Papineau 2017). **Naturalistic glottogony was part of a general intellectual movement to eschew supranatural explanations of phenomena in favour of naturalistic ones. This trend became the defining characteristic of the Enlightenment, which – as will be shown – was the golden age of reflection on language origins.**

We have already acknowledged the role of ancient and medieval philosophies of language as well as the Adamic tradition in the development of naturalistic glottogony. Of particular importance was the Renaissance return to these ancient philosophical views that had been under-represented in the Middle Ages, most importantly Epicureanism (see below). The great geographical explorations put Europeans in contact with alien human populations and hitherto unknown species, such as non-human apes. These facts contributed to eroding the traditional views about man, his cultural and biological characteristics, including language, and his position in the world. A search for a new definition of humankind (4.2) was primarily conducted under the auspices of science, whose growth inspired new philosophical conceptions, such as empiricism (4.4). The biblical mythology offered the explanation of how language had come about, and hence the Adamic reflection was not concerned with elaborating such an explanation but with interpreting what the biblical myths meant. In the new situation, the old account was no longer convincing, and the task of naturalistic glottogony was to find a new, more convincing one.

4.1 Epicurean inspirations

The philosophy of ancient Greece and Rome had a continued and formative impact on medieval scholasticism – with Plato and particularly Aristotle enjoying quasi-religious veneration as the fountainheads of wisdom. However, the

dominance of the doctrinal element prevented medieval scholars from expressing an interest in those intellectual traditions of antiquity that did not accord with the Christian worldview. Such was the fate of the materialistic philosophy elaborated by Epicurus and his followers (see 3.3). The Renaissance reinstated Epicureanism as a viable philosophical standpoint. At first, the inspiration was drawn from its ethical message, as evidenced, for example, by the writings of Lorenzo Valla (1407–1457), an early humanistic philosopher, philologist and Catholic priest (see Joy 1992). Later, the materialistic and naturalistic sentiments of Epicureanism were given an increasing attention, including Epicurus' and Lucretius' naturalistic conceptions of the emergence of language.

Pierre Gassendi (1592–1655), a renowned mathematician and follower of empiricism, saw Epicurean atomism as the appropriate foundation for the budding science. A Catholic priest himself, Gassendi believed that science can be reconciled with the tenets of Christianity and that this aim could only be accomplished by the further development of science, which should solely rely on naturalistic explanations. In *Syntagma philosophiae Epicuri*,[23] he argues that Epicurus' account of language origins provides an excellent example of what such a naturalistic explanation should look like. Another Catholic priest, **Richard Simon** (1638–1712), a biblical scholar, in his influential *Histoire critique du Vieux Testament* (*A Critical History of the Old Testament*) combatted various views on the divine origin of language found, for example, in the Adamic literature of his day (see 2.5); instead, he assumed that language is a phenomenon that arose naturally, and as such is best explained by Epicurus' account (cf. Formigari 1988: 276). **Samuel von Pufendorf** (1632–1694), a philosopher and jurist, in the treatise *De jure* concentrated on the motif found in both Epicurus and Lucretius that concerned the pressure on the original form of communication to change into communally shared linguistic conventions. Appealing to the two ancient philosophers, Pufendorf presses the point that the development of linguistic conventions facilitated a better coordination of human activities, which in turn led to the foundation of civilised societies (Formigari 1988: 276).

Giambattista Vico (1668–1744) in his main work *Scienzia Nuova* (*The New Science*) presented the most influential account of language origins that was inspired by Epicurean philosophy. Vico, unlike the thinkers mentioned above, is far from accepting Epicureanism in its entirety, and severely criticises its materialistic reductionism (1725/1948: 55, 87). However, he also contends that the

23 The full title: *Syntagma philosophiae Epicuri cum refutationibus dogmatum quae contra fidem christianam ab eo asserta sunt*. Lyon: Guillaume Barbier, 1649.

naturalistic method Epicurus used to uncover the beginnings of language is the correct one and that therefore he will use it in his own project (Formigari 1988: 276). Vico proposes that the first language – referred to by him as the language of gods – did not have a vocal form but relied on gestures, pictograms, artefacts and religious rituals. The language of gods was a natural communication system in which semantic relations were established by the similarity between the form of a sign and its significatum (Vico 1725/1948: 125–126). This similarity could be the effect of the literal, physical similarity between the form and meaning, or it could depend on the imagination that highlights analogy or contiguity between them – somewhat akin to the way metaphor and metonymy are understood in modern cognitive semantics (cf., e.g. Lakoff and Johnson 1980, or Evans and Green 2005). Given the variety of semiotic resources employed in this original language, perhaps it should be best characterised as an iconic communication system (cf. Goodman 1972/1992, or Nöth 2008). This is how Vico describes the design of the first language, which leads him to a handful of methodological comments as well as the speculation that it might have been used by inhabitants of Atlantis:

> 431 The philosophers and philologians should all have begun to treat of the origins of languages and letters from the following principles, (i) That the first men of the gentile world conceived ideas of things by imaginative characters of animate and mute substances. (2) That they expressed themselves by means of gestures or physical objects which had natural relations with the ideas; for example, three ears of grain, or acting as if swinging a scythe three times, to signify three years. (3) That they thus expressed themselves by a language with natural significations. (Plato and Iamblichus said such a language had once been spoken in the world; it must have been the most ancient language of Atlantis, which scholars would have us believe expressed ideas by the nature of the things, that is, by their natural properties.) It is because the philosophers and philologians have treated separately these two things which, as we have said, are naturally conjoined [the origins of languages and letters], that the inquiry into the origins of letters has proved so difficult for them, involving equal difficulty with the inquiry into the origins of languages, with which they have been either not at all or very little concerned. (Vico 1725/1948: 125–126)

In the succeeding phase of the development, the era of the heroes, language underwent increasing conventionalisation. This did not however result in a loss of its original imaginative character, and poetry constituted the dominant form of linguistic expression at the time. The last phase – designated by Vico as the era of humans – marked the emergence of fully conventionalised symbols, both vocal and graphic, the primary function of which was transfer of ideas. The following

passage, given in the concluding part of *The New Science*, presents a concise description of the three types of language:

> 928 Three kinds of languages.
> 929 The first of these was a divine mental language by mute religious acts or divine ceremonies, from which there survived in Roman civil law the *actus legitimi* which accompanied all their civil transactions. This language belongs to religions by the eternal property that it concerns them more to be reverenced than to be reasoned, and it was necessary in the earliest times when men did not yet possess articulate speech.
> 930 The second was by heroic blazonings, with which arms are made to speak; this kind of speech, as we have said above, survived in military discipline.
> 931 The third is by articulate speech, which is used by all nations today. (Vico 1725/1948: 306)

For Vico, the tripartite chronology, delimited by the epochs of gods, heroes and men, has a universal character and regulates the development of not just language, but all human cultural accomplishments, including systems of government, justice, artistic expression and even ways of thinking. Furthermore, the author of *The New Science* insists that the three phases of development dictate both the collective evolution of humanity and the evolution of individual societies. Finally, he argues that the three phases can also be seen in the child's development. The motif that the historical development of language is reflected in the development of an individual can already be found in Lucretius (see 3.3), but Vico's position is much more radical in that the two types of developmental processes follow essentially the same plan. Accordingly, in the first phase of the child's development, corresponding to the era of gods, the infant attempts to understand the surrounding world through perceptual experiences; then, in the phase corresponding to the epoch of heroes, it identifies with the heroes of the culture in which it is growing up – here, with the use of imagination, it is able to construct a variety of fictional situations and roles; finally, the transition from childhood to adulthood consists in the acquisition of abstract thinking (1725/1948: 66–70; cf. Danesi, 1993: 64–66). Vico's account strikes us as both speculative and non-intuitive; however, in the context of language origins, it preempts ideas that later rose to prominence. First of all, it is interesting to see the emphasis that he places on visual communication when describing the properties of the original language (i.e. the language of gods) – later, we will see a similar emphasis in gestural and pantomimic scenarios of language origin (see 4.5, 4.8, 5.6). His other major contribution concerns the postulate about the relation between the emergence of language in the (pre)history of mankind and its

emergence in an individual, or – to put it into modern terms – between the phylogeny and ontogeny of language (see the discussion of Wundt's views in see 5.6).

4.2 The search for a new definition of humankind

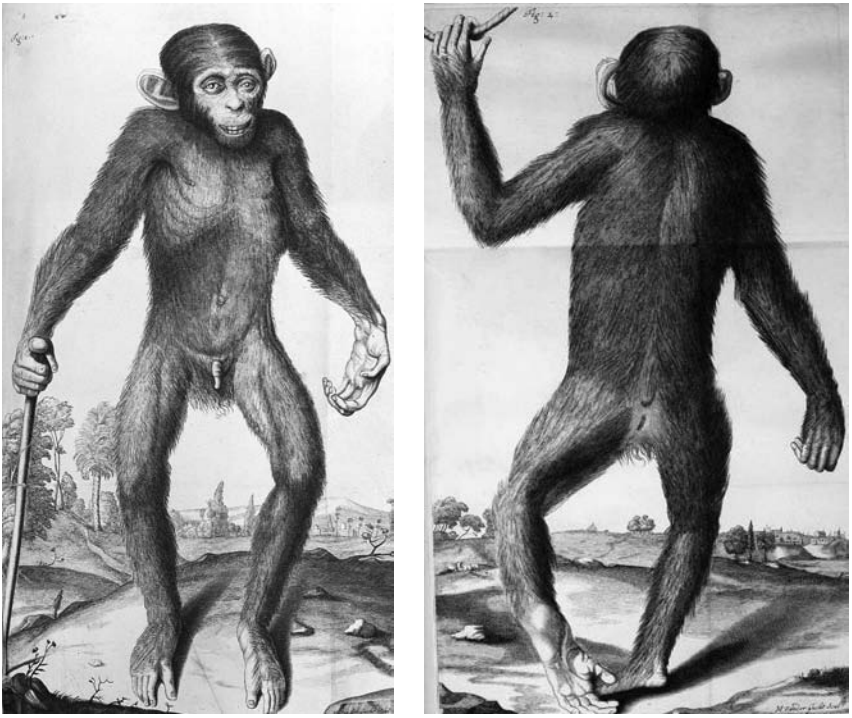
Another source of impetus for naturalistic scenarios of language emergence came from early scientific attempts to spell out the essential characteristics of a human being in contradistinction to other species. The traditional world view based on the biblical revelation and the medieval interpretations of Aristotle located man centrally in the great chain of being between animals and spiritual beings (Lovejoy 1933). The era of great geographical explorations brought Europeans into contact with, on the one hand, new cultures and races and, on the other, animal species – such as non-human great apes and monkeys – that resembled humans morphologically and behaviourally. These events led to a blurring of the line dividing man and animals, though it also problematised which cultures and races should be considered as truly human.

Such a context was instrumental in initiating studies that were to develop into modern anthropology and comparative research. The distinguished Dutch anatomist **Nicolaes Tulp** (1593–1674), famously portrayed in Rembrandt's painting *The Anatomy Lesson*, preformed the first documented post-mortem of a non-human ape, most probably bonobo (*Pan paniscus*), and was surprised at its morphological similarity to humans (Hewes 1977a: 99). More systematic attempts to study primates were undertaken by **Edward Tyson** (1651–1708) and described in ***Orang-Outang*** (1699), which can be regarded as the first work of comparative primatology. It describes in minute detail an autopsy of an ape performed by Tyson himself and the discussion of its results. Interestingly, the animal, despite the title, was not an orangutan, i.e. a member of the genus *Pongo* native to Sumatra and Borneo, but a chimpanzee, i.e. a member of the genus *Pan*; although it is difficult to determine to which of the chimpanzee species it belonged – the common chimp (*Pan troglodytes*) or the bonobo (*Pan paniscus*). However, Tyson's use of the term *orangutan* was deliberate. By drawing on its original meaning, which in Malay stands for "a person of the forest", he wanted to highlight its similarity to humans, rather than to apes or monkeys:

> I shall not at present give the Reader the trouble of the Reflexions, that I intended, upon the Observations made in the Anatomy of this remarkable Creature; since I am conscious (having been so tedious already) that 'twill but farther tire him, and myself too. I shall therefore now conclude this Discourse, with a brief Recapitulation of the Instances I have given, wherein our Pygmie, more resembled the Humane kind, than Apes and Monkeys do … (Tyson 1699: 91)

This is followed by the enumeration of 48 characteristics, in which Tyson finds the specimen more similar to humans than apes and monkeys, and 24 characteristics, which are more ape/monkey-like than human-like (Tyson 1699: 92–94, see Fig. 7). He concludes that the morphology of the brain and larynx does not exclude the possibility that it was able to use spoken language (cf. Hewes 1977a: 99).

Fig. 7: Edward Tyson's Orang-Outang



Source: http://commons.wikimedia.org/wiki/File:Edward_Tyson,_Orang-Outang_Wellcome_L0028397.jpg, http://commons.wikimedia.org/wiki/File:Tyson_Pygmy_external_back.jpg (DOA: 15 Mar 2017.)

These early attempts to bridge the gap between man and animals co-existed with the struggles to find a new definitional formula for humankind. On the one hand, Europeans were fascinated with some non-Western cultures, notably with the Chinese culture, but, on the other, they often denied that peoples considered uncivilised by the standards of the time could be considered human. The public were captivated by stories from faraway countries reported by explorers and

missionaries, but even more interest was generated by "wildlings" brought to Europe, who were often put on display for amusement. When Sebastian Cabot (1474–1557) brought three Inuits from one of his journeys to North America and paraded them in London, they were taken to be representatives of a different species – flesh-eating and primitive – who "spake such speech that non coulde understand them, and in their demeanour like to bruise beastes" (Nash 2009: 56). Although Pope Paul III in the encyclical *Sublimis Deus*, promulgated in 1517, declared that American Indians are fully human, the controversy about their nature persisted for a long time, incited by travellers' and missionaries' tales of awe and disgust about cannibalistic half-men for whom "there is not flesh or fish, which they finde dead, (smell it never so filthily) but they will eate it, as they they finde, without any other dressing" (Nash 2009: 57).

In 16th- and 17th-century Europe, such attitudes were ordinarily expressed towards inhabitants of any lesser known parts of the world. However, there were some ethnicities that either due to their physical or cultural characteristics attracted a special attention. For example, the Khoikhoi nomads of southwestern Africa were commonly considered in 17th-century England to be animals – possibly because of their extraordinary physique (e.g. the prevalence of steatopygia[24] in women) and their language containing click sounds (in fact, the name – Hottentot – given to them by the Dutch settlers was intended to imitate the click sounds of Khoikhoi). A certain preacher who visited the Cape of Good Hope in 1615 described them as "beasts in the skin of men, rather than men in the skins of beasts" and their language as "an articulate noise rather than Language, like the clucking of Hens or gabling of Turkies" (Novak 2009: 188). In a similar vein, Thomas Herbert (1606–1682) in *Some Yeares Travels into Africa and Asia the Great* (1677), one of the most popular travel books of the time, suggested that the Hottentot language occupies the middle ground between languages and animal cries, while the Khoikhoi themselves were thought to have descended from satyrs, described by the ancient authors, and to be more closely related to baboons than humans (Novak 2009: 188).

The problems of defining man manifested themselves not only in popular sentiments or travel books but also concerned Europe's intellectual elite. Still in the 18th century – the golden age of biological taxonomies – it was commonly believed that there are inferior forms of our species, which were collectively referred as *Homo ferus*, or the wild *Homo*. The existence of such forms was accepted by the fathers of biological systematics – **Carl Linnaeus** (1707–1778) and

24 Extreme accumulation of fat on buttocks and thighs.

Georges-Louis Buffon (1707–1788; cf. Burke 2009: 266). Linnaeus, in the successive editions of his monumental *Systema Naturae*, presented varying definitions of the genus *Homo* and the species *Homo sapiens*. The definitive taxonomy was included in the tenth edition (1758), where he distinguishes between two species in the genus – *Homo sapiens* and *Homo troglodytes*. The former comprises six varieties (*morpha*). Four of them corresponded to races, but the author of *Systema* believed that they were also characterised by unique psychological profiles (see below). The two remaining were *Homo ferus*, or the wild *Homo*, and *Homo monstrosus*. The representatives of the former variety were described as hairy, quadrupedal mutes; *Homo monstrous* included dwarves and giants, and humans with visible physical deficiencies. *Homo troglodytes*, the other species in the genus, came in two varieties: *nocturnus* – a fanciful human-like creature leading a nocturnal life and dwelling in caves, and *syvestris* – possibly referring to the half-ape and half-human described in Tyson's *Orang-Outang*:

Homo

- sapiens
  I. ferus – "wild man"
  II. americanus – "obstinate"
  III. europaeus – "gentle" "inventive" "governed by laws"
  IV. asiaticus – "severe" "governed by opinions"
  V. afer – "negligent" "women without shame" "breasts lactate profusely"
  VI. monstrous – dwarfs and giants
- troglodytes – "iris and pupils golden" "nocturnal"
  I. nocturnus
  II. sylvestris (quoted after Burke 2009: 267)

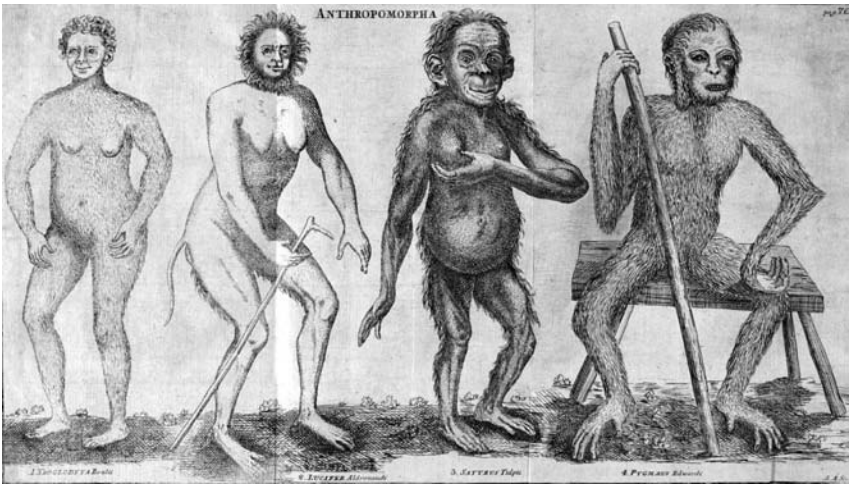
Later in the essay *Anthropomorpha* (1760), Linnaeus, relying on travellers' tales, stretched his imagination to describe not only *Homo troglodytes*' physical features and lifestyle but also their communication and relation with humans:

> These children of darkness, who turn day into night and night into day, seem to me to be most nearly related to us. … They are not much larger than a boy of nine years old; white in cloud, and not sunburnt, because they always go about at night; they walk erect like ourselves; the hair of their head is short, and curly by nature, like that of the Mauritanians, but at the same time is white. Their eyes are orbiculated; the pupil and iris golden, a thing which deserves particular attention. Their eyebrows hang down in front, so that their vision is oblique and lateral; under the upper eyelid they have the *membrana nictitans*, like bears and owls, and other animals which go about by night, and this is the principal mark by which they are distinguished from us. … They lurk in their caves during the day, and are nearly blind, before they are caught by men and accustomed to the light. … They have a language of their own which they speak in a whistle, so difficult, that scarce any one can hear it except by long association with them. … In many places

> of the East Indies they are caught and made use of in houses as servants to do the lighter domestic work, as to carry water, lay the table, and take away the plates. … And it would be no small gain to a philosopher, if he could spend some days with one of these animals, and investigate how far the power of the human mind surpasses theirs, and what is the real difference between the brute and the rational being. (quoted after Burke 2009: 267)

Christian Hoppius (1736–unknown), one of Linnaeus' students, sought to give a more comprehensive classification of the genus *Homo*, by including other reports from faraway countries, and came up with the five species (see Figure 8). Apart from *Homo sapiens* and *Homo troglodytes*, he distinguished *Homo caudatus*, who was supposed to have a tail and inhabit the Nicobar Islands, the chimpanzee (*Satyrus tulpii*) and the orangutan (*Pygmaeus edwardii*) (Lewin and Foley 2004: 7–8; Burke 2009: 266–270).

Fig. 8: Antropomorpha *according to Christian Hoppius*



Source: https://commons.wikimedia.org/wiki/File:Hoppius_Anthropomorpha.png (DOA: 15 Mar 2017.)

These taxonomic decisions, shocking from today's perspective, primarily resulted from a lack of systematic and reliable knowledge of non-European ethnicities and non-human primates. The nascent state of comparative primatology, described above, did not allow biologists to draw definitive conclusions about the characteristics of *Homo sapiens* and even less so about the systematics of non-human primates. Given such a dearth of solid evidence, it is easier to understand the early taxonomists' reliance on anecdotes from travel reports.

As already noted, the problem of language was central to these definitional attempts. We saw how representatives of some non-European ethnic groups, such as the Khoikhoi, were denied human status because their languages sounded so strange to the European ear that they were considered more similar to animal vocalisations than articulate speech. On the other hand, many believed that at least some apes and monkeys either already have language or are able to learn it. Edward Tyson was convinced of the presence of linguistic abilities in his *orang-outang*, and the problem of animal linguistic abilities also resonates in the early biological taxonomies (see above). In the course of the 17th and 18th centuries, it also started to engage popular opinion, with the general public often putting a lot of trust in "linguistic skills" of animals (Esmail 2013: 78) – as documented by Samuel Pepys (1633–1703), who, on seeing a primate that he refers to as a baboon, notes:

> At the office all the morning and did business; by and by we are called to Sir W. Batten's to see the strange creature that Captain Holmes hath brought with him from Guiny; it is a great baboon, but so much like a man in most things, that though they say there is a species of them, yet I cannot believe but that it is a monster got of a man and she-baboon. (Pepys 1893: 465)

Julien Offray de la Mettrie (1709–1751), one of the earliest proponents of French materialism, does not satisfy himself with the affirmation of ape and monkey linguistic abilities but – with a pedagogical flare characteristic of the Enlightenment – drafts in *Machine Man* a programme of how non-human primates could be taught articulate language. The inspiration for this programme is drawn from the pioneering attempts to devise sign languages and teach them to the deaf, which were undertaken by the Swiss physician Johan Konrad Amman (1669–1724) and described in the work *Surdus loquens* (1692, *The Taking Deaf*). La Mettrie is convinced that the great type of ape, similar to the one studied by Tyson, can learn language if it is subjected to an appropriate teaching regime, such as the one that Amman adopted in working with the deaf (cf. Hewes 1975). This is not to say that La Mettrie advocates teaching apes sign language; the hearing ape, in his opinion, should develop articulate language but only on the condition that Amman's intensive and personalised educational methods are used. The French philosopher goes further and claims that once it learns language, there is nothing that could prevent such an ape from becoming a fully socialised member of human society – "a small man of the town". It is worth giving La Mettrie's description *in extenso*, as it captures **two motifs typical of the Enlightenment reflection on man, including the problem of language and its origins. The first concerns an unwavering belief in the power of pedagogy against the power instinct,** whereby the application of an appropriate method of teaching

can close the gap created by culture and physical deficiency (as in the cases of "savages" and the deaf), or even by biology (as in the case of apes and monkeys). **Related to this is the other idea that the border between man and animals is nebulous, particularly regarding their mental capacities, which** legitimises **attempts at enculturating animals.**

> Some animals learn to talk and sing; they remember tunes and get all the notes as exactly as any musician. Others (such as the ape) display more intelligence and yet can't manage this. Why is this, if it's not because of a defect in the speech organs? But is this defect built into the animal so that it can't be remedied? In short, would it be absolutely impossible to teach a language to such an animal? I don't think so.
>
> My best candidate for this would be the great ape, unless we happened to discover some other species that is even more like ours, as we well might in some region that hasn't yet been explored. The great ape is so like us that naturalists have called it the "wild man" or the "man of the woods". I would select one that was neither too young nor too old (most of the ones brought to Europe are too old), and that had the cleverest physiognomy and confirmed this promise in a thousand little tests. Finally, as I am not up to the job of being its tutor, I would send it to the excellent Amman's school or to the school of some other equally skilful teacher, if there is one. My criteria for selecting my great ape pupil, incidentally, are the ones Amman uses in selecting children for his school.
>
> You know, from Amman's book and from all those who have presented his method, all the wonderful results he has achieved with children born deaf, in whose eyes he has discovered ears (that is how he puts it), and how quickly he has taught them to hear, speak, read and write. I think that a deaf person's eyes see better and more alertly than the eyes of someone who isn't deaf, because the loss of one limb or one sense can increase the strength or the sharpness of another. *But the ape sees and hears, it understands what it hears and sees. It grasps so perfectly the signs that are made to it that I'm sure it would do better than Amman's pupils at any game or exercise that didn't involve language. Why then should the education of apes be impossible? Why couldn't a hard-working ape reproduce for itself the sounds needed for pronunciation, achieving this—as the deaf do—by imitation?* Well, it might be that the ape's speech organs can never articulate anything, whatever we do in the way of teaching; I don't venture to pronounce on that question. But I'd be surprised if it were right, given the close analogy between ape and man, and the fact we have never found any other animal that is so strikingly like man, inside and outside, as the great ape is. … And wouldn't Amman have been regarded as mad if he had boasted, in advance of having any results, that he could teach pupils like his, and in such a short time? Yet his success has astonished everyone, and … he has shot up into immortality. … *Amman's discoveries have a different order of value; he has saved men from the mere instinct to which they seemed condemned; he has given them ideas, a mind—a soul—that they would otherwise· never have had. How much greater this power is!*
>
> The mechanism that opens the Eustachian tube in the deaf – couldn't it also unblock it in apes? An amiable wish to imitate the master's pronunciation – couldn't that free the organs

> of speech in animals that can imitate so many other signs with such skill and intelligence? I defy anyone to point to a single truly conclusive experiment showing that my plan is impossible and absurd; and I go further – I am virtually certain, given the ape's similarity to us in structure and operations, that if we went about it in the right way we could teach this animal to utter sounds and consequently to learn a language. *Then it would no longer be a 'wild man' or an imperfect man, but a perfect man, a small "man of the town" as against "man of the woods", with as much material – as much muscle – for thinking and profiting from its education as we have.* (La Mettrie 1996: 11–12, my emphases)

The philosopher continues, stressing that it was language that allowed man to elevate himself from the state of nature, and that it happened not by divine fiat but through training and habituation:

> There's no sharp line between animals and man; true philosophers would agree about that. What *was* man before he invented words and learned languages? Back then a member of the human species, with much less natural instinct than members of other species (he didn't yet think he was their king!), was distinguishable from apes and other animals only by having a facial structure that indicated greater discernment. …
>
> Words, languages, laws, science and arts came, and through them the rough diamond of our minds was at last polished. Man was drilled like an animal; he was trained into being an author in the same way as a dog, for instance is trained to carry a pack. … Everything was done by signs; each species understood what it *could* understand; and that is how man acquired what our German philosophers call *symbolic knowledge*. (La Mettrie 1996: 12–13)

Regimented attempts to teach non-human apes some form of language had to wait until the 20th century (6.3.1), but it is interesting to see that the conceptual rudiments of such studies go back to the Enlightenment.

A related line of reflection concerned feral children. Anecdotal accounts of children raised in isolation, or more commonly by animals, have a long history, to mention for example the myth about the legendary founders of Rome – the twins Romulus and Remus – who are believed to have been suckled by a she-wolf. It is interesting to note that contemporary cases seem to confirm that animals, particularly stray dogs, do occasionally take care of abandoned human children.[25] The Ukrainian Oxana Malaya (born 1983) may have spent as many as the first 7 years of her life with dogs; the Russian Ivan Mishukov (born 1992) spent two years, between the ages of 4 and 6, in a pack of stray dogs, and became the alpha male of the group. The cruel regime of the forbidden experiment described in Chapter 2 (2.2) involved a deliberate imposition of the condition of

25 The information about feral children is taken from Newton's *Savage Boys and Wild Girls: A History of Feral Children* (2002) and Luchte's *Of the Feral Children* (2012).

ferality on newborn children to test Adamic theories about the original language of mankind (2.2, 2.5). In the Enlightenment, feral children and attempts at their rehabilitation began to be treated as sources of information about the problem of language acquisition and, more speculatively, about the origin of language.

From the 17th century to the beginning of the 18th century, the most famous feral children that inspired this reflection were Peter the Wild Boy (c. 1711–1785; in German: Wilder Peter von Hameln) and Victor of Aveyron (c. 1788–1828). Peter was found in 1725 by a hunting expedition to woods near Hamelin in Lower Saxony. The hunt was led by George I, King of Britain and Ireland, who was then visiting his homeland duchy of Hanover, and the boy was brought to London in 1726. Peter must have had little or no exposure to social life – he walked on all fours, did not know any words and had been living in the forest for an unknown period of time, probably subsisting on plants. In England, he lived on a state pension in the custody of various individuals, and despite efforts to teach him language he was able to say only two phrases "Peter" and "King George", as reported by Lord Monboddo (see below), who met him towards the end of Peter's life (cf. Hewes 1977a: 15). The attempts to rehabilitate Victor of Aveyron were much more intensive and better documented. When he was first found in the woods of the department of Aveyron in southern France, Victor was pre-adolescent. He kept running away to the forest until in 1800 he was placed at Paris's National Institute of the Deaf (*Institution Nationale des Sourds-Muets*) in the custody of its director, Roch-Ambroise Cucurron Sicard (1742–1822) (see 4.8, 5.6). Sicard believed that the methods used in the Institute would allow Victor to learn language but, disillusioned with the lack of progress, he let Gaspard Itard, then a young doctor at the Institute, adopt the boy. Itard developed a programme for rehabilitating his charge, the two main objectives of which were teaching him French and teaching him to recognise human emotions, most importantly empathy. Itard in great detail describes the implementation of this programme in his *Historical Account of the Discovery and Education of a Savage Man* (*Mémoire et Rapport sur Victor de l'Aveyron*, 1801/1802). According to this documentation, Victor made immediate progress in understanding spoken French and developing some forms of civilised behaviour, such as table manners. He also showed both eagerness and skill in communicating with his tutor by means of whole-body pantomimes, manual gestures and non-linguistic vocalisations. This observation led Itard to suggest that language must have begun as the combination of communicative body movements and cries. Although familiar with the sign language that was being used at the Institute, Itard decided that since Victor was neither mute nor deaf, he should be taught spoken French. However, the regime of imitative exercises bore no fruit, with Victor being

able to clearly enunciate only two French phrases – *lait* ("milk") and *Mon Dieu* ("My God"). In an incisive passage of his book, **Itard concludes that imitative skills, which he takes to be fundamental for language acquisition, disappear in the course of growing up**:

> It may be observed, that this imitative power, adapted for the education of all his organs, and especially for the acquisition of speech, although very energetic and active during the first years of life, is rapidly enfeebled by the progress of age, insulation, and all the other causes which tend to deaden the nerveuse sensibility. (Itard 1802: 144)

The above statement can be considered an early formulation of the critical age hypothesis (see 6.2).

4.3 Lord Monboddo's scientific speculations[26]

Language origins owe a lot to James Burnett, an eccentric Scottish judge better known as Lord Monboddo (1714–1799), although his role is rarely acknowledged in contemporary literature (but see Hewes 1977a and Żywiczyński and Wacewicz 2015). The uniqueness of Monboddo's approach consisted in using various available lines of evidence – from the budding disciplines of primatology and anthropology, to linguistic comparisons – to construct arguments about the origin and development of language. The 6 volumes of his treatise *Of the Origin and Progress of Language* (1774) is certainly full of speculation, but it is the speculation based on, or at least inspired by, the state of science at the time.

The bulk of the *Origin and Progress* is devoted to the developmental trajectory of language. Monboddo contends that original languages depended on the most economical elements – short words mainly distinguishable by tones that developed from emotional cries and onomatopoeic imitations:

> [T]he first variation of inarticulate cares was by difference of tone, and in this way the method of communication by sound was first enlarged, and something like a musical language formed by the imitation of birds, there is nothing more natural than to suppose, and indeed I think it must necessarily have happened, that they would carry the imitation of the birds still farther; and, finding that the difference of musical tones did not vary and distinguish their natural cries sufficiently for the purpose of speech, they added to those cries the further variety of articulation, which they would likewise learn from the birds; and so would form language: And having once begun to distinguish their sounds of communication in this way, they would soon discover, that inanimate, as well as animated things, made noises that approached to articulation; and by observing and

26 The presentation of Monboddo's views is largely based on Lovejoy (1933) and Barnard (1995).

> imitating such sounds, they would enlarge their stock of words. Of this kind, are many words in different languages, and, particularly in English; such as crack, snap, crash, murmur, gurgle, and the like. (Monboddo 1774: 493–494)

On Monboddo's account, these original words were first used in the imperative function, to coordinate efforts in joint tasks:

> The first cries that would be articulated were probably those with which animals call upon one another, and exhort or command one another to do certain things: For such cries are necessary in carrying on any work by joint consent, such as we must suppose men to be engaged in before a language could be invented. (Monboddo 1774: 477–478)

For the purposes of glossogonic speculation, Monboddo not only draws examples from European languages – ancient and modern – but also from many languages considered in 18th-century England as primitive, most importantly from an array of Amerindian languages, such as Wyandot spoken by Huron people, Algonquin, Mapuche or Greenlandic Inuit. Interestingly, it is primarily linguistic comparison that brings the Scottish thinker to the idea of the monogenetic origin of language and humankind.

Accordingly, Monboddo argues that language emerged once, in the manner described above, and then diversified into the world's languages, and analogously man emerged once and then diversified into the world's races and ethnicities. What was most shocking to the British public was Monboddo's thesis that man descended from apes, and more specifically from the type of ape that Tyson described in *Orang-Outang*. Relying on his own informants, Monboddo claimed that *orang-outangs* are characterised by some degree of human-like socialisation and have rudimentary technological culture but lack language:

> Orang-outangs live together in society; act together in concert, particularly in attacking elephants; build huts, and no doubt practise other arts, both for sustenance and defence: … they may be reckoned to be in the first stage of human progression, being associated, and practising certain arts of life; but not so far advanced as to have invented the great art of language. (Monboddo 1774: 268–269, cf. Lovejoy 1933: 285)

He also declared these apes to be endowed with moral qualities, such as modesty, honour, justice and civility (1774, vol. I: 289–293).

Arthur O. Lovejoy (1873–1962), an influential historian of ideas, suggests that Monboddo proposed an essentially evolutionary scenario, whereby man, who at first was identical with apes, elevated himself from the state of nature by the invention of social institutions and language. Lovejoy hence insists that the Scottish philosopher should be identified as the first proponent of biological evolution, with his work pre-dating by 20 years the classic exposition of evolutionism in Erasmus Darwin's (1731–1802) *Zoonomia*. But it seems that the

boundary set by Monboddo between man and *orang-outang* is much too fuzzy to meet the requirements of biological evolution. His view is rather that man and *orang-outang* biologically belong to the same species, and the difference between them is a result of the former's cultural innovations – first institutions and norms, and then language. Deprived of socialisation, a human being is not essentially different from an ape, which explains why Monboddo considered Peter the Wild Boy as an intermediary form between man and ape (1811). This leads him to the view, consonant with the sentiments of the Enlightenment, that "language is not natural", i.e. it is not a biological but a cultural property acquired by our ancestors in a historical process of changes in lifestyle and communicative practices:

> I have dwelt thus long upon the Orang Outang, because, if I make him out be a man, I prove by fact as well as argument this fundamental proposition, upon which my whole theory hangs, That language is not natural to man. And, secondly, I likewise prove that the natural state of man, such as I suppose it, is not a mere hypothesis, but a state which at present actually exists. That my facts and arguments are so convincing as to leave no doubt of the humanity of the Orang Outang, I will not take upon me to say; but his much I will venture to affirm, that I have said enough to make the philosopher consider it as problematical, and a subject deserving to be inquired into. For, as to the vulgar, I can never expect that they should acknowledge any relation to those inhabitants of the woods of Angola; but that they should continue, thro' a false pride, to think highly derogatory from human nature, what the philosopher, on the contrary, will think the greatest praise of man, that, from savage state, in which the Orang Outang lives, he should, by his own sagacity and industry, have arrived at the state in which we now see him. (Monboddo 1774: 360–361)

4.4 Empiricists vs. rationalists and the problem of language

Much of 17th- and 18th-century philosophical discussion was dominated by the great epistemological debate between empiricists and rationalists. Although the problem of language origins as such was not part of this discussion, the nature of language was one of its key topics, and the ideas that emerged in its course turned out to be crucially important for naturalistic reflection on language and its beginnings.

Empiricism primarily arose out of considerations about methods on which science could be founded. Drawing inspiration from Aristotle, the stoical tradition and medieval conceptualists (cf. Vanzo 2014), the defining tenet of empiricism was that knowledge arises *a posteriori*, primarily from sensory experience (Greek: *empeiria* for "experience"). The corollary of such an epistemological stance was the methodological postulate that scientific investigation should be directed at reducing an object of study to statements about sense experiences

(Markie 2017). For example, **Francis Bacon** (1561–1626) argued that argumentation should be built inductively, proceeding from facts recorded by the senses to generalisations. The spirit of Bacon's methodological empiricism is nicely captured by the famous metaphor from his treatise *Organum Novum* (1620): "We must not then add wings, but rather lead and ballast to the understanding, to prevent its jumping or flying, which has not yet been done; but whenever this takes place we may entertain greater hopes of the sciences" (1620/1854: 364). In *Organum*, Bacon also identifies the sources of error in scientific pursuits; to highlight their deceiving quality, he designates them as idols from the Greek *eidolon* for "phantom" (cf. Andrzejewski 2016: 96). One type of these – idols of the market – are directly linked to the operation of language:

> There are also idols formed by the reciprocal intercourse and society of man with man, which we call idols of the market, from the commerce and association of men with each other. For men converse by means of language; but words are formed at the will of the generality; and there arises from a bad and unapt formation of words a wonderful obstruction to the mind. Nor can the definitions and explanations, with which learned men are wont to guard and protect themselves in some instances, afford a complete remedy: words still manifestly force the understanding, throw every thing into confusion, and lead mankind into vain and innumerable controversies and fallacies. (1620/1854: 347)

Since the potential of language for deception cannot be eliminated even by carefully designed definitions of terms, Bacon suggests that scientists should limit reliance on language and instead try to communicate as much as possible through demonstration. The dream of the indexical form communication that replaces language is expressed in another of Bacon's works, *New Atlantis*, whose fictional inhabitants use sticks to point to objects, instead of using linguistic labels (Andrzejewski 2016: 97). It is interesting to see the parallel between Bacon's linguistic scepticism and the distrust in the descriptive power of language expressed by Augustine, who also stressed the problematic relation between linguistic signs and their intended designata (see 3.5). But since Bacon was not interested in building a theory of language but a methodology of science, his distrust in the power of linguistic description was much more acute, and this sceptical sentiment came to dominate the empiricist attitudes to language.

This is clearly visible in **John Locke** (1632–1704), certainly the most influential philosopher of the British empiricist movement.[27] Locke subscribes to the telementational view of linguistic communication, whereby words, which stand

27 The presentation of Locke's views on language is based on the work by Harris and Taylor (1989: 108–119).

for ideas in the speaker's mind, when uttered excite the same or similar ideas in the hearer's mind:

> The use men have of these marks being either to record their own thoughts, for the assistance of their own memory or, as it were, to bring out their ideas, and lay them before the view of others: words, in their primary or immediate signification, stand for nothing but the ideas in the mind of him that uses them, how imperfectly soever or carelessly those ideas are collected from the things which they are supposed to represent. When a man speaks to another, it is that he may be understood: and the end of speech is, that those sounds, as marks, may make known his ideas to the hearer. That then which words are the marks of are the ideas of the speaker: nor can any one apply them as marks, immediately, to anything else but the ideas that he himself hath: for this would be to make them signs of his own conceptions, and yet apply them to other ideas; which would be to make them signs and not signs of his ideas at the same time, and so in effect to have no signification at all. (Locke, *An Essay on Human Understanding*, 1690/1846: 267).

Language serves as a conduit for transferring ideas between individuals: "For language being the great conduit, whereby men convey their discoveries, reasonings, and knowledge, from one to another …" (Locke 1690/1846: 328, cf. Reddy 1979). Such a position became firmly established in theorising linguistic communication and lay the foundation for the classic formulations of the code model of language by Bühler (1934) and Shannon (1948). Telementation was not Locke's own idea – it can be seen in both Bacon's writings and Thomas Hobbes's (1588–1679) *Leviathan*. Locke's primary contribution to the theory of linguistic communication consists in elaborating an empiricist critique of language-mediated knowledge.

The critique is tightly connected with the theory of ideas developed by Locke in *An Essay Concerning Human Understanding* (1690). Accordingly, the mind of a newborn child is a blank slate (*tabula rasa*), on which experience gradually impresses itself in the form of ideas.[28] There are simple ideas, such as blueness resultant from a visual sensation, or sourness from a gustatory sensation. There are also simple ideas of reflection, e.g. thinking, willing or believing, which result from the mind's apperceptive ability to identify its own operations. Finally, some simple ideas result from the joint activity of sensation and reflection, as is the case with pain, pleasure, existence and the like. The mind combines simple ideas into complex ones, such as the idea of gold:

> He that will examine his complex idea of gold, will find several of its ideas that make it up to be only powers; as the power of being melted, but of not spending itself in the fire; of being dissolved in *aqua regia*, are ideas as necessary to make up our complex idea of

28 To underline this developmental aspect, Locke's position is sometimes referred to as genetic empiricism; see Andrzejewski 2016: 97–100.

> gold, as its colour and weight: which, if duly considered, are also nothing but different powers. For, to speak truly, yellowness is not actually in gold, but is a power in gold to produce that idea in us by our eyes, when placed in a due light: and the heat, which we cannot leave out of our ideas of the sun, is no more really in the sun, than the white colour it introduces into wax. These are both equally powers in the sun, operating, by the motion and figure of its sensible parts, so on a man, as to make him have the idea of heat; and so on wax, as to make it capable to produce in a man the idea of white. (Locke, *An Essay on Human Understanding*, 1690/1846: 191)

Crucial to Locke's epistemology is the claim that complex ideas are reducible to simple ones, which in turn are grounded in experience, i.e. sensation, the experience of the outside world, and reflection, the experience of the mind itself. Out of many types of complex ideas, two – ideas of substances and mixed modes – are given a unique status in Locke's account. The former, exemplified above by gold, result from simple ideas but they themselves have an independent existence; i.e. the substance gold is the way the mind conceptualises the co-occurrence of the appropriate simple ideas (Locke 1690/1846: 388–390). Mixed modes, for example various abstract notions such as justice, exist only as ideas and do not have any correlation outside the ideational domain (Locke 1690/1846: 329–330). Although they ultimately derive from experience, unlike substances they cannot be identified with any objects in the world.

How does this account of the epistemological process relate to language? Locke's account of language focuses on its "imperfections", i.e. those characteristics of language that make it an unreliable instrument for investigating reality. The main fault Locke finds with language is uncertainty about whether words incite the same or even similar ideas in the minds of the speaker and hearer. One of the imperfections of language that is responsible for this telementational problem is, in Locke's opinion, the *arbitrariness* of linguistic signs, whereby the form of a word cannot itself determine the type of idea it stands for:

> Words, by long and familiar use, as has been said, come to excite in men certain ideas so constantly and readily, that they are apt to suppose a natural connexion between them. But that they signify only men's peculiar ideas, and that by a perfect arbitrary imposition, is evident, in that they often fail to excite in others (even that use the same language) the same ideas we take them to be signs of … (1690/1846: 191)

This leads him to the claim that linguistic signs are voluntary in the sense that the connection between a word and an idea is accomplished by the speaker's "*voluntary* imposition" (1690/1846: 319) and hence in principle only depends on the speaker's free will. In consequence, the connection between a word and an idea is *individualistic*, being an act of voluntary imposition performed by a particular individual, and it is *private*, as nobody apart from this individual has

direct knowledge of the connection that she or he has imposed between a word and an idea. Hence "… every man has so inviolable a liberty to make words stand for what ideas he pleases, that no one hath the power to make others have the same ideas in their minds that he has, when they use the same words that he does" (1690/1846: 268). The risk that language is an obstacle to knowledge concerns primarily complex ideas, such as mixed modes (see above). Words referring to simple ideas do not pose a great threat of causing misunderstanding because they are similar in all people and the use of words in reference to them can be easily validated. However, the use of words for mixed modes, such as "truth", "beauty" or "justice", cannot be verified in the above way. Additionally, complex ideas may arise from connecting different simple ideas by different individuals, or by the same individual but at different times: "… one man's complex idea seldom agrees with another's, and often differs from his own—from that which he had yesterday, or will have tomorrow" (1690/1846: 268). Therefore, the use of words for complex ideas is bound to be much more confusing than the use of words for simple ideas. However, Locke's linguistic scepticism is not as thoroughgoing as Bacon's. The author of *An Essay* believes that we are able to overcome the imperfections of language by carefully designed definitions of terms, particularly terms that stand for complex ideas. To do so, whenever such a term is used, one needs to reduce a complex idea to a definite set of simple ideas that one takes the complex idea to consist of.

Locke's moderate scepticism, based on the telementational model of communication and his theory of ideas, exerted a strong influence on the British empiricist tradition, as evidenced by the works of George Berkeley (1685–1753) and David Hume (1685–1753). Its impact was also felt on the continent, where it influenced for example Humboldt's theory of language (see 5.1). With regard to discussions about language origins, the most important is Locke's genetic empiricism, which assumes that the starting point for cognitive development is the mental blank slate and that mere exposure to sensations has the capacity to transform this blank slate into a fully functional mind. As we are soon going to see, such an approach was adopted by the authors of the best-known glossogonic thought-experiments (4.5–4.7). It also combined the Enlightenment belief in the power of pedagogy with a conviction that by selecting the type of experiences a child is exposed to, one can mould its development in a desired way. This conviction is the leitmotif of Locke's own pedagogical treatise *Some Thoughts Concerning Education* (1712) and many similar works of the era, such as Benjamin Franklin's (1706–1790) *Proposals Relating to the Education of Youth in Pensilvania* (1749) or Johann Basedow's (1723–1790) *Vorstellung an Menschenfreunde*

für Schulen, nebst dem Plan eines Elementarbuches der menschlichen Erkenntnisse (*Idea for Philanthropists about Schools with the Plan for an Elementary Book of Human Knowledge*) (1768). It also resonates – albeit in a pessimistic way – in Jean Jacques Rousseau's hugely popular novel *Emil* (see 4.6). It is also easy to see how this conviction provided justification for speculations about training apes, as we saw in La Mettrie, or gave enthusiasm, at least initially, to Sicard and Itard in rehabilitating the feral Victor of Aveyron. The spectacular failures of educating Victor and Peter the Wild can be seen as corroborating the competing predictions of rationalism.

René Descartes (1596–1650), the towering figure of this tradition, was not directly concerned with language or its origin. However, in the few places that he did write on this subject, the French thinker – very much in the spirit of his philosophy – emphasised that only humans possess language. Consider the famous passage from *Mediations on the First Philosophy*:

> For it is a very remarkable thing that there are no men, not even the insane, so dull and stupid that they cannot put words together in a manner to convey their thoughts. On the contrary, there is no other animal however perfect and fortunately situated it may be, that can do the same. And this is not because they lack the organs, for we see that magpies and parrots can pronounce words as well as we can, and nevertheless cannot speak as we do, that is, in showing that they think what they are saying. On the other hand, even those men born deaf and dumb, lacking the organs which others make use of in speaking, and at least as badly off as the animals in this respect, usually invent for themselves some signs by which they make themselves understood. And this proves not merely animals have less reason than men but that they have none at all, for we see that very little is needed to talk. (Descartes 1641/2014: 42)

Ahead of his times, Descartes presses the point that the possession of language does not depend on the details of anatomy (see Fitch 2000) or on the use of the vocal auditory communicative channel (see Armstrong et al. 1995). It depends on the qualitative difference between humans and animals in that the former consist of two substances – mind and body – while animals have only body. In terms of Descartes' ontology, the attribute of the mind-substance is thinking, and ideas constitute its mode of being, i.e. the manifestation of this attribute; the attribute of the body substance is extension and its mode of being is a specific shape that extension assumes (Smith 2017). Since language, as the above passage suggests, is the expression of the mind's activity, it is beyond animals' reach and even carefully designed programmes to bring them closer to language (see above the section on La Mettrie) are pedagogical utopias. Descartes takes the old biblical idea about the unbridgeable gap separating man from the rest of the animate world and places it on a new, philosophical plane – according to this account,

the divide between man and animals is as vast as the ontological divide between mind and body.

The impact of Descartes' philosophy directly inspired scholars associated with the famous Port-Royal-des-Champs Abbey, which in the 17th and 18th century was one of France's most important centres of learning and the intellectual fortress of Jansenism. The best-known work on language that this milieu spawned is *Grammaire générale et raisonnée* (*General and Rational Grammar*) authored by two Catholic priests and Jansenist theologians – Claude Lancelot (c. 1615–1695) and Antoine Arnauld (1612–1694). The Port-Royal *Grammar*, as it came to be referred to, was written with the practical intent of providing students with what Lancelot and Arnauld considered as the optimal method of learning languages; however, in elaborating their pedagogical project, they also laid a distinct theory of language. In this last respect, the Port-Royal *Grammar* can be seen to be a continuation of the medieval tradition of speculative grammar (see 3.6): as the speculative grammarians insisted that the structure of language reflects the structure of reality (hence "speculum", the Latin term for "mirror"), the Port-Royal grammarians contended that the structure of language reflects the structure of thought (Harris and Taylor 1989: 98). These claims led the proponents of both views to universalism. According to the speculative grammarians, reality itself guarantees that the fundamental structure of all languages, based on the three modes of signifying, is the same. The Port-Royal grammarians' bid for universality rests on the Cartesian assertion that the structure of thought in all people is the same and this sameness guarantees the commonality seen in all languages. In doing so, however, Lancelot and Arnauld do not stick to the details of Descartes' theory of ideas[29] but opt for a more commonsensical account of thought processes. Illustrative in this respect is their explanation of how elements of grammar emerge from different aspects and manners of thinking:

> [T]he greatest distinction to be made about what occurs in our minds is to say that one can consider the object of our thought on the one hand, and the form or manner of our thought, the main form being judgment, on the other hand. But one must still relate to what occurs in our mind the conjunctions, disjunctions, and other similar operations of our minds, and all the other movements of our souls, such as desires, commands,

29 Descartes distinguishes between three types of ideas: **innate** ideas, which originate in the thinking subject (e.g. God as the thinking subject); **adventitious** ideas, which originate in the external world (including sensory ideas, e.g. heat, pain; and ideas that arise from sensory ideas, e.g. the Sun and the Moon); and **fictitious** ideas, which originate in the content of other ideas (e.g. Pegasus) (Smith 2017).

> questions, etc. It follows from this that men, having had need of signs in order to mark everything that occurs in their minds, also found it necessary to draw a most general distinction among words into those that signify the objects of thoughts and those that signify the form and the manner or mode of our thoughts, although the latter often do not signify the manner alone, but only the manner in conjunction with the object, as we will show. Words of the first kind are those which are called nouns, articles, pronouns, participles, prepositions, and adverbs. Those of the second kind are verbs, conjunctions, and interjections. These are all derived as a necessary consequence from the natural manner in which we express our thoughts. (Lancelot and Arnauld 1660/1975: 68 quoted after Harris and Taylor 1989: 95–96)

Since elements of grammar mirror the way we think – with the fundamental distinction into the form and manner of thoughts described above – Lancelot and Arnauld's intention is to uncover these dependencies between language and thought and by doing so make it easier for the student to learn any language (Harris and Taylor 1989: 99–103). Such is also the extent of the use of the *Grammar* for studying languages, as well as the limit of its claim about the universality of languages – the universal properties of languages are explained in terms of rather general intuitions, and the *Grammar* fails to account for what makes languages different (Harris and Taylor 1989: 104). The fact that languages differ, sometimes dramatically, poses a problem for Lancelot and Arnauld's linguistic rationalism. Similar to the speculative grammarians (3.6), they try to combat it in an Aristotelian fashion by postulating the distinction into the essential properties of languages, defined by reason and explainable as the results of mental operations, along with accidental properties which arise through usage and custom (Harris and Taylor 1989: 104–105). This postulate is accompanied by a pedagogical/methodological one that a student of languages, without ignoring accidental differences between languages, should primarily be concerned with what constitutes their rational core:

> It is a maxim that those who work on a living language must always keep sight of the fact that those modes of speech which are authorized by a general and uncontested usage ought to pass as legitimate, even if they are contrary to the rules and internal analogy of the language. On the other hand, one ought not to adduce them in order to cast doubt upon the rules and disturb the analogy of languages, nor should they be used to authorize as consequences of themselves other modes of speech which usage has not authorized. Otherwise, he who will linger only on these aberrations of usage, without observing the foregoing maxim, will cause a language to remain forever uncertain, and lacking any principles, it will never be able to be determined. (Lancelot and Arnauld 1660/1975: 113–114 quoted after Harris and Taylor 1989: 105)

The *Port-Royal Grammar* is crucially important for linguistic universalism. Accordingly, Port-Royal replaced the old universalistic assumption that the structure of language mirrors reality found in the speculative tradition with the view that language mirrors the structure of thought. Accompanied by the ancillary assumption, derived from Descartes, that the structure of thought is universal, this view marked Port-Royal's cognitive turn in thinking about the universal properties of language. These elements were emphatically described by Chomsky in the famous *Cartesian Linguistics: A Chapter in the History of Rationalist Thought* (1966; for a more recent presentation, see also Chomsky 2016). Chomsky presented the Port-Royal grammarians, together with Descartes, as predecessors of his version of universal grammar (see 6.2). He also argued that his distinction into deep and surface grammatical structure can be traced back to Port-Royal's idea of "the natural manner of thought" and its linguistic realisation. Although *Cartesian Linguistics* met with severe criticism for what was seen as an attempt to distort historical views so that they fitted Chomsky's position (e.g. Aarsleff 1970), it seems that the analogy he drew between Port-Royal and his own project was relatively well-motivated (Miel 1969).

4.5 The Mandeville-Condillac thought-experiment

The late Enlightenment was dominated by the empiricist spirit defined by Locke's postulate that the development of thinking and the acquisition of language results from the cumulative growth of experience. Such an approach was considered as paradigmatically scientific, as can been seen in the writings of the French authors from the encyclopaedist movement[30] – take for example Denis Diderot's (1713–1784) physiological conception of psychology and learning (cf. Kuderowicz 1989: 372–379). Compared with rationalists, the proponents of empiricism were much more prone to obliterating the boundary between humans and non-human animals, as already noted with regard to the problems of teaching apes language or rehabilitating feral children (4.2). This was certainly not Locke's idea (see for example Locke 1690/1846: 159–160); however, the mainstream of 18th century empiricism

30 In a narrow sense, the term refers to the authors who contributed to *Encyclopédie, ou dictionnaire raisonné des sciences, des arts et des métiers* (*Encyclopedia, or a Systematic Dictionary of the Sciences, Arts, and Crafts*), the biggest publishing project of the Enlightenment. The 28 volumes of the *Encyclopedia*, edited by Diderot and d'Alembert, appeared between 1751 and 1772 in France. The *Encyclopedia* stressed a scientific approach, political progressivism and a distrust of religion. In a broader sense, the term is applied to thinkers of the late Enlightenment who subscribed to these postulates.

assumed, sometimes tacitly, its reductionist version whereby cognitive structure is determined by the types of experience the mind is exposed to – no matter whether this mind belongs to a human or an ape (see once again La Mettrie, 4.2).

Such a view also came to inform the glossogonic reflection of the era. It can clearly be seen in Monboddo's account of the development of language in man from the cognitive and communicative capacities of his *orang-outang*-like ancestor (see above). It is also found in many thought-experiments – a popular outlet for speculations about language origins in the Enlightenment. Such experiments describe language-less human beings, often isolated children, who have to invent language. Specifically, the experiments focus on the type of communicative conditions that facilitate the emergence of language, its initial form and the dynamics of the transition of this initial form into fully fledged language.

The most influential **thought-experiment** of this kind was **presented in Condillac**'s *Essay on Human Knowledge* (*Essai sur l'origine des connaissances humaines*, 1746). It also **remains the best-known gestural origin scenario in the glottogonic literature** (see for example Hewes 1976, Fitch 2010: 338). It is then interesting to note that Condillac's thought-experiment was preceded by an almost identical account by Bernard de Mandeville (1670–1733) in the second edition of the famous socio-economic poem the *Fable of the Bees* (1729). Mandeville appeals to the motif of isolated children and speculates about how they will *de novo* create language. In his opinion, they will start with gestures, which are a more natural means of communication than speech, i.e. non-linguistic individuals find them easier to communicate with than sounds:

> When a Man's Knowledge is confin'd within a narrow Compass, and he has nothing to obey, but the simple Dictates of Nature, the Want of Speech is easily supply'd by dumb Signs; and it is more natural to untaught Men to express themselves by Gestures, than by Sounds; but we are all born with a Capacity of making ourselves understood, beyond other Animals, without Speech. (1729: 286–287)

It is not clear if the author of the *Fable* believes that gestures are more natural than sounds in that they have more expressive power (e.g. by being more iconic) than non-linguistic vocalisation, or that the ability to use them is inborn in humans. Likely, Mandeville takes these two interpretations of naturalness as supporting each other: without language, gestures are more referentially expressive than sounds; and humans are able to use gestures without training. Next, Mandeville argues that the emerging form of communication must have combined gestures with another type of inborn signals – emotional cries:

> To express Grief, Joy, Love, Wonder and Fear, there are certain Tokens, that are common to the whole Species. Who doubts that the crying of Children was given them by Nature,

> to call Assistance and raise Pity, which latter it does so unaccountably beyond any other Sound? (Mandeville 1729: 286–287)

In the absence of language, the first people are thought to have communicated by means of two semiotic resources: gestures and emotional cries. Mandeville does not explain what the division of labour between these two was, or more specifically he does not explain the role of gestures because cries, in accordance with their character, must have been used to primarily express emotions. Mandeville also does not clarify if they were used jointly or separately. All we learn from his account is that gestures and emotional cries were natural to man in his wild state, i.e. their use and understanding did not require any prior training. According to the *Fable*, the change of this bi-modal form of communication into vocal language occurred in the context where interlocutors did not see each other.[31] The transformation was slow, with each generation learning to associate sounds with designata and then passing on their inventions to a next one:

> We have reason to think, that a wild Pair would make themselves intelligible to each other by Signs and Gestures, before they would attempt it by Sounds: But when they lived together for many Years, it is very probable, that for the Things they were most conversant with they would find out Sounds, to stir up in each other the Idea's of such Things, when they were out of sight; these Sounds they would communicate to their young ones. (Mandeville 1729: 287–278)

Mandeville points to children as accelerating the process of language development assuming the vocal form. In doing so, he expresses the view already established in the Enlightenment that the vocal abilities of children are superior to these of adults:

> They would find that the Volubility of Tongue, and Flexibility of Voice, were much greater in their young ones than they could remember it ever to have been in themselves … Some of these young ones would, either by Accident or Design, make use of this superior Aptitude of the Organs at one time or other; which every Generation would still improve upon; and this must have been the Origin of all Languages, and Speech it self, that were not taught by Inspiration. (Mandeville 1729: 287–288)

In the case of Mandeville, the view about children's vocal abilities could not have been informed by the well-documented failures to rehabilitate the feral children, Peter the Wild and Victor of Aveyron (both Peter and Victor were found after the author's death), but he may have been acquainted with the encouraging results of new pedagogical trends in teaching languages, which were for example being developed in the Port-Royal Abbey.

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31 A similar argument is found in Hockett 1960a and 1960b; see 6.1.

Contemporary reconstructions often identify **Étienne Bonnot de Condillac** (1715–1780) as the author of the gestural scenario of language origin and are either completely silent about Mandeville (Johansson 2005) or mention him only cursorily (Hewes 1975, 1976, 1977a; Fitch, 2010). Condillac – a member of the Académie française, a friend and collaborator of Denis Diderot and Jean Jacques Rousseau – was influential among the French intellectual elite of the 18th century.[32] Certainly, his position helped popularise his account of the emergence of language, which he gave in the treatise *Essay on the Origin of Human Knowledge* (*Essai sur l'origine des connaissances humaines*, 1746). But it is surprising that Condillac himself does not refer to Mandeville, although the similarity between his proposal and that of Mandeville is not coincidental: two language-less children are lost in the desert and become isolated from the rest of humanity for their entire lives. Condillac wonders if they and their progeny will be able to invent language anew, and speculates that it is possible that some languages were born in this way:

> Adam and Eve did not owe the exercise of the operations of their soul to experience. As they came from the hands of God, they were able, by special assistance, to reflect and communicate their thoughts to each other. But I am assuming that two children, one of either sex, sometime after the deluge, had gotten lost in the desert before they would have known the use of any sign. The fact I have just stated gives me the right to make this assumption. Who can tell whether some nation owes its origin only to such an event? So that I am permitted to make the assumption. The question is to know how this budding nation made a language for itself. (*Essay on the Origin of Human Knowledge*, 1746/2001: 113)

Condillac, himself a Catholic priest, is careful to set his thought-experiment in the drapes of the biblical narrative, but its starting point and what follows are almost identical to Mandeville's account: as we are going to see, Condillac argues that the children will develop quasi-linguistic communication based on gesture, pantomime and affective cries, and later thanks to the superior vocal skills of children in successive generations this protolanguage will gradually assume a modern, vocal form. Why then does Condillac fail to acknowledge Mandeville? Most likely, both the form of the experiment as well as the scenario itself were so well-known in the Enlightenment that, he did not feel that there was any reason to mention his predecessor. We will find a somewhat similar scenario in many other works, for example by Rousseau (see below). In more general terms, it seems that pantomime and non-linguistic emotion-related vocalisation are the semiotic resources that modern humans use when deprived of the possibility of

32 Although connected with France for most of his life, Condillac was Swiss by birth.

using language. This fact is illustrated by accounts of European travellers' contacts with native populations during the era of great geographical explorations (see Hewes 1973), but also by very contemporary lines of research such as experimental semiotics, which studies the emergence of new communication systems between people in experimental conditions (e.g. Galantucci et al. 2012 and Zlatev et al. 2017).

Be it as it may, given the popularity of Condillac's proposal in language origins, it is worthwhile taking a prolonged look at it. His account begins with an interesting idea that without the assistance of language, the pair of children would find it difficult to form stable concepts, even by associating sensations with memories:

> §1 So long as the children I am speaking of lived apart, the exercise of the operations of their soul was limited to that of perception and consciousness, which do not cease so long as we are awake; to that of attention, which occurred whenever some perceptions affected them in a particular manner; to that of reminiscence, when the circumstances which engaged them stayed before their minds before the connections they had formed were destroyed; and to a very limited exercise of the imagination. The perception of a need, for instance, was connected with the object which had served to relieve it. But having been formed by chance and lacking the steady support of reflection, these connections did not last long. One day the sensation of hunger made these children call to mind a tree loaded with fruit which they had seen the day before. The next day this tree was forgotten, and the same sensation called to mind some other object. Thus the exercise of the imagination was not within their power. It was merely the effect of the circumstances in which they found themselves. (Condillac 1746/2001: 114)

The difficulty in getting the conceptual system off the ground seems to be a reference to Locke's genetic empiricism. Condillac explains that the conceptual system probably evolved hand in hand with the communicative system. In the beginning, sensations were accompanied by displays in the form of vocalisations and body movements. At first these were not communicative, but through repeated exposure the witness to these displays was able to connect them with underlying sensations; in this way displays became "natural signs" – emerging forms standing for emerging concepts. This process was facilitated by attention and empathy, whereby the children were attracted by each other's displays and were able to co-experience sensations that had caused the other to perform them:

> §2 When they lived together they had occasion for greater exercise of these first operations, because their mutual discourse made them connect the cries of each passion to the perceptions of which they were the natural signs. They usually accompanied the cries with some movement, gesture, or action that made the expression more striking. For example, he who suffered by not having an object his needs demanded would not

> merely cry out; he made as if an effort to obtain it, moved his head, his arms, and all parts of his body. Moved by this display, the other fixed the eyes on the same object, and feeling his soul suffused with sentiments he was not yet able to account for to himself, he suffered by seeing the other suffer so miserably. From this moment he feels that he is eager to ease the other's pain, and he acts on this impression to the extent that it is within his ability. Thus by instinct alone these people asked for help and gave it. I say "by instinct alone," for reflection could not as yet have any share in it. One of them did not say, "I must bestir myself in that particular way to make the other understand what I need and to induce him to help me"; nor the other, "I see by his motions that he wants to have something and I intend to give it to him." But both acted as a result of the need that was most urgent for them. (Condillac 1746/2001: 114–115)

The next step consisted in the acquisition of volitional control over both concepts designated by vocalic-pantomimic forms, as well as the forms themselves. As in the initial phase, Condillac insists that there was a feedback loop between concepts and communicative forms: an incremental growth of one of these capacities led to a growth of the other, and so forth. In the course of time, the protolanguage gained displacement (cf. Hockett 1960), and the children were able to communicate not only about their ongoing experiences but also about what had happened to them in the past.

> §3 The frequent repetition of the same circumstances could not fail, however, to make it habitual for them to connect the cries of the passions and the different motions of the body to the perceptions which they expressed in a manner so striking to the senses. The more familiar they became with the signs, the more readily they were able to call them to mind at will. Their memory began to have some exercise; they gained command of their imagination, and little by little they succeeded in doing by reflection what they had formerly done only by instinct. In the beginning both made it a habit to recognize, by those signs, the sentiments which the other felt at the moment; later they used those signs to communicate the sentiments they had experienced. For example, he who came upon a place where he had become frightened, imitated the cries and motions that were the signs of fear to warn the other not to expose himself to the same danger.
>
> §4 The use of signs gradually extended the exercise of the operations of the soul, and they in turn, as they gained more exercise, improved the signs and made them more familiar. Our experience shows that those two things mutually assist each other. Before the discovery of algebraic signs, the operations of the mind had sufficient exercise to lead to their invention; but it is only after the coming into use of these signs that the operations have had the requisite exercise to carry mathematics to the point of perfection at which we find it today. (Condillac 1746/2001: 114–115)

Condillac stresses the strength of the connection between vocalisations and body movements: the former is taken to induce the latter in an almost automatic fashion. The principal factor constraining the growth of the bi-modal system of

communication was at this stage the children's inability to make new sounds, due to the inflexibility of their speech organs:

> §5 These details show how the cries of the passions contributed to the development of the operations of the mind by naturally originating the language of action, a language which in its early stages, conforming to the level of this couple's limited intelligence, consisted of mere contortions and agitated bodily movements.
>
> §6 Nevertheless, when they had acquired the habit of connecting some ideas to arbitrary signs, the natural cries served as a model for them to make a new language. They articulated new sounds, and by repeating them many times to the accompaniment of some gesture that indicated the objects to which they wished to draw attention, they became accustomed to giving names to things. Still, the first progress of this language was very slow. The organ of speech was so inflexible that it could articulate only very simple sounds with any ease. The obstacles to the pronunciation of other sounds even prevented them from suspecting that the voice could vary beyond the small number of words already imagined. (Condillac 1746/2001: 115–116)

When explaining how new sounds entered the protolanguage, Condillac seems to appeal to a version of the orofacial hypothesis (see 5.6; cf. Wacewicz et al. 2016), whereby the pair's offspring, whose vocal capacities were superior to these of the parents, were able to make their articulators assume new positions that reflected their body movements during the production of pantomimes:

> §7 This couple had a child who, when pressed by the needs he could make known only with difficulty, agitated all parts of the body. His very flexible tongue bent itself in some extraordinary manner and pronounced an entirely new word. The need still persisting again caused the same effects; the child moved the tongue as before and once more articulated the same sound. Full of surprise and having at last figured out what the child wanted, the parents gave it to him while at the same time trying to repeat the same word. The trouble they had pronouncing it showed that they would not by themselves have been able to invent it. (Condillac 1746/2001: 116)

The transition into vocal language was possible when a repertoire of articulate sounds was large enough to keep the vocal organs of new generations of children busy to such a degree that the loss of initial articulatory flexibility was prevented:

> §8 As the language of articulated sounds became richer, it was better suited to exercise the vocal organ at an early stage and to preserve its initial flexibility. It then became as convenient as the language of action; either one was used with equal ease until the use of articulated sounds became so easy that they prevailed.
>
> §9 It follows that there was a time when conversation was sustained by discourse that was a mixture of words and actions. (Condillac 1746/2001: 116)

"Discourse of actions" has not completely disappeared, and Condillac quotes a number of places in the Bible to demonstrate that it was in use long after spoken languages had developed. He furthermore argues that it can be still found in modern-day communicative behaviours. First of all, the old discourse of actions was transformed into gestures, which aid the expression of thoughts, but it also developed into a novel form of communication – dance.

> §11 As their taste improved, people gave greater variety, grace, and expression to this "dance." They not only submitted the movements of the arms and the attitudes of the body to rules, but even marked out how the feet should be moved. As a result dancing was naturally divided into two subordinate arts. If you will permit me to use an expression from the language of the ancients, one of them was the "dance of gestures," which was maintained for its contribution to the communication of their thoughts; the other was chiefly the "dance of steps," which was used for the expression of certain states of mind, especially joy; it was used on occasions of rejoicing, pleasure being its principal aim. (Condillac 1746/2001: 116)

Many of Condillac's intuitions prefigure modern ideas about the multimodality of linguistic communication (see for example Vigliocco et al. 2014). Concerning the reception of Condillac's language origin ideas by his contemporaries, we have already noted that its great impact – compared to the limited success of Mandeville's presentation – can partly be explained by the important position he came to occupy in the intellectual life of France and Europe. However, at least equally important is the fact that the thought-experiment described in *Essay on the Origin of Human Knowledge* captured sentiments important to 18th-century thinkers. Philosophically, his story of language emergence is coined in decidedly empiricist terms, and more specifically it testifies to Condillac's allegiance to sensationism, the then-triumphant epistemological view that emphasised the role of sensory experience in the constitution of knowledge. It was also consonant with the way the biological and cultural characteristics of man were conceptualised in the Enlightenment – Condillac's thought-experiment supported beliefs about the constitution of man in the wild state (*Homo ferus*) and the type of transformation this constitution had undergone through the development of civilisation (*Homo politicus*). Unsurprisingly then, Condillac's account of language emergence found many influential advocates, even among thinkers who – like Diderot and Voltaire – were not themselves interested in language origin problems (see Hewes 1975: 6, Hewes 1976: 483). Pierre Louis Maupertuis (1698–1759), a distinguished mathematician and a passionate advocate of the large-scale repetition of the forbidden experiment (see 2.3), carefully reviewed Condillac's account and accepted it in detail. Appealing to the ethnographic data, he tried to provide an empirical footing for Condillac's claim about the naturalness and

universality of pantomimic communication. He also argued that vocal communication is more productive than gesture or pantomime as it is easy to combine vocal signals to create new meanings, and used this argument to explain the shift of the original language into the vocal-audiotry modality (1756/1965: 437–438, cf. Hewes 1976: 484). Interestingly, both of Maupertuis's ideas are found in modern gesture-first or pantomime-first theories (see Żywiczyński et al. 2016, Zlatev et al. 2017). Another Frenchman, the encyclopaedist César Chesneau Du Marsais (1676–1756), focused on the division of labour between speech and gesture suggested by Condillac, and contended that speech mainly serves the transfer of rational contents while gesture, emotional ones (1792). Again, this reflection inspired by Condillac can be found in contemporary research on communication (cf. Efron 1941, Ekman and Friesen 1969a).

4.6 Rousseau on human evolution

The influence of Condillac's scenario is also clearly visible in Jean Jacques Rousseau's (1712–1778) theorising about language and its origin. For the Genevan philosopher, however, languages' origins constituted only an element of his views on the emergence of man and civilisation, laid out in *On the Origin of Inequality among Men* (*Discours sur l'origine et les fondements de l'inégalité parmi les hommes*, 1755).[33] The starting point for man's evolution are his ape-like ancestors, similar to Tyson's *orang-outang*, destitute not only of civilisation but also of language and intellectual sophistication. Rousseau compares the life led by man in *la bonté naturelle*, or the natural state, to the existence of the gorilla, who – in his opinion – leads a solitary life, free from any moral concerns and is solely concerned with the here and now of the bodily experience:

> Now savage man, being destitute of every species of intelligence, can have no passions save those of the latter kind: his desires never go beyond his physical wants. The only goods he recognises in the universe are food, a female, and sleep: the only evils he fears are pain and hunger. I say pain, and not death: for no animal can know what it is to die; the knowledge of death and its terrors being one of the first acquisitions made by man in departing from an animal state. (Rousseau 1755/2005: 36–37)

Although limited to physicality, the original man was happier that his civilised successor, enjoying a simple life defined by few and simple needs. He was also healthier than modern people because – as argued by Rousseau – physical

33 The presentation of Rousseau's views on human development is based on Lovejoy's *The Supposed Primitivism of Rousseau's "Discourse on Inequality"* (1923b).

activity accords with the constitution of man better than thinking (cf. Lovejoy 1923b: 170–173):

> Such is the melancholy evidence that we might have avoided almost all the ills we suffer from, if we had kept to the simple, uniform, and solitary existence prescribed to us by nature. If she intended us to be healthy, I venture almost to affirm that the state of reflection is a state contrary to nature and that the man who thinks (*médite*) is a man depraved. (quoted after Lovejoy 1923b: 170)

Rousseau further asserts that in contrast to some other animals, the human animal was good-natured and had "an innate repugnance to see others of his kind suffer" – this natural quality of sympathy was later lost with the development of civilization and specifically morality.

When explaining the causes that pushed humankind from the natural state, Rousseau adopts a fight-for-survival logic, similar to that used by Darwin in the presentation of natural selection (see 5.2.1, 5.3). Accordingly, first the availability of food became limited, which resulted in increased competition between humans and other species for sustenance, and increased demand for the selection of the best individuals:

> Accustomed from their infancy to the inclemencies of the weather and the rigour of the seasons, inured to fatigue, and forced, naked and unarmed, to defend themselves and their prey from other ferocious animals, or to escape them by flight, men would acquire a robust and almost unalterable constitution. The children, bringing with them into the world the excellent constitution of their parents, and fortifying it by the very exercises which first produced it, would thus acquire all the vigour of which the human frame is capable. Nature in this case treats them exactly as Sparta treated the children of her citizens: those who come well formed into the world she renders strong and robust, and all the rest she destroys; differing in this respect from our modern communities, in which the State, by making children a burden to their parents, kills them indiscriminately before they are born. (Rousseau 1755/2005: 29)

Such ecological pressures contributed to the development of *le caractère spécifique de l'espèce humain*, the essential human characteristic – intelligence, understood by Rousseau primarily as the ability to perfect oneself, *faculté de se perfectionner* (Lovejoy 1923b: 174). Initially, intelligence served the accomplishment of vital and practical needs, which helped humans invent primitive tools and weapons, learn to control fire, explore new territories and adapt to novel living conditions, and in the end significantly increase their population. This in turn brought about a qualitative change in the human lifestyle: the original *bête humaine* was motivated by *l'amour de soi-même* – the consideration of one's own individual needs; the new man's motivational system was governed by *l'amour propre* – the type of longing that has its root in the comparison with others and

ultimately in adopting a social mode of life, and is expressed by the want to have more than others – more goods, power, approbation, etc. Rousseau argues that in this way socialisation leads to the depravation of mankind:

> It is to this universal desire for reputation, honors, and preferment, which devours us all, …. this ardor to make oneself talked about, this fury to be distinguished, that we owe what is best and worst in men – our virtues and our vices, our sciences and our errors, our conquerors and our philosophers – in short, a vast number of evil things and a small number of good. (Rousseau 1755/2005: 29)

The intermediary phase between the state of nature and fully civilised society is occupied by the state of savagery (Lovejoy 1923b: 182). Savage societies, or *sociétés naissantes*, lived in patriarchal families without much concept of private property. Such conditions allowed savages to enjoy at least some gains of civilization without losing the empathy that was supposed to characterise man in the state of nature. Hence, Rousseau claims that the state of savagery represents the golden age in the history, or rather pre-history, of humankind. He also insists that many traditional societies, who were described by contemporary travellers, belong to this desired type of civilisation:

> Though men had now less endurance, and though natural sympathy (*pitié*) had suffered some diminution, this period of the development of human faculties, holding a just mean between the indolence of the primitive state and the petulant activity of our self-esteem, must have been the happiest and the most lasting epoch. The more one reflects upon it, the more one perceives that it was the state least subject to revolutions, the best state for man; and that he can have departed from it only by some unhappy chance, which in the interest of the general good (*utilité*) ought never to have occurred. The example of the savages, who are nearly all found to be at this point, seems to afford further evidence that this state is the veritable youth of the world; and that all subsequent advances have been, in appearance so many steps towards the perfection of the individual, in reality towards the decrepitude of the species. (Rousseau quoted after Lovejoy 1923b: 180)

Rousseau's views on language origins are implicated in the account of man's social evolution presented above. He addresses the problem of the emergence of language in *Essay on the Origin of Languages* (*L'Essai sur l'origine des langues*, published posthumously in 1781) and parts of the pedagogical treatise *Emil, or On Education* (*Émile, ou De l'Éducation*, 1762). As already noted, Rousseau accepts the account put forward by Condillac and acknowledges that that gesture/pantomime and vocalisation are the two types of communication natural to man:

> In the first times, men, scattered over the face of the earth, had no society other than that of the family, no laws other than those of nature, no language other than that of gesture and some inarticulate sounds. (Rousseau 1781/1998: 305)

In the following passage, Rousseau suggests that gesture is superior in communicating about objects and needs related to objects, due to its iconic potential and expressiveness:

> Although the language of gesture and that of the voice are equally natural, nonetheless the first is easier and depends less on conventions: for more objects strike our eyes than our ears and shapes are more varied than sounds; they are also more expressive and say more in less time. (1781/1998: 290)

Voice is on the other hand much more adapt at communicating emotions:

> But when it is a question of moving the heart and enflaming the passions, it is an altogether different matter. … The passions have their gestures, but they also have their accents, and these accents, which make us tremble, these accents, from which we cannot shield our organ, penetrate by it to the bottom of the heart, and in spite of us carry to it the movements that wrest them, and make us feel what we hear. Let us conclude that visible signs convey a more precise imitation, but that interest is aroused more effectively by sounds. (1781/1998: 291–292)

Rousseau disagrees with Condillac's thesis that language could have grown just in effect of its transmission through successive generations of communicators. For the author of *Essay on the Origin of Languages*, the development of language away from the original pantomimic-vocal mode required a push from outside the domain of communication, and this push was provided by the lifestyle change described above, whereby man became a social animal. Thinking about the beginnings of this process, Rousseau comes to the conclusion that vocalisation much better served the new demands, as it was more effective than gesture in bringing people together and coordinating their activities; hence it became the dominant modality at this stage of language emergence:

> It is therefore to be supposed that needs dictated the first gestures and that the passions wrested the first voices. By following the path of the facts with these distinctions in mind, it might perhaps be necessary to reason about the origin of languages altogether differently than has been done until now. … The natural effect of the first needs was to separate men and not to bring them together. This had to have been so for the species to spread and the earth to be populated promptly, otherwise mankind would have been crammed into one corner of the world while the rest of it remained deserted. … The passions all bring men together, but the necessity of seeking their livelihood makes them flee one another. Neither hunger nor thirst, but love, hatred, pity, anger wrested the first voices from them. Fruit does not elude our grasp, one can feed on it without speaking, one stalks in silence the prey one wishes to devour; but in order to move a young heart, to repulse an unjust aggressor, nature dictates accents, cries, complaints. The most ancient words are invented in this way, and this is why the first languages were tuneful and passionate before being simple and methodical. (1781/1998: 293–294)

First languages, spoken by savage populations (see above), were "sonorous and harmonious" and made use of tones. In asserting the tonic stage in the evolution of languages, Rousseau agrees both with Monboddo (see above) and Condillac (1746/2001: 120–122). However, for him the tonic stage does not connote primitiveness, just as savagery – on the social plane – does not connote primitiveness. On the contrary, the musical quality of tonic languages makes them superior, i.e. superior in expressing passions, to "monotonous" European languages that developed through the accumulation of consonantal sounds. What was responsible for this change? At this point Rousseau lays out his famous conception of the migration from the south to the north (1781/1998: 305–317). First languages arose in the south (i.e. the south of Europe), where lush vegetation generously supplied people with resources. Members of these *sociétés naissantes* lived in small family groups and, accordingly, spoke family languages, whose melodiousness held them together by inciting appropriate passions. When people migrated north, the new inhospitable lands required that they should form bigger groups and cooperate so as to be able to satisfy vital needs. In these lands, linguistic communication become oriented towards transferring more and more abstract ideas about needs and ways of satisfying them. For Rousseau, this increased precision depended on increased conventionalisation and the irrevocable loss of the original musical quality.

4.7 Herder on representations and language origins

The scenarios of language emergence given by Condillac and Rousseau certainly differ. Most importantly, the former underlines the role of communicative interaction within and across generations in the gradual process of language formation. Rousseau, on the other hand, stresses social and ecological changes that created an environment conducive to the emergence and development of language. However, there are more similarities than differences between their projects, particularly regarding the fundamentals. First of all, they define the same starting point of language, which consisted in the mode of communication combining gestures/pantomimes with emotional vocalisations. They take this mode to constitute man's natural form of communication that characterises him in the wild state (in the past but also in the present, as informed by the feral cases) and that is within the reach of non-human animals, specifically apes (or *orang-outangs*). Hence, it can be argued that both Condillac and Rousseau assert a continuity between human and non-human systems of communication and cognition – a motif that can be found in many Enlightenment thinkers, such as La Mettrie or Monboddo (4.2, 4.3). Next, the continuist position is coupled with an allegiance to empiricism, in the sense that Condillac and Rousseau understand

the growth of language (but also cognition) to be primarily shaped by exposure to particular types of experiences. In keeping with this allegiance, they argue that language emerged through the workings of external conditions – mainly, interpersonal dealings. In this way, they do not just subscribe to the view that language emerged for communication but that communication (understood in interactional terms by Condillac and in socio-ethnographic ones by Rousseau) was the prime mover in its own evolution.

A very different set of ideas and sentiments underlines Johann Gottfried von Herder's (1744–1803) account of language origins presented in *Treatise on the Origin of Language* (*Abhandlung über den Ursprung der Sprache*, 1772). As we are going to see, his position is indebted to rationalism and thus highlights the discontinuity between man and animals (unsurprising given Descartes' views, 4.4). Firstly, it will be useful to introduce the context, both intellectual and historical, in which Herder wrote his *Treatise*.

Rationalistic thought in the later Enlightenment was often associated with philosophical conservatism, which explored the possibility of finding a new grounding for traditional religious explanations. This situation also concerned reflection on language origins, where energy was mustered to show that naturalistic explanations fail to give a satisfactory account of language emergence. Emblematic in this line of thought is the work with the telling title *Essay in the Proof that the First Language did not Originate from Man, but from the Creator Alone* (*Versuch eines Beweises, daß die erste Sprache ihren Ursprung nicht vom Menschen, sondern allein vom Schöpfer erhalten habe*, 1766) by the German demographer and Lutheran minister Johann Peter Süssmilch (1707–1767).[34] His argument centres on the perfection of language, understood as structural complexity, which serves to facilitate the precision of thought. Language is able to perform two tasks: to coordinate human activities, but at a more fundamental level it allows humans to use reason by aiding the formation and organisation of concepts. This leads Süssmilch to conclude that pre-linguistic humans could not have invented language because without language they would not have been able to make full use of reason, and only such use, in his opinion, would have guaranteed the development of language. Süssmilch closes his argument with the statement that language must have been a divine gift for humanity.

While in the work of some other German thinkers of the period, notably Hamann and Tetens, there is a tension between religious and naturalistic elements in accounting for the origin of language (Andrzejewski 2016: 86–90),

34 The reconstruction of Süssmilch's views is based on Andrzejewski (2016: 84–86).

Johann Gottfried Herder (1744–1803) adopts a decidedly naturalistic approach to the subject in *Ursprung der Sprache*. He wrote the essay for a philosophical contest announced in 1769 by the Berlin Royal Academy of Sciences (Königliche Akademie der Wissenschaften), which invited contributions exploring the question, "Was man able to invent language only through the power of his mental faculties?" Out of 31 submissions, the author of the second essay claimed that language had emerged from gestures and emotional cries but failed to indicate any argument in support of this view; the fifth essay contained an interesting comparative point that apes are able to imitate sounds but – for reasons the anatomists could not yet explain – are unable to imitate human vocalisations; the author Copineau, one of the few contestants known by name, suspected that children deprived of socialisation should spontaneously develop forms of communication by relying on expressive body movements that are similar to signs used by the deaf (Hewes 1975: 8–9, Hewes 1976: 485).

Herder's *Ursprung der Sprache*, published later as *Treatise on the Origin of Language* (*Abhandlung über den Ursprung der Sprache*, 1772), won the contest, and it was a deserved success, with Herder's proposal being the most original and best argued. *Ursprung der Sprache* attacks both empiricist naturalism, advocated by Monboddo or Condillac, and spiritualism, advocated by Süssmilch and other proponents of the divine origin of language. As already explained, the empiricist reflection on language origins focused on the problem of how the accumulation of experiences – first in individuals, then in cultures – leads to the emergence of language. Such accounts define the starting point of this process as language-less man, more or less identical with non-human apes. Herder takes a completely different stance, which is announced by the statement "Already as an animal man had language" ("Schon als Tier hat der Mensch Sprache"). This may seem in line with Süssmilch's view that language was a divine gift to mankind, but the author of *Ursprung* soon makes it clear that he takes language to be of human, not divine, provenance:

> I do not want to pursue the hypothesis of the divine origin of language any further on a metaphysical basis, for its groundlessness is clear psychologically from the fact that in order to understand the language of the gods on Olympus the human being must already have reason and consequently must already have language. … If an angel or heavenly spirit had invented language, how could it be otherwise than that language's whole structure would have to be an offprint of this spirit's manner of thought. For by what else could I recognize a picture that an angel had painted than by the angelic quality, the supernatural quality of its traits? But where does that happen in the case of our language? Structure and layout, yes, even the first foundation stone of this palace, betrays humanity. (Herder 1772/2002: 96–99)

What exactly is Herder's motive for mounting such a forceful refutation of the divine origins doctrine, or to use his own words, which elements of language betray its human design? Herder sees the human being, in contradistinction to divine beings, primarily as a sensuous creature. Such a definition addresses both the source of man's experiences (i.e. the outside world accessed through the senses), as well as the psychological impact caused by sense-generated experiences, which manifest themselves as emotions. This emotional quality is reflected in language and testifies to its human origin:

> A human, sensuous creature is what I love when I reflect on this manner of thought: I see everywhere the weak and timid sensitive person who must love or hate, trust or fear, and would like to spread these sensations from his own breast over all beings. I see everywhere the weak and yet mighty creature which needs the whole universe and entangles everything into war or peace with itself, which depends on everything and yet rules over everything. – The poetry and the gender-creation of language are hence humanity's interest, and the genitals of speech, so to speak, the means of its reproduction. But now, if a higher genius brought language down out of the stars, how is this? Did this genius out of the stars become entangled on our earth under the moon in such passions of love and weakness, of hate and fear, that he wove everything into liking and hate, that he marked all words with fear and joy, that he, finally, constructed everything on the basis of gender pairings? Did he see and feel as a human being sees, so that the nouns had to pair off into genders and articles for him, so that he put the verbs together in the active and the passive, accorded them so many legitimate and illegitimate children – in short, so that he constructed the whole language on the basis of the feeling of human weaknesses? Did he see and feel in this way? (Herder 1772/2002: 102)

In the above passage, Herder strives to show the emotive basis of some grammatical distinctions (possibly in German articles and genders). Looking back at the beginnings of language – both in the phylogenetic and ontogenetic order – he stresses that the first forms of language were emotional interjections, which

- either reflected the way an external object made an impression on the human mind:

  > The first vocabulary was therefore collected from the sounds of the whole world. From each resounding being its name rang out, the human soul impressed its image on them, thought of them as characteristic signs. How could it be otherwise than that these resounding interjections became the first? (Herder 1772/2002: 102)

- or were generated by the onomatopoeic principle:

  > The sound had to designate the thing, just as the thing gave the sound. … The child names the sheep not as a sheep but as a bleating creature, and hence makes the interjection into a verb. This matter becomes explicable in the context of the steps of

development of human sensuality, but not in the context of the logic of the higher spirit. (Herder 1772/2002: 100)

Herder insists that this original language served to express activity because the human mind finds it easiest to take in action-related experience – the view for which he tries to find support in the anthropological material available at the time:

Since the whole of nature resounds, there is nothing more natural for a sensuous human being than that *it lives, it speaks, it acts.* That savage saw the high tree with its splendid crown and admired. The crown rustled! That is the work of divinity! The savage falls down and prays to it! … With the savages of North America, for example, everything is still alive: each thing has its genius, its spirit. And that it was just the same with the Greeks and the Easterners is shown by their oldest vocabulary and grammar they are, as the whole of nature was to the inventor, a pantheon!, a realm of living, acting beings! (Herder 1772/2002: 101, original emphasis)

At this stage, language was a musical expression of man's unique experience of the world. Here, Herder agrees with Rousseau regarding the musical form of the original language, and claims that music but also poetry are living fossils of this communication system, whose main function was to connect sounds with images that stir appropriate emotions:

So if the first human language was song, it was song which was as natural to the human being, as appropriate to his organs and natural drives, as the nightingale's song was natural to the nightingale, a creature which is, so to speak, a hovering lung – and that was … precisely our resounding language. *Condillac, Rousseau,* and others were half on the right track here in that they derive the meter and song of the oldest languages from the cry of sensation – and without doubt sensation did indeed enliven the first sounds and elevate them. (Herder 1772/2002: 104, original emphasis)

and:

The thing that so many ancients say, and so many moderns have repeated without sense, wins from this its sensuous life, namely "that *poetry was older than prose!*" For what was this first language but a collection of elements of poetry? Imitation of resounding, acting, stirring nature! Taken from the interjections of all beings and enlivened by the interjection of human sensation! The natural language of all creatures poetized by the understanding into sounds, into images of action, of passion, and of living effect! A vocabulary of the soul which is simultaneously a mythology and a wonderful epic of the actions and speakings of all beings! Hence a constant poetic creation of fable with passion and interest! What else is poetry? (Herder 1772/2002: 103, original emphasis)

In linguistic terms, the original language consisted of verbs, and its further development came by decomposing terms (or rather tunes), which stood for activities

into agents and actions. This process first brought about the emergence of nouns and later the other elements of modern languages:

> The thought of the thing itself still hovered between the agent and the action. The sound had to designate the thing, just as the thing gave the sound. Hence from the verbs arose nouns, and not from the nouns verbs. (Herder 1772/2002: 100)

How does Herder's account bear on *Ursprung*'s foundational statement "Already as an animal man had language"? We have seen that Herder believes language to be a human invention. Crucially, he also believes that human beings were designed (possibly by god) so as to be able to invent language, and this ability constitutes the essential difference between man and other animals. In Herder's opinion, when compared to other animals, man is "instinctless and miserable" but this lack in the acuteness of the senses is compensated for by the mental capacity to have a clear awareness of his experiences (*Besonnenheit*), to able to recognise similarities between them and to generalise them. This quality constitutes the gravity centre (*Schwerpunkt*) of human beings and separates them from the rest of the animal kingdom:

> Animals connect their thoughts obscurely or clearly but not *distinctly.* just as, to be sure, the kinds which are closest to the human being in manner of life and nerve structure, the animals of the field, often display much *memory,* much *recollection,* and in some cases a *stronger* recollection than the human being, but it is still always only *sensuous* recollection, and none of them has ever demonstrated through an action a memory that it had *improved its condition for its whole species,* or had *generalized experiences in order to make use of them subsequently.* To be sure, the dog can recognize the bodily gesture which has hit him, and the fox can flee the unsafe place where he was ambushed, but neither of them can illuminate for itself a *general reflection* concerning how it could ever escape this blow-threatening bodily gesture or this hunters' ruse for good. So the animal still always only remained stuck *at the individual sensuous case,* and its *recollection became a series of these sensuous cases, which produce and reproduce themselves* – but never *connected "through reflection";* a manifold without distinct unity, a dream of very sensuous, clear, vivid representations without an overarching law of clear wakefulness to order this dream. (Herder 1772/2002: 129–130, original emphases)

This reflexive ability endows man with inner speech (*inner Sprache*), whose function is to connect sounds to mental representations, first in the mind of an individual and later – when sounds are volitionally produced – also in the mind of the listener (cf. Riley 1979: 618). Herder devotes a lot attention to the differences between linguistic communication and systems of communication used by animals (for example, the honeybee): the former is based on representations and can be improved by the use of more and more distinct sounds for more and more finely tuned representations; the latter is inborn and hence cannot be enhanced

(Riley 1979: 619). It is then this representational ability that is responsible for man's uniqueness among animals. It also makes him, from the very outset, an essentially linguistic being, not in the sense that he was given language by a deity (*contra* Süssmilch) but, as noted above, in the sense that he was created in a way so as to invent language:

> Nature gives no forces in vain. So when nature not only gave the human being abilities to invent language, but also made this ability the distinguishing trait of his essence and the impulse behind his special direction [in life], …The human being is a freely thinking, active being, whose forces operate forth progressively. Therefore let him be a creature of language!

This leads Herder to a critique of Condillac's and Rousseau's scenarios, the first of whom erred by ascribing human traits to animals and the other, by wanting to make beasts out of men (Riley 1979: 618–619). The main charge against Condillac concerns the assumption made in the *Essay* that man was able to become a linguistic creature mainly through the development of articulatory flexibility. For Herder, the problem of flexibility is completely accidental, and the emphasis it receives in Condillac's presentation hides the focal problem that language could have emerged only on the basis of a pre-existing representational capacity (Ferber 2010: 206–207; cf. Taylor 2016: 5–7). Regarding Rousseau's account of glossogony, Herder accuses the Genevan philosopher of conflating language and animal communication, which obliterates the distinction – fundamental to Herder – between man's cognitive infrastructure and animal cognition (Ferber 2010: 207).

Viewed more generally, *Ursprung* should be seen as part of the rationalistic reflection on man and language. Similar to Descartes, Herder emphasises the cognitive divide between man and animals; like the Port Royal grammarians, he stresses the cognitive function of language over the communicative one. In this context, what makes his contribution unique is the decidedly naturalistic sentiment with which Herder sets to explaining the origin and subsequent development of language. In doing so, he concentrates on the problem of cognitive prerequisites that make the emergence of language possible. Such an approach, in fact based on the logic of reverse engineering (see Dennett 1995), is integral to the methodology of building arguments in the modern science of language evolution (see the work on the theory of mind, e.g. Call and Tomasello 2008; or on meta-representation, e.g. Dunbar 2007). In the more immediate intellectual context, Herder's conception of language betrays nationalistic sentiments characteristic of the *Sturm und Drang* pre-Romantic period. Just as his teacher Johann G. Hamann (1730–1788), he appeals to the ancient view that there is an

intimate link between a language and a community of its speakers (Andrzejewski 2016: 86–94). Originating in glottogonic and glossogenetic myths (1.1, 1.2) and explored by the Adamic literature (see 2.2, 2.4), this view is reinterpreted by Hamann and Herder to suit the modern ideas of "nation" and "nationalistic state". Herder adds a naturalistic explanation whereby a language is understood a collective memory of a nation's experiences and in this way imposes a particular way of thinking and feeling on its speakers (Andrzejewski 2016: 94). We will soon see these motifs, together with rationalistic naturalism, in von Humboldt's work (see 5.1). First, however, we need to take a look at the developments that took place at the very end of the Enlightenment.

4.8 *Les Idéologues*

Herder's position in 18th-century thought on language origins was as unique as it was isolated. This was not just the effect of the rationalistic underpinnings of his theorising in the philosophical world, which was then dominated by sensualistic empiricism *à la* Condillac. Herder was also isolated in proposing that language, since its inception, has been evolving in the vocal-auditory modality – in fact, as we saw, he considered the ability to connect sounds with emotions and thoughts as the basic representational skill, which afforded the development of language. In contrast, the overwhelming majority thinkers concerned with glossogony in the late Enlightenment subscribed to the pantomimic-gestural view of language origin, earlier articulated by Mandeville, Condillac or Rousseau.

Les Idéologues constituted a very influential milieu that was particularly attached to this view. Formed in Paris towards the end of the century, the Idéologues called for a systematic study of children's development as well as comparative research into cultures, including cultures of traditional societies, and various non-linguistic systems of communication. The most prominent member of the group, Roch-Ambroise Cucurron Sicard (see 4.2, 5.6), the director of the Institute for the Deaf and Mute, promoted the idea that the acquisition of sign and vocal language proceeds in the same fashion. This position was generally seen as lending support to the pantomimic-gestural hypothesis of language origin. Another member of the group, philosopher Joseph Marie Degérando (1772–1842), published a multi-volume work on semiotics *Signs and the Art of Thinking Considered in Terms of Their Mutual Relations* (*Des Signes et de l'Art de penser considérés dans leurs rapports mutuels*, 1799–1800). In this work, he paid considerable attention to the onto- and phylogenetic development of symbolic thinking, suggesting the primacy (in both senses) of visually transmitted symbols.

In 1799 the group founded the Society of Observers of Man (*Société des observateurs de l'homme*), the world's first scientific organisation that had a distinctly anthropological character. The goals of the Society were concordant with the research agenda of the Idéologues, and included a number of world-wide projects, for example, on customs of "uncivilized" societies or signs used by various deaf populations. The founding father of the Society, Louis F. Jauffret (1770–1840), emphasised the necessity of undertaking long-term, qualitative research into the child's ontogeny (Benzaquen 2004). This programme was specifically geared to investigating cognitive and communicative development, but it was hoped that the results would also shed light on the problem of language origins. Jauffret's attitude towards children is sometimes described as sentimental (Benzaquen 2004: 34–37), but it should also be noted that he championed the idea of performing the forbidden experiment on a large-scale and under controlled circumstances (Hewes 1975: 485–486, 1976: 9, 1977a: 100–101). Another member of the Society, Pierre Laromiguière (1756–1837), a follower of Condillac, argued that pantomimic-gestural communication, described in his teacher's famous thought-experiment, is innate to humans. He justified this view by appealing to the success of the methods used in the Institute for the Deaf and Mute, but also to reports on how European travellers communicate with newly discovered populations:

> The knowledgeable and the ignorant, everyone understands it, everyone speaks it. Let one of us be transported to the extremities of the globe in the midst of a horde of savages. Do you think that he will not be able to express the most pressing needs of life? Do you think he can mistake the signs of a barbarous refusal or the sign of a generous and compassionate intention? Therefore, there is no question of inventing a language: it already exists made for us by nature.[35] (1826, III, 113; quoted after Knowlson 1965: 507)

Laromiguière concludes with the postulate of constructing a universal language based on this innate capacity to communicate by means of body movements (see 5.6). None of the Society's grand projects had started when, in 1804, it was dissolved by Bonaparte.

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35 My translation from the French original: Savants, ignorants, tout le monde la comprend, tout le monde la parle. Que l'un de nous soit transporté aux extrémités du globe, au milieu d'un horde de sauvage: croyez-vous qu'il ne saura pas exprimer les besoins les plus pressants de la vie? Croyez-vous qu'il puisse se méprendre sur les signes d'un refus barbare ou d'un intention généreuse et compatissante? Il ne s'agit donc pas d'inventer une langue, de la faire: elle existe, c'est la nature qui l'a faite.

The Enlightenment, and particularly the second half of the 18th century, was the golden age of reflection on language origins. The character of this reflection was defined by naturalism, and naturalistic glottogony – as shown by Monboddo, Condillac and Rousseau – was an important front in the struggle for a new, scientifically viable definition of man that was then emerging. Naturalistic glottogony was also a unique intellectual formation. We have shown that glottogonic and glossogenetic myths are universal. The equivalents of the Adamic tradition and the philosophical investigation of language that developed in antiquity and Middle Ages are much more difficult to find outside the Occidental thought. However, classical Indian philosophy with debates between the *Mīmāṃsā* school of Hindu orthodoxy and the Buddhist epistemological tradition (*Pramāṇa*) or the later Motist philosophy of language in China seem good approximations of these European developments (for details see Cabezón 1994, Itkonen 1991: 5–124, Żywiczyński 2004). But the naturalistic reflection on language origins that we described in this chapter was unique to 17th- and 18th-century Europe. The reasons why it appeared just then are complex, but its uniqueness derives from the uniqueness of science, which started to grow in Europe at the end of the Middle Ages and the start of the modern era, and formed a theoretical motivation for naturalistic glottogony. The tradition of naturalistic glottogony coincided with an increased interest in other language-related problems – for example, universal grammar (see 6.2) or attempts to construct philosophical languages, most importantly *a priori* philosophical languages, which were hoped to eliminate the impact of Baconian idols (4.4; see Eco 1995: 210–227). Some historians of linguistics claim that these developments testify to a general trend of making language an object of study, that in the following decades was about to bring about the inception of linguistics (e.g. Heinz 1983: 99–115, Itkonen 1991: 272–282). This may be so, but it should be emphasised that these areas were largely autonomous lines of reflection on language, and specifically the language origins of the period had a powerful connection to naturalism, the influence of which is not easy to see in the reflection on universal grammar or philosophical languages

Another distinguishing feature of naturalistic glottogony was its scale. During the Enlightenment, even thinkers whose interests lay far from any concern with language would often indicate what their position on the origin of language was. It almost seems that having a view on the glottogonic problem, preferably one's own view, was then seen as a confirmation of one's intellectual ability. For example, Adam Smith (1723–1790) in *Considerations Concerning the First Formation of Languages* (published as an annex to the 1767 edition of *Theory of Moral Sentiments*) argued that the grammatical structure of modern languages evolved on

the basis of our ancestors' ability to categorise events into objects, which give rise to nouns, and processes, which give rise to verbs.[36] It is notable that philosopher Dugald Stewart (1753–1828), who was Adam Smith's publisher, also dabbled in language origins, commenting on and expanding Smith's account. The gestural position was supported, among others, by libertine philosopher Claude Adrien Helvétius (1715–1771), while Mikhail Vasilyevich Lomonosov (1711–1765), a Russian polymath scientist and the founder of Moscow University, agreed with Herder that the early form of language was vocal. Examples of the ubiquity of the topic of glottogony could be multiplied.

36 For details see Stephen K. Land's work *Adam Smith's Considerations Concerning the First Formation of Languages* (1977).

5 Linguistics, Darwinism and the twilight of traditional language origins

On a number of occasions, the Enlightenment has been referred to as the golden age of glottogony. Using such catchphrases involves the risk of making sweeping generalisations, and it is hence important to explain what exactly they are intended to mean. In our case, the intention was to show that the problem of language origins in the Enlightenment becomes, for the first time in the Occidental intellectual tradition, a key theoretical problem. Previously there were, of course, contexts in which glossogony constituted an important area of investigation, such as the problem of the Adamic language in the Kabbalistic tradition, or the Illustrious Vernacular – the theme introduced by Dante and discussed in the Renaissance. However in these cases, language origins were not treated as an independent intellectual pursuit, and reflection on them served other – philosophical or more often theological – purposes. **In the Enlightenment**, on the other hand, **the problem of language emergence became a grand question intimately related to other grand questions that consumed the greatest minds of the epoch**. The biggest of these problems was arriving at a new, naturalistic definition of man, and explaining the origin of language was a necessary component of this definition. It should be stressed that glottogony in the Enlightenment was dominated by a particular type of reflection – it was naturalistic in that it sought mundane explanations for how our ape-like ancestors acquired language and in this way elevated themselves from the state of nature. As we have seen, naturalistic reflection on language origins in the Enlightenment followed, although not exclusively (see for example Herder, 4.7), a specific philosophical programme rooted in Locke's empiricism and later interpreted along sensualist lines. There also emerged a near-consensus view about the form of language precursor, which was taken to have consisted of communicative body movements and emotive vocalisations.

At the beginning of the 19th century this kind of speculative glottogonic reflection began to show clear signs of exhaustion. First of all, there was no new knowledge or theoretical impulse that could invigorate naturalistically and scientifically orientated glottogony. We had to wait another half a century for Darwin's ground-breaking conception, and – as we are going to see – even when announced, Darwin's evolutionism did not immediately exert any systematic impact on thought about the beginnings of language.

There were no significant advances in primatology, apart from the observations made by the comparative biologist and palaeontologist **Georges Cuvier** (1769–1832) who, in the monumental *The Animal Kingdom* (*Le Règne Animal*, 1817), argued – in opposition to many Enlightenment thinkers (see La Mettrie, 4.2) – for the strict separation between man and other primates, both on morphological and behavioural grounds. Following Blumenbach's *Manual of Natural History* (1779), Cuvier classifies humans as belonging to the order *Bimana* (or two-hand animals), of which *Homo* is the only genus (1817/1840: 44). Within this genus, as he puts it, "the human species would appear to be single", but there exist sub-specific hereditary varieties, or races: Caucasian, Mongolian and Ethiopian (1817/1840: 49). Other primates are classified as belonging to the order *Quadrumana* (or four-hand animals), whose rather involved taxonomic description recognises non-human apes as the taxon most closely related to man (1817/1840: 54). Although non-human apes are credited with well-developed intelligence, they are described as unable to acquire language. Cuvier thus treats language as a human-specific characteristic, which aids the development of other uniquely human capabilites, such as cultural transmission and transgenerational accumulation of knowledge:

> In other respects, Man appears to possess nothing resembling instinct, no regular habit of industry produced by innate ideas; all his knowledge is the result of his sensations, his observations, or of those of his predecessors. Transmitted by speech, increased by meditation, applied to his necessities and his enjoyments, they have given rise to all the arts. Language and letters, by preserving acquired knowledge, are a source of indefinite perfection to his species. It is thus that he has acquired ideas, and made all nature contribute to his wants. (Cuvier 1817/1840: 48)

As must be stressed, Cuvier's taxonomical work was still largely based on haphazard observation, with anecdotes taking the place of rigorous ethological research. Such limitations rendered impossible any systematic comparison between language and systems of non-human primate communication and cognition.

Interestingly, the first half of the 19th century saw the emergence of lines of evidence that potentially could have been of greatest interest to naturalistic glottogony. These included the first attempts to conduct experimental research in psychology, for example that undertaken by Gustav Fechner (1832), or the fossil finds testifying to the existence of hominin species other than *Homo sapiens*, e.g. the first discovery of Neanderthal bones excavated in 1829 by Philippe-Charles Schmerling in Engis, Belgium. However, to be fully

appreciated, these advances had to wait for the theoretical and empirical consolidation of Darwinism.

5.1 Humboldt's conception of language as activity

In the meantime, the intellectual climate was becoming less sympathetic to naturalistic theorising about language origins. One reason for this was the formation and dynamic development of comparative philology, with its own distinct research agenda and views about language (see 5.2). Another game-changer was Romanticism, with its glorification of feeling against reason, illustrated by Goethe's famous line: "All the knowledge I possess everyone else can acquire, but my heart is all my own" (*The Sorrows of Young Werther*, 1774). As already indicated in the discussion of Herder's views, **romantic reflection on language emphasised the reciprocal relation between a language and a speech community** (which, in the socio-political reality of the 19th century, became commonly identified with a nation): on the one hand, **a language represents a configuration of thoughts and feelings unique to a particular speech community**; on the other hand, a language understood in this way imposes on members of this community a way of thinking and feeling that distinguishes them from members of other speech communities (cf. Andrzejewski 2016: 86–94). Such sentiments contrasted with the Enlightenment's universalistic approach to language and linguistic communication, rooted in sensualist epistemology. Talking about 19th century philosophy, it is impossible to overlook the huge impact generated by the gradual reception of Immanuel Kant's work. In the light of Kant's critical philosophy, the sensualist-empiricist programme of the previous century – so important to naturalistic glottogony – must have been seen as naïvely optimistic.

A lot of the motifs and ideas characteristic of the first half of the 19th century are present in Wilhelm von Humboldt's (1767–1835) works on the theory and description of languages. He is certainly a thinker who takes inspiration from different intellectual traditions, and hence it is difficult to classify him as belonging to any of them (cf. Kowalska 2002: viii–iv). We find there a Romantic preoccupation with how a language expresses the mental inclinations of its speakers (Kowalska 2001: 8–9), but at the same – in the spirit of the Enlightenment – Humboldt also attempts to specify universal principles of the emergence and development of language (cf. Kowalska 2001: 8–9). In fact, as we will soon see, his solution to **demarcate what is language-specific and language-universal constitutes one of his most enduring contributions to the theory of language.**

Finally, Humboldt is eager to extend Kant's critical philosophy to problems of linguistic communication (see below).

The most important of his works devoted to these concerns is *On the Diversity of Human Language Construction and Its Influence on the Mental Development of the Human Species*[37] (1836), often abbreviated to *On Language* (the English translation from 1999), which Leonard Bloomfield called "the first great book in general linguistics" (Bloomfield 1933: 133; cf. Losonsky 1999: vii). Intended as an introduction to the voluminous *The Kawi Language on the Island of Java*, *On Language* indeed may be classified as belonging to the vanguard of the science of linguistics, which was emerging in the 19th century, but it is first and foremost a work on philosophy of language with a strong emphasis on the problem of language emergence. This issue was considered by Humboldt on a number of planes; for us the most important of these is the phylogenetic order, but he also studies language emergence on smaller scales, for example pertaining to language acquisition or language learning, and even to the speaker's generation of utterances (cf. Kowalska 2001: 13).

One of the most original of Humboldt's ideas is that language is an individual's activity. In this sense, language, conceived as a dynamic and continuous activity of expression (*energeia*), is contrasted with the understanding of language as a finished product of this activity (*ergon*):

> In itself [language] is no product (*Ergon*), but an activity (*Energeia*). Its true definition can therefore be only a genetic one. For it is the ever-repeated *mental labour* of making the *articulated* sound capable of expressing *thought*. … For in the scattered chaos of words and rules that we are, indeed, accustomed to call a language, there is present only the *particular* brought forth by this speaking, and this never completely, and first calling for new work, so as to detect from it the nature of the living speech and to provide a true image of the living language. It is precisely the highest and most refined aspect that cannot be discerned from these disparate elements, and can only be perceived or divined in *connected discourse*; which is all the more proof that language proper lies in the act of its real production. It alone must in general always be thought of as the true and primary, in all investigations which are to penetrate into the living essentiality of language. The break-up into words and rules is only a dead makeshift of scientific analysis. (Humboldt 1836/1999: 49, original emphases)

The motivation for engraining in this "ever-repeated mental labour of making the articulated sound capable of expressing thought" cannot be reduced to practical goals, such as coordinating actions. For Humboldt, the disposition to

37 Original title: *Über die Verschiedenheit des menschlichen Sprachbaus und ihren Einfluss auf die geistige Entwicklung des Menschengeschlechts*.

express thoughts by means of sounds depends on the aprioric (in the Kantian sense) structure of the human mind, without which man would be unable to manifest his mental capacity (see Andrzejewski 2016: 113):

> The *bringing-forth of language* is an *inner need of man*, not merely an external necessity for maintaining communal intercourse, but a thing lying in his own nature, indispensable for the development of his mental powers and the attainment of a world-view, to which man can attain only by bringing his thinking to clarity and precision through communal thinking with others. (Humboldt 1836/1999: 27, original emphases)

We could then say that language, as understood above, is a species-specific property of humankind or, using Humboldt's own terms, that it is an expression of the human *Lebensprinzip* – the way human beings live. In contrast to Condillac and Rousseau, who suggested how man may have developed from a language-less state, Humboldt agrees with Herder about the oxymoronic nature of the phrase "language-less man" and insists that mankind and language must have appeared together. This does not mean that language suddenly appeared in its full complexity. Humboldt, again in consonance with Herder but also Hamann (4.7), claims that **the first form of linguistic expression was song**, which served to indicate communicators' thoughts but also to increase the cohesion of their group. In an interesting passage, Humboldt explains why he disagrees with the view that the original language consisted of a simple lexicon, whose elements would have been used to inform others about one's needs:

> Even the *beginnings of language* should not be thought restricted to so meagre a stock of words as is commonly supposed when, instead of seeking its inception in the original summons to free human *sociality*, we attribute it primarily to the need for mutual *assistance*, and project mankind into an imagined state of nature. Both are among the most erroneous views that can be taken about language. Man is not so needy, and to render assistance, unarticulated sounds would have sufficed. Even in its beginnings, language is human throughout, and is extended unthinkingly to all objects of casual sense perception and inner concern. Even the languages of so-called *savages*, who would have, after all, to come closer to such a state of nature, exhibit, in fact, a wealth and multiplicity of expressions that everywhere exceeds what is required. Words well up freely from the breast, without necessity or intent, and there may well have been no wandering horde in any desert that did not already have its own songs. For man, as a species, is a singing creature, though the notes, in his case, are also coupled with thought. (Humboldt 1836/1999: 60, original emphases)

The above account brings to mind contemporary conceptions of holistic protolanguage, particularly Steven Mithen's idea of the holistic musical protolanguage (2005). Apart from the form of original (proto)language, both Humboldt and Mithen stress its function for engaging in social rapport. However, unlike

Mithen or other proponents of holistic protolanguage (Wray 1998, Arbib 2005), Humboldt is not concerned with how this original form of communication decomposed into the units of modern languages. Instead, his focus remains on what he considers **the essence of language**, which **is the meeting point of two components – the inner component related to thought and the outward component related to sound**:

> Now in language, insofar as it actually appears in man, two constitutive principles may be distinguished: the *inner linguistic sense* (by which I understand, not a special power, but the entire mental capacity, as related to the formation, and use of language, and thus merely a tendency); and *sound*, insofar as it depends on the constitution of the organs, and is based on what has been handed down already. The inner linguistic sense is the principle which dominates language from within outwards, and everywhere supplies the guiding impulse. Sound, in and for itself, would resemble the passive matter which receives form. But since permeation by the linguistic sense transforms it into *articulate* sound, containing both intellectual and sensuous power, inseparably united and in constant mutual interaction, it becomes, in its perpetual symbolizing activity, the actual *creative* principle in language, and seemingly even an independent one. (Humboldt 1836/1999: 214, original emphases)

Every use of language is a creative act (*energeia*) of linking a mental content with a sound (Harris and Taylor 1989: 156). As a result, a sound ceases to be a merely physical phenomenon and becomes articulate or a sound-form, that is a sound able to express mental content (cf. Andrzejewski 2016: 118–121). Connections between sounds and mental contents are not accidental but are built in the way that properties of sounds reflect properties of mental concepts. Humboldt describes three principles of establishing thought-sound connection. The first of these is the onomatopoeic principle, or the "directly imitative" principle, whereby a sound captures the sound made by an object that the speaker is thinking of (1836/1999: 73); the second could be identified as the phono-iconic principle, whereby a sound captures "an impression similar to that of the object upon the soul: as *stand*, *steady* and *stiff* give the impression of fixity" (1836/1999: 73); finally, Humboldt specifies the analogical principle, which requires that similar mental contents should be expressed with similar sounds (1836/1999: 74).

This brings us to the nature of *energeia*. As we have just seen, although spontaneous, it is not an unrestrained activity. Furthermore, apart from the very first instance of language use, *energeia*, i.e. mental labour to express thought by articulate sounds (see above), always encounters some *ergon*, or product, in the form of previous uses of language: "the mental activity which as earlier explained produces the expression of thought, is always directed at once upon something

given; it is not purely creative, but a reshaping activity" (1836/1999: 50, see also Harris and Taylor 1989: 154–155). On this account, the defining characteristic of language is change dictated by a dialectic of *energeia* and *ergon*: **current use of language is constrained by established use, but also shapes what will be the established use in the future and hence will constrain future uses** (cf. Harris and Taylor 1989: 154–157).

The crucial tenet of Humboldt's proposal is that the evolution of language is directional – it leads to a better and better expression of thought. To fully understand this point, we must take a look at his views on both the relation between language and thought and on linguistic universality and diversity. Regarding the first of these, language is not just an instrument for expressing thought because, as Humboldt emphasises, it is language that makes "true thinking" possible:

> Language is the formative organ of *thought*. *Intellectual activity*, entirely mental, entirely internal, and to some extent passing without trace, becomes, through *sound*, externalized in speech and perceptible to the senses. Thought and language are therefore one and inseparable from each other. But the former is also intrinsically bound to the necessity of entering into a *union* with the verbal sound; thought cannot otherwise achieve clarity, nor the idea become a concept. …
>
> The activity of the senses must combine synthetically with the inner action of the mind, and from this combination the presentation is ejected, becomes an object *vis-a-vis* the subjective power, and, perceived anew as such, returns back into the latter. But *language* is indispensable for this. For in that the mental striving breaks out through the lips in language, the product of that striving returns back to the speaker's ear. Thus the presentation becomes transformed into real objectivity, without being deprived of subjectivity on that account. Only language can do this; and without this transformation, occurring constantly with the help of language even in silence, into an objectivity that returns to the subject, the act of concept-formation, and with it all true thinking, is impossible. So quite regardless of communication between man and man, speech is a necessary condition for the thinking of the individual in solitary seclusion. (1836/1999: 54–56, original emphases)

Humboldt does not embrace Descartes' thesis that animals do not have mental life. They do, but it is qualitatively different from human mental life, and this difference is the result of language. Here, he agrees with the empiricist tradition, represented by Locke and Condillac, that only language can transform an amorphous motley of sensations and memories into units of thoughts, i.e. concepts that can be operated upon – combined, separated, negated, etc. (Taylor and Harris 1989: 157–158).

Important in this context is the question about universal properties of different languages (cf. Kowalska 2001: 8). On the most general level, he presents

a rationalistic argument that, since people's minds are organised in essentially the same way and since language reflects this structure, the core of different languages must likewise be the same:

> Since the natural disposition to language is universal in man, and everyone must possess the key to the understanding of all languages, it follows automatically that the form of all languages must be essentially the same, and always achieve the universal purpose. The difference can lie only in the means, and only within the limits permitted by attainment of the goal. (1836/1999: 215)

Clearly then, Humboldt arrives at a universalistic position as a result of considerations very similar to those found in the Port-Royal *Grammar*, and posits that the universality of thought processes is reflected in the universal core of all languages (see 4.4). Chomsky saw in both Port-Royal's and Humboldt's theories the precursors of his version of universal grammar (Chomsky 1966: 2; cf. Losonsky 1999: vii).[38] However, **the way Humboldt explains language universality and, even more so, language specificity goes against Chomsky's ideas and probably against those of the Port-Royal Grammarians, too.** He believes that all languages are equipped with the basic "parts of speech, case relations, active and passive voice, and verbal mood" (Harris and Taylor 1989: 160). Languages can indicate these differently; for example, case relations can be indicated by inflectional morphemes, as in Latin, or word-order, as in Chinese (Harris and Taylor 1989: 160). These different strategies in principle account for differences between languages, but in contrast to modern linguistics, Humboldt believes that strategies used by some languages are better than those used by others. What is the yardstick to measure how good a language is? Humboldt believes it to be refinement of thought, and champions the idea that in an ideal language each word should not only indicate a concept but also its grammatical functionality (1836/1999: 217, Harris and Taylor 1989: 163). This leads him to argue that inflectional languages, whose inflectional morphemes combine a number of functions, come closest to the ideal of linguistic expressivity. According to Humboldt's account, Sanskrit is a language *par excellence*, while isolating languages, such as Chinese, are located at the opposite end of the scale (1836/1999: 140–145, Harris and Taylor 1989: 159–164). These ideas inspired modern relativist views that emphasise the formative impact of a language on its speakers' cognitive categories, which, in their earliest forms, were

38 Another important motif that Chomsky finds in Humboldt is the identification of thought and language (e.g. Chomsky 2016: 102); see also below – the passage on the refinement of thought.

articulated by the anthropological linguists Edward Sapir (1884–1939) and Benjamin Lee Whorf (1897–1941).

Humboldt's highly evaluative claims about differences in expressivity between different language types are intimately related to his conception of nation and race. In keeping with Romantic attitudes, Humboldt considers ethnic groups primarily as spiritual entities:

> The unity of *nations* and *races*, which invariably evokes a simultaneous separation, depends, in any case, primarily upon historical events, themselves largely due to the nature of the places men live in and travel to. But even if we wish to separate from this all influence of inner agreement or repulsion, even of a merely instinctive kind – not that I would care to justify this view forthwith – still, every nation, quite apart from its external situation, can and must be regarded as a human *individuality*, which pursues an inner spiritual path of its own. (Humboldt 1836/1999: 41, cf. Helbig 1982: 10–11, original emphases)

The most decisive factor determining this spiritual path is a language because "Language and intellectual endowment, in their constant interaction, admit of no separation, and even historical destinies may not be so independent of the inner nature of peoples and individuals …" (1836/1999: 182). Through the *energeia-ergon* dialectic, **the communicative decision of ancestors sets a community on a particular evolutionary course by encouraging specific linguistic strategies and thereby enhancing specific forms of thinking** (Andrzejewski 2016: 125–128, Kowalska 2002: xxiv–xxv). These strategies then mould a conceptual-linguistic reality for successive generations, which constrains their communicative choices, and so on (cf. Harris and Taylor 1989: 159). But, as Humboldt argues, there are more or less optimal developmental trajectories for languages and therefore for the whole communities that use those languages:

> The true synthesis [as in inflectional languages] springs from the inspiration known only to high and energetic power. In the imperfect one, this inspiration has been lacking; and a language so engendered likewise exerts a less inspiring power in its use. This can be seen in its literature, which, is less inclined to those genres which require such inspiration, or bears on its face a lesser degree of it. The smaller mental power of the nation, which carries the blame for this deficiency, then evokes the same again, through the influence of a more imperfect language, in subsequent generations; or rather the weakness is evinced throughout the whole life of such a nation, until a new transformation of spirit arises through some kind of shock. (1836/1999: 89)

As can be seen from the above fragments, Humboldt's allegiance to Romanticism is only partial. Instead of the Romantic fascination with a concrete language/thought/community complex (usually one's own), he is fascinated with a variety of languages and the variety of ways in which they impact the history and

mentality of their speakers (cf. Kowalska 2001: 9). In this respect, Humboldt's approach is prescient of anthropological linguistics (see above) and cultural anthropology (5.6).

5.2 The rise of comparative philology

As noted above, **Humboldt's work was instrumental in establishing linguistics as an autonomous science**. Some of his ideas are still widely used, such as his extended morphological classification of languages (see above) or the notion of the interface between language and cognition, which was inspirational for language relativists such as Sapir and Whorf and which still exerts a strong influence on ethnolinguistics (see Underhill 2012), including the influential Linguistic Worldview Approach (see Bartmiński 2009).

However, in the **19th century the developing discipline of linguistics was dominated by a different research trend**, to which Humboldt's allegiance was but peripheral. **This trend was comparative linguistics**, or comparative philology as it was then commonly referred to (Hewes 1976: 486). Descriptive material on various European and Asian languages, which was being accumulated during the 17th and 18th centuries, brought forth a growing realisation that the similarities among them were going beyond what was known from the traditional historical as well as Greek- and Latin-based linguistic sources. This realisation was for the first time fully articulated[39] by **William Jones** (1746–1794), who in his famous lecture delivered to the Asiatic Society, suggested that European and Indic languages have a common origin:

> The *Sanscrit* language, whatever be its antiquity, is of a wonderful structure; more perfect than the *Greek*, more copious than the *Latin*, and more exquisitely refined than either, yet bearing to both of them a stronger affinity, both in the roots of verbs and the forms of grammar, than could possibly have been produced by accident; so strong indeed, that no philologer could examine them all three, without believing them to have sprung from some common source, which, perhaps, no longer exists; there is a similar reason, though not quite so forcible, for supposing that both the *Gothic* and the *Celtic*, though blended with a very different idiom, had the same origin with the *Sanscrit*; and the old *Persian* might be added to the same family. (1786/1924: 128, original emphases)

The research programme that in the beginning of the 19th century grew out this realisation was focused on designing methods that would able to uncover

39 The idea that languages of Europe and India might be related was first proposed by Marcus Boxhorn (1612–1653), the author of the so-called Scythian hypothesis.

relatedness between languages and the mechanics of language change. The most important of these was the **comparative method**, gradually elaborated by Rasmus Rask (1787–1832), Karl Verner (1846–1896) and Jacob Grimm (1785–1863). These efforts were directed at designing strict criteria for: identifying formal similarities between studied languages, assembling cognate sets and identifying sound correspondences between them (i.e. words and sounds related to an ancestral form), and finally reconstructing protoforms (i.e. forms in ancestral language; for details on the comparative method, see Campbell 1999: 108–162). The last of these activities was often aided by the method of **internal reconstruction** (Campbell 1999: 218–219), whereby variants of the same form in one language (most commonly allomorphs, or variants of a morpheme) are used to reconstruct (or identify) an ancestral form (for details on internal reconstruction, see Campbell 1999: 201–225).

The methodological rigour of comparative philologists led to spectacular successes, such as the discovery of regular change patterns (e.g. *Grimm's law* and *Verner's law*, which describe sound changes from Proto-Indo-European to Proto-Germanic). An even more telling achievement was the confirmation of the laryngeal theory (proposed by Ferdinand de Saussure in 1879) by the discovery and decipherment of Hittite texts in the early 20th century. These achievements contributed to increased demands placed on comparative philology, whose goals moved from explaining similarities between languages to **building genealogies of languages and whole language families** (Harris and Taylor 1989: 169–170). The greatest optimism about this new agenda was expressed by the German **Neogrammarian movement** (*Junggrammatiker*), which began in 1876 at the University of Leipzig. Its members – including Karl Brugmann, Berthold Delbrück, August Leskien, Hermann Osthoff, Hermann Paul – formulated **the regularity principle**, popularly described by the slogan: **"sound laws suffer no exceptions"** (Osthoff and Brugmann 1878; Campbell 1999: 17–18; cf. Helbig 1982: 14–16), and demanded that the emerging science of linguistics should be primarily concerned with delivering facts supporting this principle. According to de Saussure, such an uncompromising attitude was responsible transforming the field into a truly naturalistic enterprise: "The achievement of the Neogrammarians was to place all the results of comparative philology in a historical perspective, so that linguistic facts were connected in their natural sequences" (1922: 18, quoted after Harris and Taylor 1989: 168). Commenting on this, Harris and Taylor (1989: 168) underline the phrase "natural sequences" (*ordre naturel*), which in their view shows that the 19th-century linguists definitively parted from teleological explanations

of language change and realised that they had to formulate explanations only with reference to impersonal, language-internal processes (cf. Harris and Taylor 1989: 168–169).

5.2.1 Comparative philology, biology and Darwinism

Even before the emergence of the Neogrammarian movement, comparative philology had sometimes been taken as a paragon of scientific method, also by representatives of the natural sciences. In *The Origin of Species* (1859), Darwin himself uses its genealogical classifications to illustrate how his principle of descent with modification is able to lead to an evolutionarily adequate classification of biological entities:

> Thus, on the view which I hold, the natural system is genealogical in its arrangement, like a pedigree; but the degrees of modification which the different groups have undergone, have to be expressed by ranking them under different so-called genera, subfamilies, families, sections, orders, and classes.
>
> It may be worth while to illustrate this view of classification, by taking the case of languages. If we possessed a perfect pedigree of mankind, a genealogical arrangement of the races of man would afford the best classification of the various languages now spoken throughout the world; and if all extinct languages, and all intermediate and slowly changing dialects, had to be included, such an arrangement would, I think, be the only possible one. Yet it might be that some very ancient language had altered little, and had given rise to few new languages, whilst others (owing to the spreading and subsequent isolation and states of civilisation of the several races, descended from a common race) had altered much, and had given rise to many new languages and dialects. The various degrees of difference in the languages from the same stock, would have to be expressed by groups subordinate to groups; but the proper or even only possible arrangement would still be genealogical; and this would be strictly natural, as it would connect all languages, extinct and modern, by the closest affinities, and would give the filiation and origin of each tongue. (Darwin 1859: 422–223, cf. Harris and Taylor 1989: 166–167)

As already noted, linguistics was then aspiring to the status of an autonomous science, and Darwin's words, which indicated that it could constitute a methodological inspiration for biology, certainly boosted the confidence of linguists of the day (cf. Harris and Taylor 1989: 167–168). However, it should be stressed that Darwin was by no means alone in using analogies between biological and linguistic research. The Romantic conceptualisations of "nation" (see 5.1) and of "language" as "organism" made both of these concepts amenable to biological theorising. For example, **August Schleicher** (1821–1868), the author of the first reconstruction of Proto-Indo-European, was prepared to

treat the analogy between biological and linguistic phenomena literally, and **posited that just like organisms, languages undergo phases of development and decay**; accordingly, the goal of linguistics is to discover the laws governing this developmental process:

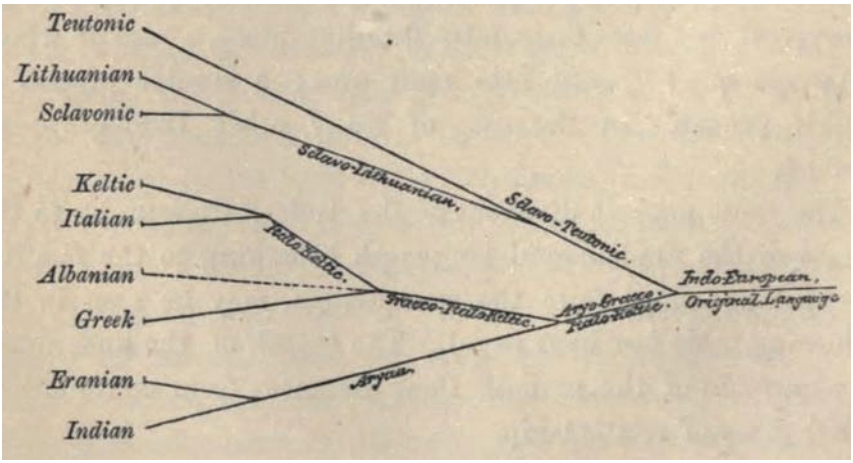
> The life of a language (generally called its "history") falls under two heads:
>
> 1. Development in prehistoric times. As man has developed, so also has his language, i.e. the expression of his thoughts by sounds: even the simplest language is the product of a gradual growth: all higher forms of language have come out of simpler ones, the confixative of the monosyllabic, the inflexive out of the confixative.
> 2. Decline in the historic period. Language declines both in sound and in form, and in its decay changes of meaning take place alike in function and construction of sentences. The transition from the first to the second period is one of slower progress. To investigate the laws by which languages change during their life is a most important problem in the science of language, for unless we are acquainted with them we cannot possibly understand the languages in question, especially those which are still living. (Schleicher 1861–62/1874, vol. II: 91–92)

This leads Schleicher to explain the emergence of new languages in semi-biological terms of branching out, when he uses the type of explanation that Darwin was so sympathetic to:

> Through different developments, at different points in the province of one and the same language, the self-same tongue branches out into the ramifications of the second period (whose beginning however is likewise earlier than the origin of historic tradition), and diverges into several languages (dialects); this process of differentiation may repeat itself more than once.
>
> All these changes took place gradually and at long intervals in the life of the language, since generally all changes in language unfold themselves gradually.
>
> The languages which spring immediately from an original language we call fundamental; almost every fundamental language has split up into languages; all these last-named languages may further branch into dialects; and these dialects into sub-dialects.
>
> All the languages which are derived from one original-language form together with a class of speech or speech-stem; these again are sub-divided into families or branches of speech. (Schleicher 1861–62/1874, vol. II: 92)

Schleicher also included elements of biological taxonomy in his famous family-tree model (*Stammbaumtheorie*, see Fig. 9). Designed to document the relatedness of languages, this model not only treats individual languages as correlates of species but also language-families as correlates of higher level taxa.

Fig. 9: The Indo-European language family reconstructed by Schleicher (1861–62/1874, vol I: 8)



Source: https://functionalshift.files.wordpress.com/2011/10/schleicher_tree-english.jpg (DOA: 15 Mar 2017.)

In fact, in the middle of the 19th century, it was quite common to consider comparative linguistics as belonging to the natural sciences, most akin to biology, and hence Darwin's appeal to the comparative method in *The Origin of Species* was probably less surprising to his contemporaries than to modern readers. **Friedrich Max Müller** (1823–1900), the distinguished Sanskrit scholar and holder of the first chair of comparative philology at the University of Oxford, describes the work of a linguist as organised by essentially the same research procedures as those that are employed by a naturalist:

> The language which we speak, and the languages that are and that have been spoken in every part of our globe since the first dawn of human life and human thought, supply materials capable of scientific treatment. We can collect them, we can classify them, we can reduce them to their constituent elements, and deduce from them some of the laws that determine their origin, govern their growth, necessitate their decay; we can treat them, in fact, in exactly the same spirit in which the geologist treats his stones and petrifications – nay, in some respects, in the same spirit in which the astronomer treats the stars of heaven or the botanist the flowers of the field. There *is* a Science of Language as there is a science of the earth, its flowers and its stars. (1864 vol. 2: 1 quoted after Harris 2005: 85)

The 19th-century alliance between philology and biology (Harris and Taylor 1989) **was used to the mutual benefit of the two disciplines**. Comparative linguistics, by using naturalistic terms, sought to present itself as a veridical science;

for biologists, and especially Darwin and his followers, the successes of linguistics showed that biology too, instead of pursuing a preoccupation with taxonomic descriptivism *à la* Cuvier, should look for dynamic, developmental principles. Importantly, for Darwin (as for Schleicher and Max Müller), such a direct inspiration was desired because in his view philologists and biologists both dabble in phenomena that are reducible to natural facts:

> Languages, like organic beings, can be classed in groups under groups; and they can be classed either naturally according to descent, or artificially by other characters. Dominant languages and dialects spread widely, and lead to the gradual extinction of other tongues. A language, like a species, when once extinct, never, as Sir C. Lyell remarks, reappears. The same language never has two birth-places. Distinct languages may be crossed or blended together. We see variability in every tongue, and new words are continually cropping up; but as there is a limit to the powers of the memory, single words, like whole languages, gradually become extinct. As Max Müller has well remarked: "A struggle for life is constantly going on amongst the words and grammatical forms in each language. The better, the shorter, the easier forms are constantly gaining the upper hand, and they owe their success to their own inherent virtue." To these more important causes of the survival of certain words, mere novelty and fashion may be added; for there is in the mind of man a strong love for slight changes in all things. The survival or preservation of certain favoured words in the struggle for existence is natural selection. (*The Descent of Man* 1871/1981: 60–61, cf. Harris and Taylor 1989: 169)

5.2.2 Comparative philology and language origins

As we will see, there was a limit to which Max Müller was prepared to accept Darwin's ideas (5.3). But what was the situation of language origins in the first half of the 19th century? It might seem that the genealogical orientation of comparative philology and its strong links with biology should promote the subject. Such, however, was not the case; in fact, it **was the growth in scientific rigour in the newly emerging field that acted as a deterrent to glottogonic speculation**. When the comparative method was being formed, it remained an open question as to whether it would be able to help reconstruct the original language of mankind, and still in 1823 Scottish clergyman Alexander Murray (1775–1813), in *Philosophical History of the European Languages*, laboriously argued that the sounds of all languages derive from 9 protosyllables (cf. Hewes 1976: 486). In this way, language origins that had always remained distinct from pre-scientific linguistic thought could have been incorporated into the developing science of comparative philology. Soon enough, however, philologists understood that the comparative method was incapable of investigating the reconstructive process so far into the past, and language origins started to be viewed with increasing suspicion.

Besides, the intellectual climate of the first half of the 19th century, which was to a large extent dictated by Romantic sentiments, favoured a concern with factors that divide cultures, nations and languages. For example, Schleicher's **polygenetic proposal** (1850) gained great popularity. Rather liberally interpreting the findings of comparative studies, Schleicher posited that since language death is – allegedly – much more frequent than language birth, in the past there had had to be many languages rather than one original language:

> To assume one original universal language is impossible; there are rather many original languages: this is a certain result obtained by the comparative treatment of the languages of the world which have lived till now. Since languages are continually dying out, whilst no new ones practically arise, there must have been originally many more languages than at present. (1860/1874: 2)

Interestingly, the polygenetic hypothesis was adapted from Schleicher, a biologising linguist, for the purposes of biological anthropology by **Ernst Haeckel** (1834–1919), known best for his theory of recapitulation.[40] Based on a selective reading of Darwin, Haeckel maintained that all human races descend from a species of speechless ape, which later gave rise to a number of human species. Some of these became extinct, but the two principal species have survived – "the straight-haired", comprising "Australians", "Malays", "Mongols" and "Mediterraneans", and "the woolly haired", comprising "Papuans", "Hottentots" and "Negroes" (1874).

Haeckel did not appeal to linguistics when putting forward the claim that the latter are more ape-like. In doing so, he adhered to biological anthropology, his area of expertise, arguing for example that Black Africans' toes are more moveable that those of Europeans (Jahoda 1999: 83). However, **evaluative opinions about the superiority of some languages and inferiority of others**, which can be found in Humboldt (see above) and other linguists of note (for example Schleicher), **fuelled racialist or even openly racist views among comparative philologists** (cf. Harpham 2009). One of the most glaring examples of this was set out in *De l'Origine du langage* (1848/1858) by Sanskritist and Semitist **Joseph Ernest Renan** (1823–1892), the author of the Khazar theory, which held that Ashkenazi Jews had not emerged from Israeli stock but were descendants of Turkic Khazars.[41] The extremity of Renan's position saw him replace the

40 The theory of recapitulation, or the biogenetic law, claims that the embryological development recapitulates elements of phylogeny; for criticism see Gould 1977.

41 The reconstruction of Renan's views is mainly based on Bill Ashcroft's article "Language and Race" (2001).

anthropological concept of race with that of "linguistic race" and at the same time advocate a radical form of linguistic relativism:

> Language is thus almost completely substituted for race in the division of humanity into groups, or rather the word 'race' changes meaning. Language, religion, laws, mores brought the race into being much more than blood did. (Renan 1887: 32, Ashcroft 2001: 320)[42]

Like Schleicher, Renan believed in linguistic polygenesis and, furthermore, contended that there had been two episodes of language emergence – one of these had led to the formation of Aryan, or Indo-Germanic, languages; the other, to the formation of Semitic languages. The use of these two separate language types was supposed to instigate different propensities in the minds of their respective users: Aryans (as defined by Renan) comprised the vanguard of civilisation because their languages promoted rational thinking and philosophical reflection, while Semites, whose minds were attracted to religious dogmas, occupied the intellectual backwater (1848/1858: 80–90; cf. Ashcroft, 2001: 319–321). In one of the most bizarre passages of *De l'Origine du langage*, he identifies conjugation as the element that decided the fortunes of these two groups:

> The Aryan language was highly superior, especially as regards verb conjugations. This marvellous instrument, created by the instinct of primitive men, contained the seeds of all the metaphysics that would be developed later on by the genius of the Hindus, the Greeks or the Germans. The Semitic language, on the contrary, got off to the wrong start where verbs are concerned. The greatest mistake this race ever made (because the most irreparable) was to adopt such a niggardly mechanism for treating verbs that the expression of tenses and moods has always been imperfect and awkward in its language. Even today, the Arabs are still struggling against the linguistic error committed by their ancestors ten or fifteen thousand years ago. (Renan 1848/1858: 35)

Despite reservations about language origins among comparative philologists, Renan does not eschew this topic but uses it to further argue about the essential difference between the protolanguages – Aryan and Semitic. He accepts a rather straightforward onomatopoeic scenario, somewhat similar to Herder's proposal. But unlike the German philosopher, Renan does not concern himself with the cognitive prerequisites of language, but focuses on imitative skills, which in his opinion allowed our ancestors to lift language off the ground:

> To describe physical things, imitation or onomatopoeia seems to have constituted the ordinary procedure employed by man to form names. As the human voice combines the

42 Translated by Bill Ashcroft (2001: 320).

qualities of sign and sound, it was natural to use a sound produced by the human voice to stand for as a sign for sounds of nature.[43] (1848/1858: 35)

Later, he notes that Semitic roots tend to be shorter and more onomatopoeic than Aryan ones, which – as might be expected – leads him to conclude that they are also more primitive.

Although relegated to the peripheries of reflection on language, language origins were still capable of generating interest, and such was the case with Renan's speculations, with the racist sentiments attracting a lot of popular attention. A much more critical appraisal of language origins was given in *An Essay on the Origin of Language* (1860) by **Frederic W. Farrar** (1831–1903), an Anglican clergyman, philologist and close friend of Darwin. Specifically targeting Renan, **Farrar criticises these scenarios of language emergence that concentrate on sound-imitative processes and ignore cognitive prerequisites, including combinatorial skills. On his account, onomatopoeia is at best able to explain the formation of a simple lexicon, but language – as he insists – is not just lexicon but also grammar**: "Language may be regarded as the union of words and grammar, of which words are analogous to matter, and grammar to form. … That which originates language, like that which originates thought, is the logical relation which the soul establishes between external things" (1860: 62). Farrar suggests the existence of **two principles that were responsible for the emergence of language**. The first of these, which he designated **the mechanical principle**, concerns sound-imitative abilities which gave rise to the oldest lexical roots – the so-called matter of language. However, concepts referring to abstract designata, in Farrar's opinion, could not have arisen in this way but required the operation of another principle, which he terms **the intellectual faculty of language** (1860: 117), understood as analogical thinking, which mainly depends on metaphors:

We may now state our belief that almost all primitive roots were obtained by Onomatopoeia, i.e., by an imitation with the human voice of the sounds of inanimate nature. Onomatopoeia sufficed to represent the vast majority of physical facts and external phenomena; and nearly all the words requisite for the expression of metaphysical and moral convictions were derived from these onomatopoeic roots by analogy and metaphor. (1860: 62–63)

43 My translation from the French original: "Dans l'expression des choses physiques, l'imitation ou l'onomatopée paraît avoir été le procédé ordinaire employé par l'homme pour former les appellations. La voix humaine étant à la fois signe et son, il était naturel que l'on prît le son de la voix pour signe des sons de la nature".

Farrar, appealing to Rousseau's conception of language, stresses that what allowed humans to develop complex language was a change from a mode of thinking based on sense-data to metaphorical thinking. It is interesting to see, well over a century before the advent of cognitive linguistics, Farrar's claim that metaphorisation was responsible for the emergence of linguistic signs and grammatical rules (1860: 51, cf. Sprinker 1980: 120–122).

Despite growing opposition against glottogonic speculation among 19th-century linguists, **Friedrich Max Müller** decided to devote one chapter of his widely read *Lectures on the Science of Language* to the problem of language origins (Lecture IX. "The Theoretical Stage, And the Origin of Language", 1862: 229–286). At first, Müller approaches the problem in an intriguingly modern way. He contends that it is unlikely that the mystery of language origin will ever be solved completely, and adds that **methods of comparative philology will not allow us to determine what the form of the first language was, nor where it arose** (1862: 288). Hence, he argues that the only viable course of glottogonic investigation is to try to determine how language "*may have been* produced by natural causes"[44] (1862: 287, original italics). After reviewing the available evidence on language acquisition, including cases of the forbidden experiment (1862: 289–292), as well as research on the vocal abilities of non-human animals, he comes to the conclusion that language is a mixture of instinct and learning (1862: 295–296), and that it is "the outward sign" of some mental disposition. Therefore, one should look for its beginnings among human mental abilities, particularly those that are not shared with other animals (1862: 296–297):

> If we want to gain an insight into the faculty of flying, which is a characteristic feature of birds, all we can do is, first, to compare the structure of birds with that of other animals which are devoid of that faculty, and secondly, to examine the conditions under which the act of flying becomes possible. It is the same with speech. Speech is a specific faculty of man. It distinguishes man from all other creatures; and if we wish to acquire more definite ideas as to the real nature of human speech, all we can do is to compare man with those animals that seem to come nearest to him, and thus to try to discover what he shares in common with these animals, and what is peculiar to him and to him alone. (Müller 1862: 290–291)

Max Müller is prepared to ascribe many of the characteristics commonly associated with man to non-human animals: aside from sensation, including the capacity for experiencing pleasure and pain or love and hatred, he credits

44 Max Müller quotes here Dugald Stewart (vol. iii: 35).

animals with memory, volition, a simple system of categorisation (the ability "to compare and to distinguish") and even moral sentiments such as shame and pride (1862: 294–295). When it comes to human-specific qualities, he concludes, referring to Locke, that it is "the faculty of abstraction, but which is better known to us by the homely name of Reason" (1862: 298) that distinguishes animals from humans, and argues that language is the outward sign that man has reason. In this way, Müller's project on language origins completes a circle. To reiterate, in order to understand the origin of language one must identify a mental capacity that is in the possession of man but not of non-human animals (or "beasts", to use his idiom). However, this capacity – **reason – turns out to be indistinguishable from language, whereby the only essential difference between man and beast, which could be referred to when trying to explain the origin of language, is language**.

Although Müller is not against investigating how language "*may have been* produced by natural causes" (see above, original italics), he does not believe that appealing to natural causes will suffice to explain the origin of language. In one of the best-known passages from *Lectures*, he stresses that naturalistic mechanisms, here represented by Darwin's natural selection, fall short of giving a satisfactory account of the emergence of language:

> Where, then, is the difference between brute and man? What is it that man can do, and of which we find no signs, no rudiments, in the whole brute world? I answer without hesitation: the one great barrier between the brute and man is *Language*. Man speaks, and no brute has ever uttered a word. Language is our Rubicon, and no brute will dare to cross it. This is our matter of fact answer to those who speak of development, who think they discover the rudiments at least of all human faculties in apes, and who would fain keep open the possibility that man is only a more favored beast, the triumphant conqueror in the primeval struggle for life. Language is something more palpable than a fold of the brain, or an angle of the skull. It admits of no cavilling, and no process of natural selection will ever distill significant words out of the notes of birds or the cries of beasts. (1862: 296)

Why should then he insist on looking for naturalistic explanations? First of all, the reason is methodological: **the inability to show the natural causes of language, and of reason, could be used as an argument that neither language nor reason is a naturally arisen phenomenon**. On the other hand, naturalistic explanations can be of great value when explaining the development of languages. As shown in the passage above, Max Müller was eager to treat linguistics as a natural science, whereby a linguist should see language as a geologist sees stones, an astronomer, stars, and a botanist, flowers. He was also prepared to acknowledge that natural laws, such as natural selection, operate within languages:

> Hence that superabundance of synonyms in ancient dialects, and hence that *struggle for life* carried on among these words, which led to the destruction of the less strong, the less happy, the less fertile words, and ended in the triumph of *one*, as the recognized and proper name for every object in every language. On a very small scale this process of *natural selection*, or, as it would better be called, *elimination*, may still be watched even in modern languages, that is to say, even in languages so old and full of years as English and French. (1862: 320)

But at the same time, Max Müller remains sceptical about the power of naturalistic explanations to uncover the very origin of language, and his survey of glottogonic scenarios is a testament to this scepticism. He distinguishes two principal positions – the **bow-wow** theory, which holds that language emerged through sound imitation, and the **pooh-pooh** theory, which traces the beginnings of language to emotional interjections (1862: 300). He identifies Herder as the most able defender of bow-wow. He himself criticises it by laying out extensive arguments to demonstrate that only a very small number of lexical roots can potentially be derived in this way and, further, that even those that have a clearly onomatopoeic character show a non-negligible amount of conventionality. Accordingly, sound imitation alone cannot account for the emergence of even onomatopoeic words (1862: 300–306). As regards pooh-pooh, Max Müller mentions Condillac as its principal supporter (although Rousseau better suits the profile) and attacks it in a manner similar to his criticism of bow-wow: first of all, interjections and the lexemes derived from them occupy only the outskirts of the lexicon, and they are more similar to other lexical items than to the actual cries from which they might have been derived (1862: 306–310).

Contrary to later interpretations, it does not seem that he coined the terms "bow-wow" and "pooh-pooh" with comical intent. Rather, he intended them to describe what he took as the defining elements of the sound-imitative and interjectionist view. Posterity often returned to Müller's classificatory proposal and elaborated it (see 5.5); in many of these classificatory attempts, glottogonic proposals were treated with derision, testifying to the decline in prestige that language origins had suffered since the Enlightenment. Max Müller himself fell prey to this trend when his view on the origin of language was designated as the **ding-dong** theory (see section 5.5). Dissatisfied with naturalistic solutions to the problem of language origins, he put forward a quasi-mystical account of the emergence of the basic lexical roots, appealing to Cratyllian sentiments:

> How can sound express thought? How did roots become the signs of general ideas? … I shall try to answer as briefly as possible. The 400 or 500 roots which remain as the constituent elements in different families of language are not interjections, nor are

> they imitations. They are *phonetic types* produced by a power inherent in human nature. They exist, as Plato would say, by nature; though with Plato we should add that, when we say by nature, we mean by the hand of God. There is a law which runs through nearly the whole of nature, that everything which is struck rings. Each substance has its peculiar ring. We can tell the more or less perfect structure of metals by their vibrations, by the answer which they give. Gold rings differently from tin, wood rings differently from stone; and different sounds are produced according to the nature of each percussion. It was the same with man, the most highly organized of nature's works. Man, in his primitive and perfect state, was not only endowed, like the brute, with the power of expressing his sensations by interjections, and his perceptions by onomatopoieia. He possessed likewise the faculty of giving more articulate expression to the rational conceptions of his mind. That faculty was not of his own making. It was an instinct, an instinct of the mind as irresistible as any other instinct. So far as language is the production of that instinct, it belongs to the realm of nature. Man loses his instincts as he ceases to want them. … Instead of deriving language from nine roots, like Dr. Murray, or from *one* root, a feat actually accomplished by a Dr. Schmidt, we must suppose that the first settlement of the radical elements of language was preceded by a period of unrestrained growth, – the spring of speech – to be followed by many an autumn. (1862: 322–323)

Max Müller's case captures the situation of language origins in the middle of the 19th century, when lack of explanation was often competing with religiously inspired mumbo-jumbo.

5.3 Darwin on linguistic change, anthropogenesis and the origin of language

As already noted, the publication of *The Origin of Species* (1859) led to dialogue between comparative philology and the emerging Darwinism. The conceptualisations of language and language-relatedness, as seen for example in Schleicher's *Stammbaumtheorie*, Renan's racialist approach, or Max Müller's naturalistic account of linguistic change, were not just coined in biological terms – these authors literally conceived of languages and language families as biological entities. We have seen that such an attitude was in no small part dictated by philologists' anxiety to present their research as a genuine – i.e. natural – science. Hence, their reactions to *The Origin*, as in the case of Max Müller (see above), were sympathetic, at least as regards the application of the logic of natural selection to the study of linguistic change. **Darwin shared the view that biological and linguistic change are both instances of the same – natural – process. Therefore, he believed that they can be explained by the same mechanism – natural selection**. In the famous passage from *The Origin* given above, he uses language genealogies as an illustration, and by no means a metaphorical one, of the descent-with-modification

principle. The laws of linguistic change discovered by comparative philology are likewise summoned by him to show how natural selection operates, as in another passage given above, this time from *The Descent of Man*, where Darwin directly refers to Max Müller. **These statements are very important for reconstructing Darwin's thought, because they clearly demonstrate that he did not limit his theory to biological evolution in the strict sense but considered its wider application. In this sense, Darwin should not only be regarded as the first Darwinist but also as the first universal Darwinist**, as explained much later by Daniel Dennett (1995).

The Origin deeply polarised the intellectual scene in the mid-19th century, and one of the key axes of this polarisation concerned the problem of anthropogenesis. Not to provoke conservative readers, Darwin decided to omit any mention of human evolutionary origins in *The Origin of Species* – he laid out his views on the subject only 11 years later in *The Descent of Man, and Selection in Relation to Sex* (1871; see below). However, it was clear that the mechanism of natural selection, as explained in *The Origin*, was universal, and its operation pertained to any species, man included. In the debate incited by *The Origin*, Darwin had a number of prominent supporters, such as geologist Charles Lyell (1797–1875), the author of the uniformitarian principle, or Joseph D. Hooker (1817–1911), one of the greatest British botanists and explorers. But his most ardent advocate was **Thomas Huxley** (1825–1895), whose unfaltering support for *The Origin* earned him the nickname "Darwin's Bulldog". Huxley, a comparative biologist himself, wrote a series of articles – published jointly as *On Our Knowledge of the Causes of the Phenomena of Organic Nature* (1862) – supporting Darwin's theory and fiercely attacking its opponents, many of whom were affiliated with the Anglican Church. Later, in *Evidence as to Man's Place in Nature* (1863), Huxley investigated the problem of man's uniqueness, which he expressed in taxonomic terms by the question: "[I]s man so different from any of these apes that he must form an order by himself?" (1863: 85). To answer this question, he presents detailed comparative evidence concerning humans and other primates – mostly anatomical, e.g. concerning the structure of limbs, vertebrae, crania or the brain, but also embryological and ethological – and comes to the conclusion that:

> The structural differences between Man and the Man-like apes certainly justify our regarding him as constituting a family apart from them; though, inasmuch as he differs less from them than they do from other families of the same order, there can be no justification for placing him in a distinct order … (Huxley 1863: 124).

Following Linnaeus, he then locates man in the order of *primates*, but reserves for him a separate family – that of *Anthropini* (1863: 124). In the conclusion of

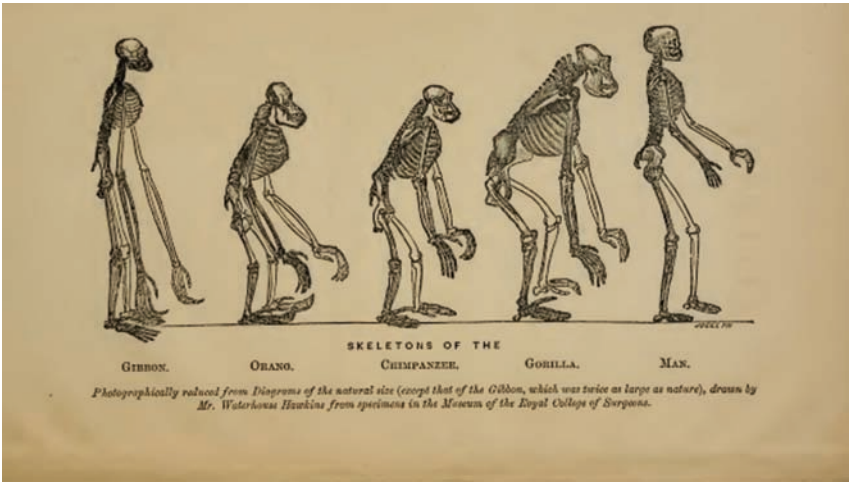
these comparative observations, Huxley stresses the gradual nature of distinctions between life forms, which he finds particularly striking in primates:

> Perhaps no order of mammals presents us with so extraordinary a series of gradations as this – leading us insensibly from the crown and summit of the animal creation down to creatures, from which there is but a step, as it seems, to the lowest, smallest, and least intelligent of the placental Mammalia. It is as if nature herself had foreseen the arrogance of man, and with Roman severity had provided that his intellect, by its very triumphs, should call into prominence the slaves, admonishing the conqueror that he is but dust. (1863: 124–125)

This leads him to the conclusion that **Darwin's concepts of natural selection and descent with modification best explain the origin of our species**, and that **both our anatomical and psychological characteristics are testament to our ape ancestry**:

> I have endeavoured to show that no absolute structural line of demarcation, wider than that between the animals which immediately succeed us in the scale, can be drawn between the animal world and ourselves; and I may add the expression of my belief that the attempt to draw a physical distinction is equally futile, and that even the highest faculties of feeling and of intellect begin to germinate in lower forms of life. (1863: 124–125)

Fig. 10: The frontispiece from Evidence as to Man's Place in Nature *(1863), where Huxley argued for the ape ancestry of man*



Source: https://archive.org/details/evidenceastomans00huxl (DOA: 15 Mar 2017.)

If the Darwinian camp mainly grouped people of science, the opposite one was much more heterogeneous.[45] It contained biblical literalists, but also the intellectual elite of religious organisations, such as the Church of England. Samuel Wilberforce (1805–1873), a bishop of the Anglican Church and one of the most influential public speakers of the Victorian era, attacked Darwin on many fronts but was particularly appalled by the supposition that humans and apes may have descended from a common ancestor. Another man of the church, Rev. Adam Sedgwick (1785–1873), who was also a prominent geologist and Darwin's former instructor, highlighted and criticised a more general consequence of natural selection – that it effectively denies the divine providence and ultimate causation on which Christian theology is founded.

The Origin was also criticised on purely scientific grounds. For example, Richard Owen (1804–1892), a star of 19th-century comparative anatomy and palaeontology, emphasised the conjectural nature of Darwin's proposal. Out of the early reactions probably the most intriguing and scientifically sound came from biologist St. George Mivart (1827–1900), initially an enthusiastic supporter of Darwin, who became increasingly suspicious of the gradualistic model of evolution. In his 1871 book *On the Genesis of Species* Mivart argued that there is no evidence for intermediate stages between ancestor and descendant forms. Darwin took Mivart's criticism very seriously and to this day the problem of incipient forms remains a weakness in the Darwinian account, as highlighted by proponents of the model of punctuated equilibria (see for example Gould and Eldredge 1972). Despite reservations, Mivart contended that evolution through natural selection was the best model for explaining the variability of life forms. There was, however, a limit to which he was prepared to accept the operation of natural selection and this limit was the origin of the human mind. A very similar position was taken by Alfred Wallace (1823–1913), the co-founder of the theory of natural selection, who in *Darwinism: An Exposition of the Theory of Natural Selection with Some of Its Applications* (1889) claimed that the theory is incapable of accounting for the emergence of higher cognitive functions in humans.[46]

Such **exclusivism** – the view that excluded some areas from the operation of natural selection (mainly related to human moral and intellectual

45 This account of the critical reception of *The Origin* is largely based on Lovtrup's *Darwinism: The Refutation of a Myth* (1987).

46 Initially, Wallace did not have such reservations; for example, when in the article from 1864 "The Origin of Human Races", he argued that the hominin evolution proceeded in two stages – first, the development of bipedalism, and then development of the brain (and in relation to it, of intelligence).

qualities) – became popular among mild supporters of Darwinism. It is not difficult to identify Max Müller as such a proponent, with his thesis of "language as Rubicon that no brute will dare to cross" and simultaneous acceptance of natural selection as a mechanism of language change (see above). Exclusivism was quite common among **the Neogrammarians**, who **appreciated the potential of Darwinian theory to explain the orderliness of linguistic change but at the same time found it difficult to accept that it could successfully account for the very origin of such a complex system as language** (cf. Aronoff 2017). But *The Origin* did gain more enthusiastic and unconditional support from some representatives of comparative philology, the most notable of whom were probably Albert Schleicher and William Farrar. However, even they did not attempt to use Darwin's theory to explain the origin of language; although it should be stressed that neither Schleicher nor Farrar denied that the mechanism of natural selection could offer such an explanation. In 1863, the German linguist wrote the pamphlet *Darwinism Tested by the Science of Language* (*Die Darwinsche Theorie und die Sprachwissenschaft*), addressed to his friend Ernst Haeckel (see above). Schleicher, using a strongly naturalistic conceptualisation of language (see above), argued that Darwin's theory is *in toto* applicable to the study of linguistic change and furthermore that the findings of comparative philology corroborate its predictions:

> Languages are organisms of nature; they have never been directed by the will of man; they rose, and developed themselves according to definite laws; they grew old, and died out. They, too, are subject to that series of phenomena which we embrace under the name of "life." The science of language is consequently a natural science; its method is generally altogether the same as that of any other natural science.
> (1863: 20–21) …
>
> The rules now, which Darwin lays down with regard to the species of animals and plants, are equally applicable to the organisms of languages, that is to say, as far as the main features are concerned. (1863: 30 quoted after Aronoff 2017: 445)

Although Schleicher is prepared to give a lot of supporting linguistic detail, his claims do not go beyond what Darwin himself stated about language genealogies in *The Origin* and what later Max Müller said about the operation of natural selection in the evolution of languages (see above). Despite his enthusiastic tone, Schleicher is completely silent about the possibility of using the theory of natural selection to explain the emergence of language. In fact, the way he describes Darwin's position suggests that he may have misunderstood the logic of natural selection as a Lamarckian process (Richards 2008: 125–126).

William Farrar seemed to have a much better grasp of the theory of natural selection but did not contribute much to the problem of the evolutionary beginnings of language. His article "Philology and Darwinism", published in one of the first issues of *Nature* (1870), aimed to introduce English readers to Schleicher's text and to solidify an alliance between Darwinism and comparative philology. Farrar agrees with Schleicher's contention that **comparative philology provides a more persuasive illustration of Darwinian principles than biology, as it deals with better documented data**: "… the Darwinian diagram is to a great extent ideal and hypothetical; while the table of languages is merely an expression of indisputable discoveries" (1870: 528). More original is an observation regarding differences in the evolution of biological and linguistic entities, for example about the extinction of species, on the one hand, and the death of languages, on the other (1870: 528). At this juncture, Farrar suggests, more in the spirit of his onomatopoeic hypothesis (see above) than Darwinian theory, that original language consisted of speech-cells – monosyllabic lexemes, analogous to biological cells, whose multiplication and diversification brought forth the emergence of the "bodies" of various languages:

> Such roots may without fancy be called speech-cells, in which the rudiments of all special organs are implicitly involved, but in which they are as little developed as in the germinal vesicles which represent the earliest forms of animal and vegetable life. There may have been multitudes of such sound-cells, as it were, from which different families of language have sprung by special lines of development, just as, according to the Darwinian hypothesis, many primordial cells, presenting a close similarity, may have been the earliest rudiments of all living organisms. (1870: 529)

Farrar's proposal is intriguingly prescient of Richard Dawkins's memetics (1976), but remains underdeveloped; most importantly, it fails to specify how Darwinian principles account for the appearance of these protolinguistic units and their transition into full-bodied languages.

The task of elaborating the first Darwinian account of the origin of language fell on the shoulders of Darwin himself. This was done in the 1871 book *The Descent of Man, and Selection in Relation to Sex*, where he decided to show – in opposition to the exclusivists – how both the human body and mental powers could have arisen through natural selection. The material that did not enter *The Descent* became the basis for the third part of Darwin's "trilogy" – *The Expression of the Emotions in Man and Animals*, which appeared in the following year and was specifically focused on the adaptive function of emotional expression. The principal argumentation strategy adopted by Darwin in *The Descent* is to estimate the scale of differences between man and animals:

> He who wishes to decide whether man is the modified descendant of some pre-existing form, would probably first enquire whether man varies, however slightly, in bodily structure and in mental faculties; and if so, whether the variations are transmitted to his offspring in accordance with the laws which prevail with the lower animals (1871/1981: 9).

The survey of bodily characteristics, including those that pertain to the embryonic development (Chapter I) **as well as mental ones, leads Darwin to the conclusion that there is no qualitative divide between humans and non-human animals**, and hence "that man is the co-descendant with other species of some ancient, lower, and extinct form" (1871/1981: 3). Regarding mental characteristics (Chapter II), Darwin seeks to demonstrate that humans and animals share basic emotional, cognitive and motivational capacities – starting from the simple emotive reactions of pleasure and pain, moving through higher emotions such as love or jealousy, until finally arriving at learning strategies and elements of complex cognition in the form of, for example, attention, imagination or reason. Darwin also suggests that animals are endowed with elements or precursors of the capacities that in his time were considered exemplars of uniquely human attributes, such as self-awareness, individuality or abstract thinking. For example, the animal counterpart of religious devotion is illustrated with "the deep love of a dog for his master, associated with complete submission, some fear, and perhaps other feelings" (1871/1981: 68). A separate section is devoted to the evolutionary underpinnings of morality (Chapter III), which the author of *The Descent* traces to man's intense sociability. A motif running throughout the work is intelligence, more often referred to as "reason" and understood in contradistinction to instinct as "deliberation before taking an action" (1871/1981: 46). Darwin is determined to show that **intelligence** so construed **is a biological adaptation**, whose development had far-reaching consequences for the evolution of other mental faculties, as well as for our lifestyle and moral sentiments:

> With increased experience and reason, man perceives the more remote consequences of his actions, and the self-regarding virtues, such as temperance, chastity, etc., which during early times are, as we have before seen, utterly disregarded, come to be highly esteemed or even held sacred. I need not, however, repeat what I have said on this head in the third chapter. Ultimately a highly complex sentiment, having its first origin in the social instincts, largely guided by the approbation of our fellow-men, ruled by reason, self-interest, and in later times by deep religious feelings, confirmed by instruction and habit, all combined, constitute our moral sense or conscience. (1871/1981: 165–166)

It is also in this context that he introduces the problem of language origin. Darwin stresses that although non-human animals are able to use even complex communication systems or improve them, for example, under the condition of domestication (1871/1981: 53–54), **only humans use "articulate speech"**. This

is distinct from emotional cries, which humans share with animals, in that articulate speech is volitionally controlled, semantic (i.e. connects definite sounds with definite ideas) and its evolution primarily depended on the development of cognitive, and not articulatory, faculties:

> Articulate language is … peculiar to man; but he uses in common with the lower animals inarticulate cries to express his meaning, aided by gestures and the movements of the muscles of the face. This especially holds good with the more simple and vivid feelings, which are but little connected with our higher intelligence. Our cries of pain, fear, surprise, anger, together with their appropriate actions, and the murmur of a mother to her beloved child, are more expressive than any words. It is not the mere power of articulation that distinguishes man from other animals, for as every one knows, parrots can talk; but it is his large power of connecting definite sounds with definite ideas; and this obviously depends on the development of the mental faculties. (1871/1981: 54)

Looking for animal behaviours that come closest to language, Darwin proposes that, at least regarding the ontogenetic development, **birdsong** seems the most similar because, **like language, it is naturally arisen, its acquisition depends on an inborn propensity but also requires learning from appropriate tutors, and its full manifestation is preceded by vocal experimentation**. Dwelling on this famous analogy between song and language, he further notes the existence of dialectical differences in many populations of songbirds:

> [L]anguage is an art, like brewing or baking; but writing would have been a much more appropriate simile. It certainly is not a true instinct, as every language has to be learnt. It differs, however, widely from all ordinary arts, for man has an instinctive tendency to speak, as we see in the babble of our young children; whilst no child has an instinctive tendency to brew, bake, or write. Moreover, no philologist now supposes that any language has been deliberately invented; each has been slowly and unconsciously developed by many steps. The sounds uttered by birds offer in several respects the nearest analogy to language, for all the members of the same species utter the same instinctive cries expressive of their emotions; and all the kinds that have the power of singing exert this power instinctively; but the actual song, and even the call-notes, are learnt from their parents or foster-parents. These sounds … are no more innate than language is in man. The first attempts to sing may be compared to the imperfect endeavour in a child to babble. The young males continue practising, or, as the bird-catchers say, recording, for ten or eleven months. Their first essays show hardly a rudiment of the future song; but as they grow older we can perceive what they are aiming at; and at last they are said "to sing their song round." Nestlings which have learnt the song of a distinct species, as with the canary-birds educated in the Tyrol, teach and transmit their new song to their offspring. The slight natural differences of song in the same species inhabiting different districts may be appositely compared … "to provincial dialects;" and the songs of allied, though distinct species may be com- pared with the languages of distinct races of man. I have given the foregoing details to shew that an instinctive tendency to acquire an art is not a peculiarity confined to man. (1871/1981: 54)

The crucial moment in Darwin's account is when he uses descent with modification not just to explain linguistic change, as many comparative linguists did, but also the problem of language origin. He suggests that the precursor of language employed a number of semiotic resources but was dominated by "instinctive cries". He also identifies **sexual selection** as the mechanism responsible for the development of cries into more complex forms of quasi-musical expression and it was to this problem that he devotes the latter part of *The Descent* (Chapters XVII–XXI). For him, sexual selection is a mechanism somewhat distinct from natural selection[47] and concerns **reproductive success dependent on mate choice, mainly through male competition and female choice**. The fact that Darwin points to sexual selection as the mechanism responsible for the beginnings of language sheds light on the functionality and form of this hypothetical communication system. He hypothesises that its musical form was particularly useful in intrasexual competition, but also in intersexual advertisement and bond-formation:

> With respect to the origin of articulate language, … I cannot doubt that language owes its origin to the imitation and modification, aided by signs and gestures, of various natural sounds, the voices of other animals, and man's own instinctive cries. When we treat of sexual selection we shall see that primeval man, or rather some early progenitor of man, probably used his voice largely, as does one of the gibbon-apes at the present day, in producing true musical cadences, that is in singing; we may conclude from a widely-spread analogy that this power would have been especially exerted during the courtship of the sexes, serving to express various emotions, as love, jealousy, triumph, and serving as a challenge to their rivals. The imitation by articulate sounds of musical cries might have given rise to words expressive of various complex emotions. … As monkeys certainly understand much that is said to them by man, and as in a state of nature they utter signal-cries of danger to their fellows, it does not appear altogether incredible, that some unusually wise ape-like animal should have thought of imitating the growl of a beast of prey, so as to indicate to his fellow monkeys the nature of the expected danger. And this would have been a first step in the formation of a language. (1871/1981: 56–57)

At this stage, natural selection favoured these individuals that had better articulatory capabilities, and in the course of time the articulatory organs became even better adapted to the production of vocalisations. More importantly, the emerging language co-evolved with the brain, which brought about the ability to build long trains of complex thought:

> As the voice was used more and more, the vocal organs would have been strengthened and perfected through the principle of the inherited effects of use; and this would have

47 In modern evolutionism, sexual selection is often considered as a sub-type of natural selection (see Żywiczyński and Wacewicz 2015: 320).

> reacted on the power of speech. But the relation between the continued use of language and the development of the brain has no doubt been far more important. The mental powers in some early progenitor of man must have been more highly developed than in any existing ape, before even the most imperfect form of speech could have come into use; but we may confidently believe that the continued use and advancement of this power would have reacted on the mind by enabling and encouraging it to carry on long trains of thought. A long and complex train of thought can no more be carried on without the aid of words, whether spoken or silent, than a long calculation without the use of figures or algebra. (1871/1981: 57)

Later, Darwin, appealing to authorities such as Max Müller, describes how descent with modification could have led to the formation of distinct languages, even those that appear the most regular and complex. Thus, in his opinion, the mechanisms of sexual and natural selection suffice to explain both the origin of language and its further diversification without having to resort to supernatural forces:

> I conclude that the extremely complex and regular construction of many barbarous languages, is no proof that they owe their origin to a special act of creation. Nor, as we have seen, does the faculty of articulate speech in itself offer any insuperable objection to the belief that man has been developed from some lower form. (1871/1981: 62)

Darwin's account in *The Descent* is the first language origin scenario that uses Darwinian theory to explain the emergence and subsequent development of language. It illustrates the fact that in contrast to the comparative philologists of the day (including his staunch supporters such as Schleicher and Farrar), Darwin was convinced that his theory is capable of giving a scientifically sound account of how language came into being as an integral component of human evolutionary history.

5.4 How language origins became a taboo: from bans on glottogonic speculation to de Saussure

What was the reception of *The Descent of Man*? It reflected the line of division into the Darwinian and anti-Darwinian camps, but as Darwin himself expected, the reaction was now much more hysterical from the one he had received 10 years earlier after the publication of *The Origin*. Unsurprisingly, many such voices came from people holding exclusivist views. For example, Mivart, known for his very well-argued critique of *The Origin* (see above), described Darwin's second book as an utter intellectual failure and worried about "the injurious effects which his work is likely to produce on too many of our half-educated classes" (1871: 89–90). How was Darwin's account of the origin of language received by the linguists of the day? It seems to have gone completely unnoticed.

This context serves well to describe how language origins became a taboo topic for linguistics. The 1860s and 1870s saw a couple of edicts issued by linguistic societies that forbade speculation about language origins. The first to appear was the famous 1866 statute of Société de Linguistique de Paris, whose Article 2 read: "The Society does not admit any communications about the origin of language or the creation of a universal language" ("La Société n'admet aucune communication concernant, soit l'origine du langage – soit la création d'une langue universelle"). The same decision was taken by the Philological Society of London a few years later, and its President, Alexander J. Ellis, motivated it in the following:

> I conceive such questions [concerning the origin of language] to be out of the field of philology proper. We shall do more by tracing the historical growth of one single work-a-day tongue, than by filling waste-paper baskets with reams of paper covered with speculations on the origin of all tongues. (1973 quoted after Sprinker 1980: 113).

In the modern SLE literature, these bans – and particularly the Parisian one – are interpreted as directed against the Darwinian account of the origin of language (e.g. Scott-Phillips 2010; Gong et al. 2014). Such a diagnosis is often accompanied by more (Christiansen and Kirby 2003a) or less (Gong et al. 2014) dramatic statements that the bans, for many decades, prevented the development of an evolutionary perspective in linguistics and, consequently, impeded serious research on language origins. These statements are incorrect on a number of grounds.

First of all, the bans were not directed at Darwinian accounts because such accounts did not exist at the time. Speaking more precisely, the only Darwinian account that was available was Darwin's own proposal from *The Descent* (1871), which appeared after the Parisian edict had been issued and roughly at the time of the London one, but – as already noted – it did not attract much attention from linguistic circles. The express cause of introducing the famous Parisian ban was the strong rivalry between the philologically orientated Société de Linguistique and the naturalistically orientated Société d'Anthropologie de Paris established by the pioneer of neurolinguistics, Pierre Broca (cf. Yamauchi et al. 2012). The ban was openly flouted by the Society's members and was rescinded after 10 years, while the London ban was construed more as a statement than a regulation, and nobody ever seriously considered enforcing it (cf. Sampson 1980: 13–33). The institutional effect of the bans was then negligible; however, the intellectual climate which occasioned them is much more important for understating the growing problem that many linguists in the mid-19th century had with language origins. **The spectacular successes of comparative philology contrasted with the scientific sterility of glottogonic speculation, which was**

seen more and more as a diversion from genuine research. Symptomatic here is the opinion of the distinguished Sanskritist William D. Whitney:

> No theme in linguistic science is more often and more voluminously treated than this, and by scholars of every grade and tendency; nor any, it may be added, with less profitable result in proportion to the labor expended; the greater part of what is said and written upon it is mere windy talk, the assertion of subjective views which commend themselves to no mind save the one that produces them, and which are apt to be offered with a confidence, and defended with a tenacity, that are in inverse ratio to their acceptableness. This has given the whole question a bad repute among sober-minded philologists (1872: 279; cf. Jespersen 1922: 412)

Writing about the connection between linguistic science and evolutionism, he says there is none: he contends that the former is concerned only with historical development; the latter only with biological processes (which stands in contrast with, e.g. Darwin's universalistic claims, 5.3; Whitney 1874). In a very modern way (see 6.6), Whitney states that what the evolutionary theory could shed light on, if it is confirmed, are the biological prerequisites of languages, such as the human vocal ability, memory or abstract thinking (Whitney 1874).

The problem with 19th-century glottogony, as practiced by Murray, Max Müller or Farrar, was that it often appealed to methods of historical reconstruction. For Whitney and many others, such "philological glottogony" was not only theoretically futile but also detrimental to the position of linguistics, which was then struggling to become an autonomous branch of science. The Paris and London bans may have been short-lived, but the disillusionment with language origins that had spawned them became a prevalent attitude in linguistics for many decades.

To revert to Darwinism, **the glottogonic taboo did not concern the popularity of Darwinian ideas among comparative philologists**, who – as already noted – saw them as a promising foundation for identifying a general mechanism of language change. It could then be said then that the glottogonic taboo did not imply a glossogenetic taboo. This attitude persisted until the crisis of comparative philology led to the rise in prominence of Ferdinand de Saussure's (1857–1913) conception of language and linguistic research. A historical linguist himself, de Saussure in his posthumously published *Course in General Linguistics* (*Cours de linguistique générale*, 1916) presented a set of views that revolutionised linguistics and set its course away from not only evolutionary but even historical concerns.[48] Regarding the theory of language,

48 *The Course* was edited and published by de Saussure's students – Charles Bally and Albert Sechehaye. Hence, it is difficult to determine the extent to which the work

he replaced the organic conception of language, which underlined much of 19th-century comparative philology and whose most emphatic expression was probably Schleicher's *Stammbaumtheorie*, with a conception of language as social product – "a product of the collective mind of linguistic groups" (Saussure 1916/1959: 5; cf. Aronoff 2017: 449), and later:

> But what is language [*langue*]? It is not to be confused with human speech [*langage*], of which it is only a definite part, though certainly an essential one. It is both a social product of the faculty of speech and a collection of necessary conventions that have been adopted by a social body to permit individuals to exercise that faculty. (Saussure 1916/1959: 9)

De Saussure concludes that only language (i.e. *langue*) defined as a social product possesses essentially linguistic characteristics and as such is the only proper object of linguistic research (Saussure 1916/1959: 9). This fundamental change leads to another major shift. Comparative philologists, particularly these affiliated to the Neogrammarian movement, believed that laws of linguistic change are unexceptable, and these sentiments led them to look with hope at the Darwinian mechanisms as a deeper explanatory principle of these laws. Working on these premises, de Saussure himself advanced the laryngeal theory (1879; see above), which was later confirmed by the discovery and analysis of Hittite texts (Kuryłowicz 1935). But in *The Course*, he abandons what he now considers an unfounded belief in the *necessary* for the qualities that fit better with the social conception of language – the *arbitrary* and the *conventional*:

> But to say that language is a product of social forces does not suffice to show clearly that it is unfree; remembering that it is always the heritage of the preceding period, we must add that these social forces are linked with time. Language is checked not only by the weight of the collectivity but also by time. These two are inseparable. At every moment solidarity with the past checks freedom of choice. We say *man* and *dog*. This does not prevent the existence in the total phenomenon of a bond between the two antithetical forces—arbitrary convention by virtue of which choice is free and time which causes choice to be fixed. Because the sign is arbitrary, it follows no law other than that of tradition, and because it is based on tradition, it is arbitrary. (Saussure 1916/1959: 74)

De Saussure is emphatic that comparative philology was but "an infant science" (1916/1959: 4), because it was too pre-occupied with comparison and hence "failed to seek out the nature of its object of study", i.e. the nature of language (1916/1959: 4). One of the principal reasons preventing such reflection was its treatment of languages as natural objects, which – similar to plants – all

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reflects de Saussure's original views and to which Bally and Sechehaye's interpretation thereof (see Harris 2001).

underwent the same developmental stages. In de Saussure's mind, this view veiled the actual nature of languages as "the collective mind of linguistic groups" (1916/1959: 5). "The true science of linguistics" must reject naturalism and instead take as its basis this fundamental insight. De Saussure's account focuses on the two types of linguistic study – the study of how these arbitrary conventions change over time and the study of their configuration as it is at a particular moment in time. However, the former – given the volatile nature of social processes (at least, as envisaged by de Saussure) – can no longer be studied with the use of Darwinian concepts (such as descent with modification) and as a result its attractiveness to researchers is dramatically reduced when compared to what it was in the Neogrammarian framework. This takes us to de Saussure's famous distinction into synchronic and diachronic modes of language analysis: the former is concerned with a description of language (*langue*) at a particular moment in its development; the diachronic, unlike comparative philology, is no longer concerned with laws of linguistic change but its main task is to relate successive states of language and record events that brought about changes from one state to another (Saussure 1916/1959: 90, cf. Aronoff 2017: 450). Since only synchronic description gives an insight into the true substance of language (i.e. a configuration of linguistic conventions), it is primary both in terms of the order of research actions and in terms of importance[49]:

> Everywhere the opposition between diachrony and synchrony stands out.
>
> For instance—and to begin with the most apparent fact—they are not of equal importance. Here it is evident that the synchronic viewpoint predominates, for it is the true and only reality to the community of speakers …. The same is true of the linguist: if he takes the diachronic perspective, he no longer observes language but rather a series of events that modify it. (Saussure 1916/1959: 90–100)

It is easy to see that diachrony is here reduced to synchrony – instead of having a dynamic character, it is reduced to a set of static points placed next to each other on the axis of time, "an infinite number of photographs, taken at different times" as the author of *The Course* himself says (1916/1959: 212, Aronoff 2017: 450). This leads de Saussure to conclude that questions about the origin of language but also about general, evolutionary laws of language change are scientifically unimportant:

49 It should be stressed that de Saussure does not resign from studying linguistic change; for example he devotes Chapter 2 in Part III to the problem of phonetic changes (Saussure 1916/1959: 143–152). But, as explained above, de Sauusure conceptualises it differently than it used to be understood in comparative philology.

> No society, in fact, knows or has ever known language other than as a product inherited from preceding generations, and one to be accepted as such. That is why the question of the origin of speech is not so important as it is generally assumed to be. The question is not even worth asking; the only real object of linguistics is the normal, regular life of an existing idiom. A particular language-state is always the product of historical forces, and these forces explain why the sign is unchangeable, i.e. why it resists any arbitrary substitution. (1916/1959: 72)

It was not the 19-century bans issued by linguistic organisations that ousted evolutionary thinking from linguistics, but rather the dominance of de Saussure's vision of the discipline, which did not admit that evolutionary change exists in language (cf. Aronoff 2017: 450). In this way, the glottogonic taboo of the 19th century met with the glossogenetic taboo of the 20th century, and together they pushed language origins and evolutionism out of the range of topics worthy of scientific pursuit and often seen as endangering such pursuit. This attitude is vividly captured by the contemporary German linguist Gerhard Doerfer, who refers to linguistic reconstructions in the following way:

> This is a large, murky clearing, lit only with narrow streams of light coming from above. The forest invites us to rest and play, but just outside it there is a dense wilderness of glottogony, brimming with heavy silence, eternal darkness and lush vegetation, which makes it easy to lose one's way. We must not never enter this dark forest. (quoted after Kuckenburg 2006).[50]

5.5 Jespersen's plea against the taboo

Of course, there were also linguists who were unafraid to enter the dense wilderness of glottogony. For example, Edward Sapir did not avoid the problems of language origin and its early development, writing in this context about sound-symbolism, orofacial gestures (see below) and Herder's glottogonic conception, to the discussion of which he devoted a complete monograph (1907). But probably the most interesting and certainly the most complete proposal that came from within linguistics during this period appeared in the book *Language: Its Nature, Development, and Origin* (1922) by Danish scholar **Otto Jespersen** (1860–1943). Jespersen's work on language origins had a truly linguistic character as it reflected the author's views on language and linguistic theory. Given the topical independence of linguistic theory and language origins, Jespersen's case shows how the former can inform the latter, and in this way his proposal is

50 Translated from the Polish translation of the German original.

prescient of some trends in the modern science of language evolution, such as *evolutionary linguistics* (see 6.7).

In his book, Jespersen devoted the last chapter "The Origin of Speech" (Chapter XXI) to the problem. Aware of the taboo status of language origins in linguistics, he nevertheless considered the subject too important to be ignored: "linguistic science cannot refrain for ever from asking about the whence (and about the whither) of linguistic evolution" (1922: 412). Jespersen sets out with a survey of the existing views on the origin of language, using Max Müller's classification (see above). Apart from *bow-wow* and *pooh-pooh*, he identifies Max Müller's own position as *ding-dong* (see 5.2.2) and adds *yo-he-ho*, which is ascribed to German philosopher of language Ludwig Noiré (1829–1889) and explained as the view that traces back the beginnings of language to vocalisations coordinating collective labour. The main problem that Jespersen finds with these views is their method – designated by him as speculative and deductive (1922: 416), whereby "those who have written about our subject have conjured up in their imagination a primitive era, and then asked themselves: How would it be possible for men or manlike beings, hitherto unfurnished with speech, to acquire speech as a means of communication of thought?" (1922: 413). Jespersen suggests a different – inductive – method, which starts with contemporary languages and then, by using different but mainly linguistic types of evidence, tries to reconstruct their developmental trajectory to forms that are no longer language but from which language must have originated:

> [I]f the change witnessed in the evolution of modern speech out of older forms of speech is thus on a larger scale projected back into the childhood of mankind, and if by this process we arrive finally at uttered sounds of such a description that they can no longer be called a real language, but something antecedent to language – why, then the problem will have been solved … (1922: 418)

It should be stressed that Jespersen does not hope to reconstruct the original language; rather, he wants to discover general laws governing language change and to use these to describe the evolutionary dynamics of language emergence (1922: 418). In this respect, **his project is similar to what is usually referred to as evolutionary linguistics in the modern science of language evolution** (see 6.7).

Jespersen mentions a number of man's anatomical and behavioural characteristics that might have promoted the development of language, such as bipedalism, sexual life unrestricted to a specific breeding season, or intense family and social life (1922: 413), but – as noted – the bulk of his arguments are of a linguistic nature. With respect to these, Jespersen enumerates three sources of evidence: language acquisition processes, "the language of primitive races"

and developmental regularities inferred from the history of languages, the last of which constitutes the main source of evidence (1922: 416).

Jespersen argues that the development of languages is guided by the principle "to lessen the muscular effort" (1922: 418). Accordingly, he proposes that earlier languages had phonemes that are more difficult to produce than those in modern languages (e.g. those that use the ingressive airstream). Furthermore, earlier languages made frequent use of tones and robust intonation patterns, which made them similar to song: "These facts and considerations all point to the conclusion that **there once was a time when all speech was song, or rather when these two actions were not yet differentiated**" (1922: 420). The morphological organisation of these early languages was similar to that of modern synthetic languages, but the delimitation of inflectional morphemes was much more problematic than today, because they accumulated many more functions (1922: 422) and their use involved "a far greater number of irregularities, exceptions, anomalies, than in modern ones" (1922: 425). This leads Jespersen to the problem of units, such as morphemes, which – as he stresses – were less distinguishable in early languages than they are in modern ones (1922: 422). In fact, what Jespersen seems to posit is holistic protolanguage, with utterance-like units referring to complete events (Wray 1998, Mithen 2005, Żywiczyński et al. 2017). The author of *Language* notes, using the upper script for emphasis:

> THE EVOLUTION OF LANGUAGE SHOWS A PROGRESSIVE TENDENCY FROM INSEPARABLE IRREGULAR CONGLOMERATIONS TO FREELY AND REGULARLY COMBINABLE SHORT ELEMENTS (1922: 429).

He further claims that these conglomerations first stood for unique events; then, they were generalised to situation types, and finally their components were analysed into event-roles, quasi-lexical items and affixes (1922: 440). Among the processes responsible for these changes, Jespersen enumerates metaphorisation and secretion, a type of grammaticalisation (Heine and Kuteva 2007) that consists in only parts of words acquiring a grammatical function (1922: 384–386).

At the earliest stage of evolution that Jespersen describes, **the budding protolanguage had not yet acquired any referential quality and served the purposes of vocal play and expression of emotions, such as love** (1922: 433). Unaware of how tough the Pleistocene reality must have been for our ancestors, Jespersen paints an idyllic picture of these early days of humanity:

> No period has seen less taciturn people than the first framers of speech; primitive speakers were not reticent and reserved beings, but youthful men and women babbling merrily on, without being so very particular about the meaning of each word. They did not narrowly weigh every syllable – what were a couple of syllables more or less to them? They chattered

> away for the mere pleasure of chattering, resembling therein many a mother of our own time, who will chatter away to baby without measuring her words or looking too closely into the meaning of each; nay, who is not a bit troubled by the consideration that the little deary does not understand a single word of her affectionate eloquence. But primitive speech – and we return here to an idea thrown out above – still more resembles the speech of little baby himself, before he begins to frame his own language after the pattern of the grownups; the language of our remote forefathers was like that ceaseless humming and crooning with which no thoughts are as yet connected, which merely amuses and delights the little one. Language originated as play, and the organs of speech were first trained in this singing sport of idle hours. (1922: 432–433)

The point that Jespersen stresses again and again is that **this form of communication was not used to transfer thoughts** (1922: 433, 437), but – as the above passage shows – to engage others in ludic entertainment and mutual display of emotions. Jespersen devotes some space to the role of song in traditional societies (1922: 432–437) and concludes that the original language had a musical form (which accords with his view on how the linguistic sound-system developed; see above):

> Men sang out their feelings long before they were able to speak their thoughts. But of course we must not imagine that "singing" means exactly the same thing here as in a modern concert hall. When we say that speech originated in song, what we mean is merely that our comparatively monotonous spoken language and our highly developed vocal music are differentiations of primitive utterances, which had more in them of the latter than of the former. (Jespersen 1922: 436)

Although Darwin and Jespersen approach the problem of language origins from different angles – the former mainly appealing to the mechanisms of natural and sexual selection, the latter to the interpretation of linguistic facts – **they do come to very similar conclusions that the original language (or language-to-be) was non-propositional, holistic and musical, and that its primary function was emotional expression**. In these respects, they come close to the modern holistic and musical conception of protolanguage, particularly to Steven Mithen's Hmmmm (i.e. holistic, manipulative, multimodal, musical and mimetic protolanguage; Mithen 2005), and when we look back, they are reminiscent of Humboldt's idea of the original language (see 5.1). Certainly, both Darwin's and Jespersen's accounts are occasionally very speculative, but they are also similar to the proposals of modern language evolution studies in that they try to build arguments relying on facts and expressly stated methodological assumptions. Therefore, in the history of thought on language origins, their works should be seen as marking a qualitative change, breaking away from a glottogonic mode of reflection towards a truly scientific approach.

Given that these works date from the latter part of the 19th century and the early 20th century, was it possible for a science of language evolution to emerge then? It does not seem so. Even if the climate surrounding language origins had been better, there was little solid evidence that researchers such as Darwin or Jespersen could have used when constructing their proposals. It is true that palaeoanthropological data were gradually becoming available – the 1846 and 1856 Neanderthal finds, the Cro-magnon man discovered in 1868 and the Grimaldi man in 1872 – but these could not yet provide an integrated account of the evolutionary hominin history. In fact, they could not even demonstrate that there existed intermediate forms between modern humans and modern non-human apes (Hewes 1977a: 103). High hopes were raised by the first *Homo erectus* find excavated on Java by Eugene Dubois in 1891, but the fact that the specimen lacked almost the entire facial skeleton made its evolutionary interpretation difficult. In this expectant atmosphere, the Piltdown hoax was organised, whose perpetrator, Charles Dawson, set up a skull by combining an orangutan mandible with a human cranium (Hewes 1977a: 103).

At the time, still little was known about apes' communicative behaviour and even less about their linguistic skills. There were isolated attempts at the ethological observation of apes and monkeys, among which Richard Lynch Garner's (1848–1920) work stands out, not so much due to its research success but because of the extent of the researcher's sacrifice. Garner tried to record the vocal behaviours of apes and monkeys using a wax cylinder phonograph, but his book *Apes and Monkeys, their Life and Language* (1900) documents the fiasco of the project, caused by the poor quality of recording that Garner collected with a lot of stamina (Hewes 1975: 103). The first attempt to teach apes language also ended in failure. It was undertaken by William Furness, who raised chimpanzees and orangutans in his residence, where he gave them language exercises. An orangutan that received these exercises for 5 years was allegedly able to produce only three vocalisations that resembled "mama", "papa" and "cup" (cf. Hewes 1975: 103). Such circumstances much better served the cause of tabooing research into language origins than establishing a science dedicated to its study.

5.6 Tylor's natural language and the orofacial hypothesis

Edward Tylor's (1832–1917) interest in language and language origins was primarily motivated by anthropological concerns.[51] Unlike Darwin, he did not particularly attend to what comparative philology had to say about laws of linguistic

51 The reconstruction of Tylor's views presented here is based on Mocerino 2016.

change. Instead, he was focused on the problem of how language use, and communicative practices in general, define humans. This concern brought him to the idea of a **natural language**, quite similar to Laromiguière's universal language (4.8), which he understood as **a system of communication innate to humans, just as there are systems of communication innate to other species of animals** (1881: 122; cf. Mocerino 2016). Tylor looked for the traces of natural language in the same places that had been explored by his colleagues from Société des observateurs de l'homme over 50 years earlier (4.8) – sign languages of deaf communities (Tylor 1870: 16–17) and communication systems used by various (and particularly "savage") populations across the world (1871, vo. I: 149). He also drew evidence from feral cases (1863) and used it to hypothesise about the mentality of early people (1867).

As regards the form of natural language, Tylor sees it as consisting of two components – **pantomimes/gestures** on the one hand, and **emotive and imitative vocalisations** on the other. He stresses the kinesic character of these modalities and refers to both of them as gestures: "Now joining gesture-actions and gesture-sounds, they will form together what may be called a Natural Language" (Tylor 1881: 122; quoted after Mocerino 2016: 80). The visual component of natural language primarily serves to communicate ideas, which is possible because its signs are themselves "natural", i.e. there exists an evident, we should say *iconic*, connection between the form and the referent of such a sign (Mocerino 2016: 74). This view is supported by evidence from sign languages, and crucially by Sicard's observation that it is "for the deaf and dumb to make them [the signs] and for me to tell how they are made" (Tylor 1870: 19). Accordingly, Tylor contends that **signs invented by deaf people themselves abide by the principle of iconicity**, whereas all other signs are imported from spoken languages. In contrast to what we know from modern research on emerging sign languages (e.g. Senghas and Coppola 2001), he also believes that abstract concepts and grammatical elements cannot emerge through signers' own inventions and interactions (i.e. "the real gesture-language", see below) but must be borrowed from spoken languages:

> These partly artificial systems … are not the real gesture-language … So far as I can learn, few or none of the factitious grammatical signs will bear even the short journey from the schoolroom to the playground, where there is no longer any verb "to be", where the abstract conjunctions are unknown, and where position, quality, and action, may serve to describe substantive and adjective alike. (Tylor 1870: 23; quoted after Mocerino 2016: 76)

He stresses however the potential of the signs of "the real gesture-language" to undergo codification and conventionalisation, which is illustrated by the famous

example of the German sign for "French", which has the form of the "decapitation" hand movement – a reference to the French Revolution (Mocerino 2016: 76).

The other component of natural language comprises those vocalisations that, in Tylor's opinion, are naturally meaningful, similar to gestures and pantomimes:

> These are sounds of interjectional or imitative character, which have their meaning… by being taken up directly from the world of sound into the world of sense. Like pantomimic gestures, they are capable of conveying their meaning by themselves, without reference to the particular language they are used in connection with. (Tylor 1871: 145 quoted after Mocerino 2016: 79)

Natural vocalisations are then of two types – one that expresses emotions, and the other that is sound-iconic. Just like gesture and pantomimes, they are subject to conventionalisation, the former giving rise to vocal signs for specific emotions and the latter, to onomatopoeias. Commenting on the significance of vocal communication, Tylor makes an interesting observation that **voice**, no matter whether used for emotive, imitative or linguistic expression, **provides the hearer with rich indexical information, for example about the size of the speaker, which may have contributed to the omnipresence of vocal communication in humans but also in other species** (Mocerino 2016: 79, cf. Zlatev et al. 2017). More generally, discussing the difference between natural language and animal communication, he follows in Herder's footsteps (4.7) and argues that humans have a propensity to connect expressions of natural language to ideas, whereas animals lack this ability. This, essentially semiotic, ability allows humans to develop natural language into more complex forms of communication, including language in its modern form:

> That is, a young child can understand what is not proved to have entered into the mind of the cleverest dog, elephant, or ape, that a sound may be used as the sign of a thought or idea. Thus, while the lower animals share with man the beginnings of the natural language, they hardly get beyond its rudiments, while the human mind easily goes on to higher stages. (Tylor 1881: 122; quoted after Mocerino 2016: 80)

On the surface, Tylor's proposal may seem similar to the Mandeville-Condillac scenario (4.5) and elements of Rousseau's account (4.6). However, Tylor was never interested in presenting a scenario of language emergence, and the idea of natural language, as he stressed repeatedly, arose in the context of his anthropological research. Secondly, in contrast to the Enlightenment glottogony, Tylor is similar to Darwin and Jespersen in favouring scientific evidence to speculation, even if it means avoiding the bigger questions.

Despite Tylor's reservations, his ideas proved to have a significant potential for the study of language origins. It was noticed by Alfred Wallace, who in his

review of Tylor's *Anthropology* (1881) criticised its author for failing to draw conclusions from his own statements:

> In treating of the origin of language Mr. Tylor doubts the sufficiency of the theory that emotional, imitative, and suggestive sounds were the basis on which all languages were founded, though he gives tolerably full illustrations of how roots thus obtained became modified in an infinite variety of ways to serve the growing needs of mankind in expressing their wants or their feelings. (Wallace 1881: 243 quoted after Mocerino 2016: 81)

Later in the same text, Wallace focuses on sound-symbolic phenomena and claims that they can be found in many, seemingly arbitrary, words of various languages that are used by both "civilised" and "savage" communities. Specifically, he argues **that positions assumed by the articulators can often be iconically related to the meaning of words thus articulated**; for example, he interprets the lip protrusion during the articulation of the English word "go" as a pointing gesture, i.e. as a mouth gesture for giving directions (Wallace 1881: 244–245). In the subsequent work "The expressiveness of speech" (1895), Wallace combines this idea with a variety of observations about the expressive potential of gestures, to suggest that orofacial gestures facilitated the transition of emerging language from the predominantly gestural to a predominantly vocal modality.

A version of the **orofacial hypothesis**[52] also appears in the work of **Wilhelm Wundt** (1832–1920), the father of experimental psychology. His other major contribution to language origins consists in giving the first scientifically viable explanation of the relation between language ontogeny and phylogeny (see for example Vico; 4.1). Wundt presented his position on these problems in the first two volumes – jointly entitled *Language* (*Die Sprache*) – of his monumental oeuvre *Social Psychology* (*Völkerpsychologie*, 1900). The key concept is the so-called micro-genesis of language in the speaker's mind. Appealing to arguments about the expressivity and universality of gestural-pantomimic communication, Wundt comes to the conclusion that it constitutes the original form of linguistic expression, both in the onto- and phylogenetic order (Levelt 2004: 544–546). An important element of his hypothesis is the problem of the transition from this original form to spoken language. Similar to Wallace, Wundt believes that the transition was effected by orofacial gestures. According to his account, **in the beginning articulatory movements did not serve vocalisation but mimicked communicative body movements. Only later, were vocalisations, which**

52 The presentation of the orofacial hypothesis, including Wallace's position, is based on Wacewicz, Żywiczyński and Orzechowski 2016; see also Orzechowski et al. 2016b.

accompanied orofacial gestures, linked to corresponding gestural meanings, and finally assumed the dominant role in linguistic expression.

The hypothetical role of orofacial gestures in the development of language was almost identically presented by **Richard A. S. Paget**: "the significant elements in human speech are the postures and gestures [of the organs of articulation], rather than the sounds. The sounds only serve to indicate the postures and gestures which produced them. We lip-read by ear" (1930: 174). Unlike the psychologist Wundt, Paget looked for evidence to support the orofacial hypothesis in linguistic material. Specifically, he attempted to show that phonetic and semantic resemblances between unrelated languages (including Chinese, Sumerian and Arawak) are best explained by the idea of orofacial gestures (1940). The Icelandic linguist **Alexander Jóhanneson** independently embarked on a similar project, whose results led him to claim that 85% of words in Indo-European and Semitic languages derive from mouth gestures understood as the movements of lips and tongue (1949; cf. Hewes 1977b). Counterintuitive as it may seem, the orofacial hypothesis appears in the modern science of language evolution, particularly in the context of gestural theories (e.g. Arbib 2012, Leavens et al. 2014; for review see Wacewicz et al. 2016).

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Although between the 1940s and 1960s no breakthrough ideas appeared in the study of language origins, considerable literature was published on the subject by specialists from various disciplines. The authors of these works include Friedrich Kainz (1960–1962), Géza Révész (1946/1956), Macdonald Critchley (1960), Oddone Assirelli (1950), Wiktor W. Bunak (1959), Eduard Rossi (1962), Alf Sommerfelt (1954), Björn Collinder (1956), A. S. Diamond (1959) and Giorgio Fano (1962).[53] Judging from the number of reviews, it was Révész's book *Origin and Prehistory of Language* (1946) that gained the greatest popularity. Révész proposes a theory of social contact, somewhat reminiscent of Robin Dunbar's grooming scenario (e.g. 1996). It underlines the instinctual need that humans have to engage in contact with others, and suggests that language started with vocalisations that served the phatic function of initiating and maintaining this contact. Words are thought to have emerged from these vocalisations, but Révész does not describe any mechanism of how this process may have been accomplished.

An exhaustive bibliography of language origin literature from this period can be found in the work of Gordon Hewes (1975, 1976, 1977a, 1996). A survey of

53 The list of authors given after Hewes (1977a: 105).

these works, some of which are listed above, shows two things – a resurgence of interest in the study of language origins and the lack of an accepted explanatory frame. It also seems that a number of publications did not translate into any noteworthy theoretical or empirical development. Such was the situation of language origins at the threshold of a major qualitative change – the foundations of the science of language evolution (SLE). We will now present the course of events that led to this development.

6 The science of language evolution[54]

The story in the last chapter finishes in the 1960s, with the field of language origin scholarship experiencing a crisis. Linguistics, dominated by the structuralist paradigm, was generally averse to investigating problems regarding language origins and evolutionism (5.4), and this was compounded by what appeared to be a general lack of interest in interdisciplinary approaches, despite some interesting initial studies on issues such as the orofacial hypothesis. As noted, there were attempts to make language origins a less speculative and more scientifically oriented area of investigation, as can be seen in the works of Darwin (5.2.1, 5.3), Jespersen (5.5) or Wallace (5.6). But the barrier these authors all came up against was a scarcity of empirical evidence, most importantly pertaining to hominin evolution, the cognitive and communicative capacities of non-human primates and the relation between language and the brain.

Two factors that contributed to the inception of the science of language evolution (SLE) in the latter part of the 20th century were:

- the cognitive revolution in linguistics instigated by Chomsky, which helped open up the discipline to evolutionary explanations,[55] and
- significant advances in palaeoanthropology and archaeology, comparative and primate studies, and finally the foundation and rapid growth of neuroscience, which generated a lot of evidence of great interest to researchers working on language origins.

These developments coincided with a fundamental change in evolutionary science, known as the neo-Darwinian synthesis, and the resultant mathematisation of evolutionary research. The new type of evolutionism constitutes the third major factor responsible for the emergence of SLE.[56]

6.1 Linguistics, gesture studies and language origins

In the 1950s and 1960s, there was a noticeable resurgence of interest in language origin problems among linguists. Crucially, it was related to Chomky's biologising

54 The structure and content of the chapter is largely based on the third chapter of the book by Żywiczyński and Wacewicz (2015).

55 Despite Chomsky's own reservations (see, e.g. Berwick and Chomsky 2015).

56 See also Wacewicz (2013), Wacewicz and Żywiczyński (2012), Wacewicz and Żywiczyński (2014).

conception of language, but there were also linguists unaffiliated to Chomsky's programme who contributed to this trend. The most noteworthy of these was probably **Charles Hockett** (1916–2000), who developed the idea of the famous design features of language. The essential characteristic of Hockett's approach to defining language is comparison, whereby features of language (i.e. Hockett's design features) are described with reference to selected features of non-human communication systems: "The frame of reference must be such that … human language as a whole can be compared with the communicative systems of other animals, especially the other hominoids, man's closest living relatives" (Hockett 1960a: 5).[57] Hockett began with a list of seven design features: *duality, productivity, arbitrariness, interchangeability, specialisation, displacement* and *cultural transmission* (1958: 574). They are not yet referred as design features but as key properties of language. Later (1960a, 1960b/1977), Hockett uses the term "design features", defines them, and highlights the role of the comparative approach in delimiting them. Accordingly, they are described as features "that all languages of the world share" and which "at first sight … appear so trivial that no one looking just at language would bother to note them. They become worthy of mention only when it is realized that certain animal systems … lack them" (Hockett 1960a: 5). In the two articles from 1960, Hockett enumerates 13 design features, adding to the former list – *vocal-auditory channel*, *broadcast transmission and directional reception*, *rapid fading*, *total feedback*, *semanticity* and *discreteness*. Although in the 1966 article co-authored with Altmann the list of design features is further extended, it is the version with 13 features that gained the greatest popularity in linguistics, where it became the default means of comparing human language with animal communication (cf. Wacewicz and Żywiczyński 2015). For linguists, it also became a reference point for naturalistic reflection on the nature of language and in this capacity, up till now, it has heavily influenced linguistic courses and textbooks (cf. McGregor 2009 and Yule 2010).

The significance of Hockett's proposal for language origins primarily consisted in re-opening linguistics to biologically orientated reflection. In very general terms, Hockett views language as behaviour – or rather as a communicative system which manifests itself in linguistic behaviours. This leads him to the anti-mentalistic methodological postulate that the study of language should be based on observable linguistic behaviour (e.g. 1958: 137–144, 322; cf. Wacewicz

57 It should be noted that Hockett also used design features to compare language to other human but non-linguistic systems of communication, such as the Morse Code or the Ogham script used by speakers of Old Irish (1958).

and Żywiczyński 2014). Such a stance may seem reminiscent of behaviourism, which used to be a strong player in linguistics before Chomsky (e.g. Watson 1930, Bloomfield 1933). However, Hockett's framework is more akin to ethology than psychology – this can be seen in his insistence on treating communication systems, language included, as configurations of behaviours, which should be studied in the context of their natural use (e.g. 1958: 569–586).

The ethological orientation is also reflected in his evolutionary explanations. Hockett does not try to explain the evolutionary emergence of language in the way Darwin (5.3) and Jespersen (5.5) did, but in accordance with the idea of language as an accumulation of design features, he gives evolutionary accounts of each of them. Thus, vocal-auditory communication – with the related features of rapid fading, broadcast transmission and directional reception, total feedback and interchangeability – are discussed as general characteristics of mammalian communication. Next, he argues that the evolution of primate communication resulted in the appearance of specialisation, semanticity and arbitrariness, while ape communication was additionally enriched by discreetness and traditional transmission. Finally, the hominin evolution brought forth displacement, productivity and duality of patterning (1960a: 8–12).

There are a number of problems with Hockett's evolutionary, and more generally comparative, scheme. First of all, his cumulative definition of language supported by the evolutionary scenario given above betrays strong Lamarckian sentiments, with language being implicitly described as a system of communication superior to systems used by non-human species. Hockett may try to place his proposal on a grand theoretical plane, but his evolutionary and comparative considerations are grossly underdeveloped. Even in the text "Logical Considerations" (1960b/1977), which contains the most extensive exposition of design features, the comparative elements are in fact limited to a record of local similarities between language and other communication systems, such as the gibbon song call system, bee dancing or stickleback courtship ritual. Such an attitude explains his preoccupation with the characteristics of the channel and complete neglect of the cognitive and social prerequisites of language.[58]

Although much more controversial than Hockett, **Morris Swadesh** (1909–1967) should also be credited with reintroducing the problem of language origins into the linguistic debates of the second half of the 20th century. He is mainly remembered as the author of *lexicostatistics*, which consists in the quantitative

58 For a more extensive critique of Hockett's model, see Wacewicz and Żywiczyński (2015).

study of cognate words in languages with a view to determining their relatedness, and *glottochronology*, which – based on lexicostatistical data – tries to determine the course of lexical changes in the history of languages (Swadesh 1952, 1955). These methods, which have turned out to be of some use in comparative and historical linguistics (see Dyen et al. 1992), brought Swadesh to the problem of language origins. In his posthumously published monograph *The Origin and Diversification of Language* (1971), he revives the pooh-pooh hypothesis and puts forward the thesis about the evolutionary continuity between language and non-human vocal communication. Swadesh distinguishes three principal phases of language evolution – the eoglottic, paleoglottic and neoglottic periods, analogically mirroring the archaeological ages of the Eolithic, Palaeolithic and Neolithic. According to him, the process of language emergence began when cries gave rise to two distinct systems – the exclamative and the imitative. The former performed two roles: it served the original expressive function (fossilised in modern languages as exclamations) and the demonstrative or attention-getting function (cf. Moreno Cabrera 2012). The demonstrative use of vocalisation, which later developed into linguistic indices, was aided by gestures including mouth gestures, e.g. a pout for showing directions (see Wallace on orofacial gestures, 5.6). The imitative system relied on the newly gained ability to represent symbolic contents by means of phono-mimetic characteristics of sounds. For example, Swadesh argues that stops served to indicate rapid movement, nasals, smooth movement and fricatives, repetitive movement (1971: 200). In the next – paleoglottic – period of language evolution, the use of these phono-icons was extended to cover not only actions but also objects produced by actions (1971: 2008). Finally, in the neoglottic period, the rapid development of vocabulary led to obliterating the iconic qualities of lexemes. Swadesh's account failed to exert any impact, but the problems he highlighted – the continuity between non-human (particularly primate) vocal communication and language, as well as the role of sound symbolism in modern languages and its role in language emergence – are important subjects of discussion in contemporary SLE (see, e.g. De Carolis et al. 2017 or Tanner and Perlman 2017).

Gesture studies, rapidly developing at the time of Hockett's and Swadesh's activity, were destined to become one of the key areas contributing to SLE. Research on gestures was first conducted within psychology, but in the second part of the 20th century it became an autonomous but interdisciplinary area of investigation, having strong connections with psychology but also linguistics and anthropology, and later neuroscience (for an overview of the field, see, e.g. Müller et al. 2013–2014). This progress was possible through the efforts of

such researchers as Adam Kendon (1972, 1975, 1983a, 1983b), David McNeill (1985) or Paul Ekman and Wallace V. Friesen (1969a, 1969b, 1972). Somewhat on the border between gesture studies and linguistics, **sign linguistics** was growing. Although topically it belongs to linguistics, this area is also of great interest to gesturologists, because in the wide sense of the term "gesture" is inclusive of signs of sign languages (see McNeill's gesture continuum, e.g. 1992, 2005) and because their linguistic nature makes them an interesting object of study in comparison with other visually transmitted signals (e.g. gesticulations or pantomimes; see McNeill 1992). Sign languages are considered as essentially the same as spoken languages. This identity has been demonstrated with regard to brain localisation, development in ontogeny, as well as functional and code characteristics (see, e.g. Emmorey 2002). The fully linguistic status of sign languages is nowadays universally acknowledged (at least in language sciences), and as such they are included in the databases of world languages, for example *Ethnologue* or *World Atlas of Linguistic Structures*.[59] To a large extent, the current situation is the result of the pioneering efforts of **William C. Stokoe** (1919–2000), whose descriptive work on sign languages helped convince many about their linguistic character (Stokoe 1960, Stokoe et al. 1965, Stokoe 1991).

Stokoe was keen to apply the evidence from the study of sign language to language origins, and later formulated the hypothesis that there had been a gestural stage in the evolution of language (2001). However, it was anthropologist **Gordon Hewes** (1917–1997) who exerted the strongest impact on language origins in this period. He had an encyclopaedic knowledge of language origin literature, which combined with his amazing talent for reconstruction, brought forth a number of excellent historical outlines (e.g. 1975, 1976, 1977a, 1996). But his greatest ambition was to transform the notoriously speculative character of language origins into a scientific investigation strictly based on empirical evidence. Working on the assumption that language emerged from gestural behaviours, he formulated the **Gestural Primacy Hypothesis** (1973), which gave a full scenario of language evolution starting with a gestural protolanguage, through its development and finally transition into the vocal-auditory channel (see also Hewes 1977a or Orzechowski et al. 2016b). However, his contribution did not lie in articulating a specific proposal but in indicating research areas from which gestural scenarios could draw supporting evidence. One of these is the study of human communicative behaviour in face-to-face interaction. Appealing to the

59 *Ethnologue*: http://www.ethnologue.com/ (DOA: 15 Mar 2017.); *World Atlas of Linguistic Structures*: http://wals.info/ (DOA: 15 Mar 2017.).

findings of gesture research (see above), he stresses that communicative hand movements (technically, gesticulations, see McNeill 1992) co-occur with speech, and facilitate the understanding of verbally transmitted messages. Elaborating on the expressive potential of gestures and pantomimes, Hewes – just like Laromiguière (4.8) and Tylor (5.6) – uses reports of European travellers to show that these communicative behaviours are readily and successfully employed in situations when interactants do not share a language; he also stresses that on such occasions the communicators were able to convey rich and abstract information, for example about topography, dangers awaiting travellers or even elements of political and religious systems. This leads him to the conclusion that the conviction about the vocal nature of language is not supported by interactional facts but rather results from "the long obsession of linguistics with speech" (1973: 11).

Another of his most important intuitions concerned the lack of evolutionary continuity between language and primate vocal communication (1973, 1975, 1977a, 1977b). He develops this line of argumentation by looking at failed attempts to teach apes spoken language (Furness 1916, 5.5; Kellogg and Kellogg 1933, Hayes and Hayes 1952, 6.3.1), and contrasts them with very promising projects to train apes in using communication systems based on visual signals. Here, Hewes concentrates on the research conducted by the Gardners (Gardner and Gardner 1969, Gardner and Gardner 1971) and David Premack (1970, Premack and Premack 1974; 6.3.1). Somewhat ahead of his times, Hewes also appealed to the sparse neuro-evidence that was available to him. He worked before the development of technology that allowed scientists to study brain processes *in vivo*, and drew most of his ideas from neuropathology, for example underlining a relatively strong resistance of gestural communication to language-related disorders (e.g. 1977a: 132–133). Finally, he saw a potential for gestural theories in sign linguistics. He contended that sign languages can emerge spontaneously (a fact that was later unequivocally confirmed: e.g. Kegl et al. 1999), and are more iconic than their spoken counterparts and hence are easier to understand by non-users (Hewes 1977a: 111). Although some of Hewes's claims remain controversial (for example the last point above regarding iconicity), subsequent studies have confirmed most of his intuitions, which have set the path for contemporary researchers. The combination of erudition and empirical sensitivity that characterises Gordon Hewes's approach makes him a transitional figure, linking pre-scientific, speculative reflection on language origins with the modern-day science of language evolution.

In the meantime, the first scientific events dedicated to language origins were organised. The *spiritus movens* of many of them was Roger W. Wescott (1925–2000), a linguist and anthropologist, who was a strong supporter of

saltationism,[60] not just with regard to the appearance of language but as a general evolutionary doctrine (see, e.g. 2000). He was intent on galvanising linguists into taking up the problem of language origins – a goal that he wanted to achieve when he published his article "The Evolution of Language: Re-Opening a Closed Subject" (1967) and organised a special symposium during a congress of the American Anthropological Association in 1972. The symposium was a success, and it resulted in an interesting volume edited by Wescott, Stokoe and Hewes (1974). The 1970s saw a number of symposia and conferences dedicated to the problem, the most important of which were probably a special session at the meeting of the New York Academy of Sciences, again organised by Wescott in 1975, and a symposium that took place in Munich under the auspices of the Gesellschaft Teilhard de Chardin also in 1975.

6.2 The Chomskyan factor

All the developments described above played a role in the emergence of SLE, either by creating a positive intellectual climate or contributing ideas on which the new science could be founded. However, the single biggest influence was Chomsky's revolutionary programme in research on language. Noam Avram Chomsky transformed linguistics, but the impact exerted by his work goes well beyond the confines of the discipline. In fact, his work contributed to establishing a new discipline – cognitive science, the modern-day interdisciplinary research into the mind, which integrates linguistics, Artificial Intelligence (AI), philosophy, cognitive psychology and neuroscience (cf. Bechtel et al. 1998). Unsurprisingly, this most often quoted living author (citations: 352 484 and h-index: 170 according to Google Scholar)[61] is frequently portrayed as the most influential intellectual of our era (see, e.g. Knight 2016).

Chomsky set out with a critique of behaviouristic psychology to propose a new conception of language and linguistics. The foundational assumption of this new conception is that cognitive processes are real and primary to observable behaviours. Chomsky's ideas on linguistics change frequently – take for example the early model based on re-writing rules (1957, 1962), transformational-generative grammar (1965) or the minimalist programme (1995). All of them however are built on this foundational assumption and a set of ideas and motifs derived from it.

60 Saltationism (from Latin *saltus* for "leap") assumes that evolutionary change is rapid and proceeds in discontinuous jumps, whereby a complex phenotypic trait is able to appear in the course of one or several generations.

61 Record taken on 8 Feb 2018.

Chomsky identifies the study of language as belonging to the field of psychology. In the following well-known passage, he explains that every task that the linguist engages in contains a psychological component:

> [T]he linguist is involved in the construction of explanatory theories, and at each level there is a clear psychological interpretation for his theoretical and descriptive work. At the level of particular grammar, he is attempting to characterize knowledge of a language, a certain cognitive system that has been developed – unconsciously, of course – by the normal speaker-hearer. At the level of universal grammar, he is trying to establish certain general properties of human intelligence. Linguistics, so characterized, is simply the subfield of psychology that deals with these aspects of mind. (1972/2006: 24–25)

But Chomsky's position is more radical; he defines language as a mental phenomenon or a set of mental phenomena in contradistinction to linguistic behaviours, which are taken to result from these mental phenomena. This view is elaborated into the distinction between competence – the knowledge of language – and performance – its use. He adds the theoretical postulate that competence constitutes the substance of language and the ensuing methodological postulate that linguistics should be concerned with competence rather than performance (1965: 3). Chomsky's psychologism is of particular kind; in fact, he is not interested in how actual psychological processes contribute to, say, acquiring language, storing and retrieving it. His sole concern is with knowledge structures that he takes language to consist of. Importantly, according to his account, these knowledge structures must not be understood as describing individuals' mind-states but rather they refer to a knowledge of language generalised from mind-states of individual speakers-listeners:

> Linguistic theory is concerned primarily with an ideal speaker-listener, in a completely homogeneous speech-community, who knows its language perfectly and is unaffected by such grammatically irrelevant conditions as memory limitations, distractions, shifts of attention and interest, and errors (random or characteristic) in applying his knowledge of the language in actual performance. (1965: 3)

Clearly then, an ideal speaker represents a psychological fiction, but stripping language of psychological detail serves Chomsky – very much in the spirit of 17th-century rationalism – to show what is apriorically linguistic. In a later formulation, this element is designated as I-language (internal language), i.e. "the system of knowledge of language attained and internally represented in the mind/brain" (1986: 24). The aprioric nature of I-language becomes evident when it is juxtaposed with E-language (external language), which comprises both Saussurean *langue* and *parole* – for Chomsky, they are derived from the real substance of language, i.e. I-language, and as such are epiphenomenal (cf. Jackendoff 2002).

He also goes against the intuition, championed for example by de Saussure, that linguistic rules emerge *a posteriori* from regularities in using language; Chomsky reverses this logic and claims that there exist usage regularities because use reflects the *a priori* structures of I-language. In the following fragment, he explains this point with reference to phonology and phonetics (cf. Araki 2017):

> [Phonological] representations are not derived from the speech sounds by analytic procedures of segmentation, classification, extraction of physical features, and so forth, but are established and justified as part of the best theory for accounting ultimately the general relation between sound and meaning of the I-language. (Chomsky 1986: 43)

How are the aprioric structures of I-language established in one's mind/brain? In contrast to the Kabbalists (2.2) and the speculative grammarians (3.6), Chomsky does not believe in a supernatural agency; rather he believes in biology. Accordingly, I-language is the final state of the bio-programme that is innate to every human being. Similarly to the way an organ, for example the liver, develops in a growing organism in accordance with the genetic code, language develops in the child's mind under the influence of environmental stimuli. While I-language represents the end-point of this process, its starting point is Universal Grammar: "the system of principles, conditions, and rules that are elements or properties of all human languages" (1975: 29). The growth of Universal Grammar into I-language is controlled by the Language Acquisition Device (LAD), a concept that Chomsky borrowed from Eric Heinz Lenneberg. Based on his research into language acquisition, Lenneberg concluded that there is an innate, biologically determined language learning ability (1964). Later, in the very influential *Biological Foundations of Language* (1967), he used the term LAD to refer to this ability and, appealing to the processes of brain lateralisation, argued that the operation of the LAD declines over the years until it shuts down at the age of puberty. This led him to the formulation of the Critical Period Hypothesis, which assumes that there is a limited time for a child to acquire language and its duration is set by LAD's period of activity. Chomsky contends that LAD operates on Universal Grammar and instigates those of its properties that characterise a particular language that a child acquires (e.g. Chomsky 1972; for a more extensive presentation, see, e.g. Chomsky 2016).

The biological feasibility of Chomsky's strongly nativist conception of language may suggest that his belief in biology may come surprisingly close to the ancient nativists' belief in a supernatural agency that allegedly instilled language in people's minds. But it was this biologising understanding of language as an organ that opened the door to discussing language in evolutionary terms. The huge popularity of Chomskyan linguistics ensured that such discussions were no longer perceived as occupying the peripheries of language sciences.

This said, it should be stressed that Chomsky himself has remained sceptical of such attempts and opposed considering language as a biological adaptation *sensu* Darwin (see, e.g. Berwick and Chomsky 2015). But as is often the case, ideas develop without regard for the intentions of their progenitors, and the inception of SLE in the last decade of the 20th century would not have been possible without the Chomskyan factor.

6.3 The empirical factor

The Chomskyan revolution in the approach to language coincided with the rapid development of many empirical disciplines and areas of research that study topics of interest to language origins. Primatology, neuroscience, palaeoanthropology, and computer modelling, to mention just a few fields, produced a huge amount of data in this period. We saw how Darwin (5.3) or Jespersen (5.5) struggled with a lack of data; due to these advances, in the 1980s and 1990s researchers interested in language origins were in a significantly better position, being able for the first time to build arguments well-grounded in empirical data. As already noted, it is difficult to imagine SLE without the Chomskyan factor, but it is completely impossible that SLE could have emerged without the empirical factor.

6.3.1 Primate ethology and ape language experiments

Since the pioneering work of Tulp and Tyson (see 4.2), primatology has remained one of the key areas that inspired the study of language origins, but at the same the scarcity of evidence it was able to supply often pushed thinkers into the realm of pure speculation about primate communicative and cognitive abilities (see, e.g. La Mettrie, 4.2). This changed in the latter part of the 20th century, when primatological research began to flourish. In the context of language origins, advances in the study of non-human apes were, for obvious reasons, of particular importance. Many of these were provided by primate ethology, and specifically by Jane Goodall, who in the mid-1960s started regimented observation of common chimpanzees (*Pan troglodytes*) in Tanzania's Gombe National Park. Goodall described the social dynamics of chimpanzee groups, including patterns of intraspecific aggression and complex behaviours such as chimp hunts. She was also the first to document tool use by non-human apes (1969, 1971, 1986). The work on a different taxon, the Japanese macaques (*Macaca fuscata*), led to the discovery of elements of cultural transmission in non-human primates, related to washing food (Kawamura 1959, Kawai 1965) and the use of vocalisation (Itani 1963). Regarding vocalisation, Clarence R. Carpenter had earlier detected

cultural variation, in the form of quasi-dialectical differences, in gibbon duets (1940; quoted extensively in Hockett's comparative studies, e.g. 1960b/1977).

A line of research that was even more important to language origins was related to attempts at teaching apes, mainly chimpanzees, some form of language. We documented the failure of Furness's informal project to teach chimps and orangutans English (5.5). Much more intensive – adoption – experiments conducted by the Kelloggs and the Hayeses brought similarly discouraging results. Even after many months of language exposure and socialisation, Gua, the chimp adopted by the Kelloggs, could not produce any articulate English (Kellogg and Kellogg 1933), while Viki, the chimp adopted by the Hayeses, which had also been subjected to extensive training, was able to produce just four English words: "mama", "papa", "cup" and "up" (Hayes and Hayes 1952, Hayes and Nissen 1971). The breakthrough came with a change of the paradigm for conducting language experiments with apes. The person responsible for this was Robert M. Yerkes (1876–1956), a pioneer in comparative psychology who suggested that apes' difficulty in learning spoken language may result from problems with articulation and phonation, and not from cognitive barriers (e.g. 1943). This intuition inspired programmes to teach apes sign rather than spoken languages, and these quickly achieved unprecedented successes. The first came with Washoe, a female chimp trained in American Sign Language first by the Gardners (1969, 1971) and later by Roger Fouts (1997). Another hugely successful project was undertaken by Francine Patterson, who trained Koko, a female gorilla, in American Sign Language but also in understanding spoken English (see, e.g. Patterson and Matevia 2001).

There were also ape language programmes that used visual systems of communication other than sign language. This methodology was pioneered by David Premack, who used plastic chips to indicate words when training his chimpanzees (Premack 1970, Premack and Premack 1974). Premack's interest was mainly in chimpanzee cognition and language training was merely an instrument facilitating research into this area. A more language-orientated programme was LANA, initiated by Duane Rumbaugh, during which chimpanzees were taught to communicate by means of lexigrams – colourful symbols corresponding to words (see Fig. 11). The same method was later employed by Sue Savage-Rumbaugh, whose work with the chimpanzees Austin and Sherman demonstrated under controlled conditions (e.g. involving categorising statements) that they could understand the meaning of lexigrams (Savage-Rumbaugh et al. 1978, 1980). Probably, the biggest success of Savage-Rumbaugh's group was accomplished with the bonobos (*Pan paniscus*), Kanzi and his sister Panbanisha. It is interesting that Kanzi acquired the use of first lexigrams witnessing failed attempts to teach them

to his mother Matata. He is acclaimed as the most linguistically advanced non-human animal, being able to use over 600 lexigrams and having a good grasp of spoken English; his abilities have become an important reference point in works on language evolution (cf., e.g. Bickerton 1990, Deacon 1997, Johansson 2005, Fitch 2010, Żywiczyński and Wacewicz 2016).

Fig. 11: Lexigrams used by Duane Rumbaugh and Sue Savage-Rumbaugh

Source: https://sites.google.com/site/austinstoll12communication/home/lexigram (DOA: 15 Mar 2017.)

6.3.2 Genetics

The most glaring problem in Darwin's proposal was the lack of the mechanism of inheritance that could successfully be applied to the model of descent with modification. Darwin himself came with a rather speculative proposal that the body produces "minute granules", designated by him as "gemmules", which contain information about our physical characteristics. He believed that these gemmules were collected in germ cells and then passed on to progeny during reproduction:

> [Gemmules] are collected from all parts of the system to constitute the sexual elements, and their development in the next generation forms the new being; but they are likewise capable of transmission in a dormant state to future generations and may then be developed. Their development depends on their union with other partially developed and nascent cells which precede them in the regular course of growth. (Darwin 1868/1988: 321)

The above quotation clearly shows that Darwin was wrong about how the inheritance of biological characteristics works. The right mechanism was first indicated during Darwin's times by the Augustinian monk Gregor Mendel (1822–1884),

who in 1866 published the results of his work on the inheritance of the characteristics of pea plants, the best remembered of which are the colour characteristics. He identified the key principles of inheritance (now known as Mendel's Principles of Inheritance), such as the fundamental theory of heredity, which holds that inheritance depends on passing discrete units from parent to child and that some of these units carry dominant traits (i.e. characteristics that always manifest themselves in progeny), while others carry recessive traits (i.e. characteristics that manifest themselves when units for dominant traits are absent). Mendel's discrete units were later termed "genes" by botanist Wilhelm Johannsen (1905/1913), who also coined the terms "genotype" and "phenotype" (1911).

Mendel's work, written in German and published in a low-circulation journal, did not reach the world's scientific audience. His laws were re-discovered at the beginning of the 20th century by a number of scientists including Johannsen and Hugo de Vries. Many of the early geneticists opposed Darwin's theory of natural selection, particularly targeting the gradualistic nature of the Darwinian evolution. For example, de Vries used his own discovery of genetic mutation to propose a mutation theory of evolution, whereby the variability of life forms is the effect of random mutations. The hiatus between genetics and Darwinism was closed by population genetics, a newer discipline that investigates genetic and allelic[62] differences within and across populations by means of statistical modelling. The founding fathers of population genetics – Thomas Hunt Morgan, Ronald Fisher, J. B. S. Haldane or Sewall Wright – were able to show that genetic variability creates the necessary conditions for the operation of natural selection. They also observed that genetic mutations with little or no phenotypic expression can accumulate and over time lead to robust phenotypic effects, and in this way they defended Darwin's gradualistic model of evolution (see, e.g. Fisher 1930/1999 or Haldane 1959). Population genetics was instrumental in effecting the neo-Darwinian synthesis of Darwin's theory of natural selection and Mendelian genetics (see below). At roughly the same time, technological progress facilitated biomolecular research into the substrate of genes. This line of research culminated in one of the biggest discoveries of our times – James Watson and Francis Crick's decoding of the structure of the DNA molecule (1953).

Advances in genetics and molecular biology also opened new vistas on the issue of language origins. One of the most exciting perspectives was the search for language-related genes. The growth of knowledge soon eliminated as erroneous the view there can be one gene responsible for language as a whole. The search

62 Alleles are variant forms of genes located at the same genetic loci on a chromosome.

for language-related genes achieved success relatively late – only after the emergence of SLE – but even before it had been hoped that genetics would be able to provide important evidence about the biological foundations of language (see, e.g. Hockett 1960b/1977). Present-day SLE is interested in the study of many genes involved in various aspects of language, but it was the discovery of one specific gene that determined the unique role that genetics plays in SLE research. First, a language-related disorder – developmental verbal dyspraxia (DVD) – was discovered in members of one family (in the literature referred as the KE family: Gopnik 1990). DVD is characterised by serious articulatory deficits (e.g. the inability to repeat words). What is important is that the production-related deficits are accompanied by receptive ones (such as the inability to understand complex sentences), which clearly shows that it primarily constitutes a language disorder, and not just a motoric one. The distribution of DVD (within one family) suggested a genetic etiology. The responsible factor – a mutation of the gene *FOXP2* – was identified only at the beginning of the new millennium (Lai et al. 2001). Since *FOXP2* is a regulatory gene (i.e. it regulates the expression of other genes), it inspired research into the genetic landscape which *FOXP2* is a part of, both in humans (e.g. Spiteri et al. 2007) and other animals (e.g. Enard et al. 2009).

6.3.3 Palaeoanthropology and archaeology

As already noted (5.5), in the early days of palaeoanthropology there was no proof that there existed proximate forms between *Homo sapiens* and the extant non-human apes, which could confirm the evolutionary scenario of contemporary humans and apes evolving from a common ancestor. The 20th century brought evidence that allowed palaeoanthropologists to confirm this scenario and reconstruct important elements of the human phylogeny. The most spectacular discoveries happened in the latter part of the last century and the beginning of the current one, for example the finding of Lucy, a well-preserved skeleton of *Australopithecus afarensis* (specimen AL 288–1, Johanson and Maitland 1981), Turkana Boy, a nearly complete skeleton of *Homo erectus* (specimen KNM-WT 15000, Brown at al. 1985) or Toumaï, a cranium of *Sahelanthropus tchadensis* (specimen TM 266-01-060-1, Brunet et al. 2002). Analysis of the growing number of finds brought with it the realisation that hominin ancestry does not represent a straight line of descent but is better described as a bush, beginning with the Last Common Ancestor that we shared with chimps some 7–6 million years ago and then branching out in many different directions, with one branch – the only one that reaches modern times – ending up with our species (Lewin and Foley 2004). The other realisation was that hominin characteristics such as thick tooth enamel, reduction of canine teeth

and features related to bipedalism or encephalisation do not appear in a neat succession on the timeline, with earlier species having fewer of these and later more of them; rather, hominin evolution exhibits a mosaic pattern, whereby hominin characteristics evolve at different rates, and sometimes later forms retain ancient characteristics (Lewin and Foley; see Brown et al. 2004 for *Homo floresiensis*). But there also emerged a consensus that the development of bipedalism preceded encephalisation (see, e.g. McHenry 1982),[63] which was later extensively used in debates about the beginnings of language (see, e.g. Donald 1991).

There also came attempts to deduce the presence of certain aspects of language directly from hominin fossils. The first major one was undertaken by Lieberman and Crelin, who argued that the Neanderthal hyoid bone would make it difficult for representatives of this species to produce the full range of human speech sounds (Lieberman and Crelin 1971). Later analyses showed that Lieberman and Crelin's study was incorrect and the Neanderthals were anatomically very similar to *Homo sapiens* (Boë et al. 1999, 2002; d'Errico et al. 2005; cf. Corballis 2002: 144). Lieberman and Crelin's case illustrates the dangers of using fossil material (whose amount is usually very limited) to make arguments about behavioural characteristics of extinct species, but it continues to be used in SLE, sometimes convincingly (e.g. relating a greater enervation of the thorax in *Homo erectus* to the appearance of speech: MacLarnon and Hewitt 1999; Johansson 2005: 82; Hurford 2014) and sometimes misguidedly (e.g. relating a greater size of hypoglossal canal in Neanderthals, later disconfirmed, to the appearance of speech: Kay et al. 1998 *contra* DeGusta et al. 1999).

Equally controversial is the method of using endocasts (i.e. internal casts of the cranial vault) to make arguments about hominin cognitive capacities; this was introduced by Ralph Holloway and gained some popularity in the 1980s and 1990s (e.g. Holloway 1981a, 1981b, Wilkins and Wakefield 1995). In a way, these developments in palaeoanthropology illustrate the situation of language origins during this period, when an increase in the amount of data was not matched by an increase in their quality, thus preventing a truly scientific breakthrough.

A much more promising line of research is physical and functional analysis of DNA retrieved from hominin fossils (see, e.g. Green et al. 2010). A crucial step here was mapping the human genome, accomplished under the Human Genome Project, which started in 1990.[64] It was followed by comparative

63 Later confirmed by genetic studies; for details see Żywiczyński and Wacewicz (2015: 148).

64 Official site: http://web.ornl.gov/sci/techresources/Human_Genome (DOA: 15 Mar 2017.)

genomic projects, such as the Chimpanzee Genome Project[65] or the Neanderthal Genome Project.[66] For example, the last of these resulted in the discovery that *Homo sapiens* and *Homo neanderthalensis* share the same version of FOXP2 (Krause et al. 2007). These advances belong to the era of SLE, but as already noted in 1970s and 1980s it was possible to imagine that genetics would be able to supply such data, and these hopes were important in formulating programmes for the scientific study of language origins (see, e.g. Pinker and Bloom 1990).

Hominin artefacts constituted another source of data that attracted the attention and imagination of researchers interested in language origins. The latter half of the 20th century saw the emergence of cognitive archaeology, which studies how material culture reflects mental characteristics of its makers and the social organisation of the societies they belonged to (Huffman 1986). From its very beginnings, many saw the discipline's great potential to inform reflection on language origins (e.g. Mithen 1996). Indeed, artefacts and tools in particular are able to provide rich information about extinct hominin species and early *Homo sapiens*. For example, the material used in manufacturing tools tells us whether it had to be transported and, if so, how difficult this transport could have been (Roebroeks et al. 1988). Traces of processing and types of wear reveal the function of tools (e.g. Rots 2005) and indicate whether those who used them were right- or left-handed (Uomini 2011). Finally, a comparison of many tools gives insight into a degree of the standardisation of manufacture and hence the type of instruction that was required to produce them (cf. Gowlett 2009a), whereas comparative study of ornamentation yields clues to producers' belief and value systems (e.g. d'Errico et al. 2005). Cognitive archaeologists themselves warn that inferences about tool-makers' cognitive characteristics inferred in this way should be treated with extreme caution (see, e.g. Gowlett 2009b), but it also goes without saying that the new discipline provided language origins research with the type of data whose explanatory potential could not be ignored.

6.3.4 Neuroscience

Chomsky's revolutionary ideas contributed to a surge of research into various cognitive aspects of language, giving rise to new projects or invigorating old ones. Cognitive science directly drew inspiration from the Chomskyan paradigm (see 6.2), while problems related to language acquisition and language processing

65 See: www.hgsc.bcm.edu/non-human-primates/chimpanzee-genome-project (DOA: 15 Mar 2017.)

66 See: http://www.eva.mpg.de/neandertal/index.html (DOA: 15 Mar 2017.)

came under the scope of psycholinguistics, another new discipline whose foundation was facilitated by the intellectual impetus created by Chomsky (Gleason and Ratner 1998/2005: 17–18). What became its distinguishing feature was an empirical orientation and reliance on experimental methods. Next, thanks to technological advances, neurolinguistics began to flourish. In its early days, pioneering researchers such as Paul Broca (1824–1880) and Carl Wernicke (1848–1905) had to rely on post-mortem studies. The situation of neurolinguists of the 19th and the early 20th century could be compared to that of an oceanographer who stands on the shore and tries to deduce what goes on in the depths of the sea by the shape and movement of waves. The first method that made it possible to probe into the depths of the brain was electroencephalography (EEG), which measures brain activity in terms of electrical discharges; its experimental use began shortly before World War I. Next, in the 1940s, came the Wada test, which consists in applying barbiturates locally into one of the hemispheres and then administering a battery of psychological tests to the patient; this allowed researchers to study the lateralisation of psychological functions, mainly related to memory and language (Wada 1949). The 1960s mark the beginning of the brain imaging era. At first, these were static images obtained by means of computed tomography (CT) and magnetic resonance imaging (MRI). Conducting observations of brain processes in real time became possible with the onset of imaging technologies that measure metabolic processes in the brain, such as functional magnetic resonance (fMRI) or magnetoencephalography (MEG; Ahlsén 2006: 161–166). These technological advances brought forth corresponding advances in the methodology of studying *in vivo* brain processes and, as a result, in the latter part of the 20th century researchers had access to a sizeable body of data about the localisation of various language functions (for details, see, e.g. Ahlsén 2006).

*

Towards the end of the last century, there was an exponential increase in the amount of empirical evidence of direct interest to those researching language origins. The dynamics of this process also suggested that much data would soon be available, for example from the rapidly growing fields of molecular genetics and brain imaging. Under such circumstances, initiating a rigorously scientific investigation of language origins seemed much more feasible than 50 years earlier. Furthermore, the type of data that had become available and the work it had enabled determined the emerging character of SLE. As argued by Hewes (see 6.1), scientifically viable arguments about the origin of language and related problems cannot be constructed within the confines of any single discipline.

Instead, they must be formulated using **converging evidence** coming from many different disciplines. **The empirical factor, responsible for the emergence of SLE, should then be understood as both the availability of relevant data and, equally importantly, the realisation of how to use these data in the scientific investigation of language origins.**

6.4 Modern evolutionism: the Kuhnian factor

We have already noted how population geneticists (see 6.3.2) were able to interpret Darwin's theory of natural selection in a way that was consistent with Mendel's Principles of Inheritance (see again 6.3.2). Therefore, Fisher, Haldane or Sewall Wright are often portrayed as the fathers of the neo-Darwinian synthesis. This said, credit must also be given to those scientists who succeeded in presenting the new paradigm in more general terms – similar to those that Darwin himself had employed in *The Origin*. The task of translating the distinctly mathematised language of population genetics into formulations that were understandable to biologists of the early and mid-20th century was accomplished by Ernst Mayr (1942), Julian Huxley (1942), George G. Simpson (1944) and G. Ledyard Stebbins (1950). But the greatest impact was exerted by Theodosius Dobzhansky's (1900–1975) book *Genetics and the Origin of Species.* Its main goal is to explain how diversity of organisms, including their segregation into species, arises through genetic mutations and the evolutionary mechanisms that operate on them:

> Mutations and chromosomal changes arise in every sufficiently studied organism with a certain finite frequency, and thus constantly and unremittingly supply the raw materials for evolution. But evolution involves something more than origin of mutations. Mutations and chromosomal changes are only the first stage, or level, of the evolutionary process, governed entirely by the laws of the physiology of individuals. Once produced, mutations are injected in the genetic composition of the population, where their further fate is determined by the dynamic regularities of the physiology of populations. A mutation may be lost or increased in frequency in generations immediately following its origin, and this (in the case of recessive mutations) without regard to the beneficial or deleterious effects of the mutation. The influences of selection, migration, and geographical isolation then mold the genetic structure of populations into new shapes, in conformity with the secular environment and the ecology, especially the breeding habits, of the species. This is the second level of the evolutionary process, on which the impact of the environment produces historical changes in the living population. (1937: 13)

The neo-Darwinian paradigm established by the founders of population genetics was developed by their students – most importantly, George C. Williams (1926–2010), William D. Hamilton (1936–2000) and John Maynard Smith (1920–2004) – who continued to put a strong emphasis on the use of mathematical models. Their

work was informed by advances in molecular biology following Watson and Crick's (1953) discovery of the DNA structure. Accordingly, adaptive explanations were more and more concerned with selection processes operating on individual organisms and genes – a perspective that was fully articulated by Richard Dawkins in *The Selfish Gene* (1976), though it can also clearly be seen in earlier works, for example Williams's *Adaptation and Natural Selection* (1966).

These explanations clashed with the view championed by traditional ethology, represented by Konrad Lorenz, Niko Tinbergen or Karl von Frisch, that natural selection operates on the level of the species. Ethologists used this view – popularly expressed by the slogans "survival of the species" or "good of the species" – to explain such phenomena as **altruism** or **cooperation** (see Eibl-Eibesfeldt 1970/1996). After the neo-Darwinian synthesis, these explanations lost credence, because selection was seen as dependent on the transmission of a particular organism's genetic material (Williams 1966). This occasioned attempts to formulate new explanations of these phenomena, which were particularly troubling for the neo-Darwinian perspective, for example by resorting to concepts of **kin selection** (Hamilton 1964a, 1964b), **reciprocal altruism** (Trivers 1971) or **parental investment** (Trivers 1971). A line of research particularly interesting from the perspective of language origins consisted in applying signalling theory and the larger framework of game theory in building evolutionary arguments about behaviour, with an emphasis on communicative behaviour (Knight 1998, Power 1998, Noble 1999; see also Wacewicz et al. 2014, Wacewicz et al. 2017).

The classic version of game theory is a mathematical model that examines the level of optimality of behavioural strategies in conflict situations (see Neumann and Morgenstern 1944). Maynard Smith applied game theory to research on the evolution of communication, starting from the question about the conditions under which, in a Darwinian world,[67] individuals will cooperate by sharing honest information and under which they will defect and cheat (Maynard Smith 1982). Another idea important to Maynard Smith's approach is an Evolutionarily Stable Strategy, or an ESS. It is based on the game theoretic concept known as the Nash Equilibrium, named after its author – John Forbes Nash (1950). It describes the situation when the optimal strategy for all players is to keep the strategies they have respectively chosen rather than change them. Maynard Smith introduced the evolutionary element into this scheme in the form of a mutant strategy that may appear in a population of players. That is, given that a whole population of

67 Understood as a world where selection operates on individual organisms; see above.

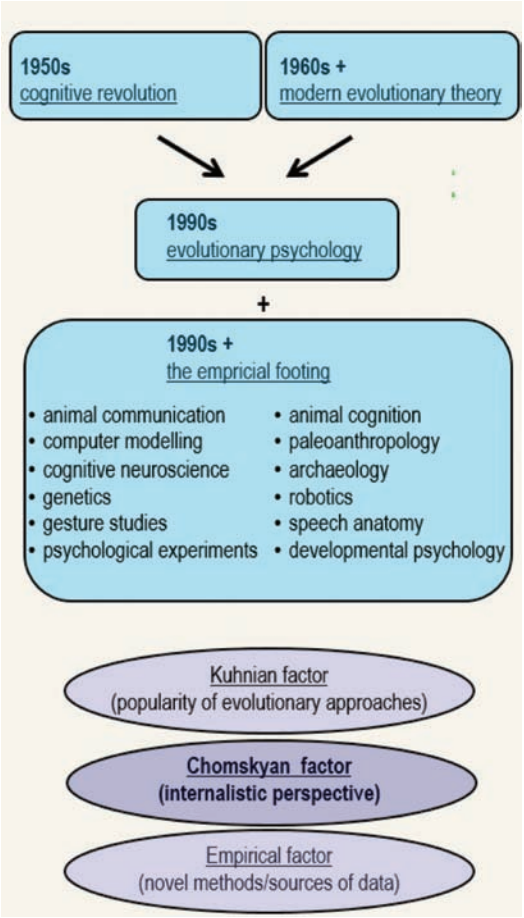
individuals employs a certain strategy, what will happen if a mutant individual employing a different strategy appears in this population? The mutant strategy is said to invade the population if it gets a higher payoff than the typical strategy. Translated into evolutionary terms, in such a case the mutant strategy will spread in the population and in the end eliminate non-mutant strategies. On the other hand, an Evolutionary Stable Strategy is defined as a strategy able to resist the appearance of mutant strategies (Maynard Smith and Price 1973).

As can be seen from the above description, the new type of evolutionism – neo-Darwinian, mathematised and often game-theoretic – began expanding beyond biology. The use of game theory facilitated a neo-Darwinian approach to the study of behaviour under the auspices of the new discipline – behavioural ecology. In contrast to traditional ethology (see above), behavioural ecology is concerned with uncovering patterns of rational decision-making, i.e. those that increase the fitness of decision-makers (e.g. Krebs and Dawkins 1984, Krebs and Davies 1993). Robert Axelrod's book *The Evolution of Cooperation* (1984) inspired the evolutionary study of pro-social behaviour in a variety of disciplinary contexts – political sciences, economics, communication studies, even ethics (see, e.g. Hauser 2006). Since 1970s, there has been a general interest in applying Darwinian theory to non-biological entities – ideas, views, melodies or changing fads. This area – cultural evolution – was popularised by Richard Dawkins's idea of memetics, with the *meme* being conceptualised as the cultural counterpart of the biological *gene* (1976; see also Blackmore 1999). There appeared a very wide spectrum of research subjects and areas pertaining to evolutionary approaches to culture, such as the study of biases in cultural transmission (Boyd and Richerson 1985), patterns of cultural transmission, social learning and cumulative culture (e.g. Cavalli-Sforza and Feldman 1981, Tomasello 1999, Laland and Brown 2002) or cultural group selection (e.g. Boyd and Richerson 1985). Many of these appeal to the Dual Inheritance Hypothesis, which posits that the specificity of human behaviour is the result of the co-evolution of genes and culture (e.g. Campbell 1965, Boyd and Richerson 1985). Finally, evolutionary theory was successfully applied to the study of psychology; the area of evolutionary psychology, which emerged at the end of the last century, is based on the assumption that, just like the human body, the human mind was shaped by natural selection to cope with selection pressures (Cosmides and Tooby 1997).

As shown above, the latter half of the last century brought the conceptual integration of the neo-Darwinian model of evolution and a steady expansion of this form of evolutionism in many different directions. It is important to see that the psychologists, economists or sociologists who were adopting it were not just

subscribing to some general proposal but were taking on, to use Kuhn's term, the whole disciplinary matrix (Kuhn 1962) – ontological and epistemological commitments, methodology and the exemplar solution of the neo-Darwinian model. The form and scale of those "conversions" to neo-Darwinism had a strong impact on researchers interested in language origins, and they constitute – together with the Chomskyan and empirical – the third major factor responsible for the emergence of SLE, which we will refer to as the Kuhnian factor (cf. Wacewicz and Żywiczyński 2014, see Table 1).

Tab. 1: Factors involved in the development of the modern science of language evolution (adapted from Żywiczyński and Wacewicz 2015: 134)



6.5 The science of language evolution: a new era of language origins

Many commentators use the year 1990 to draw the symbolic line between "the old" speculation about language origins and "the new era" of the science of language evolution (SLE), stressing the role of the programmatic character of Steven Pinker and Paul Bloom's 1990 paper "Natural Selection and Natural Language" (Pinker and Bloom 1990; e.g. Christiansen and Kirby 2003b, Christiansen and Kirby 2003c, Scott-Phillips 2010; Wacewicz and Żywiczyński 2012). The programmatic element of the paper almost assumes the form of a manifesto, as shown by its opening passage:

> Many people have argued that the evolution of the human language faculty cannot be explained by Darwinian natural selection. … Others have argued that a biological specialization for grammar is incompatible with every tenet of Darwinian theory – that it shows no genetic variation, could not exist in any intermediate forms, confers no selective advantage, and would require more evolutionary time and genomic space than is available. We examine these arguments and show that they depend on inaccurate assumptions about biology or language or both. Evolutionary theory offers clear criteria for when a trait should be attributed to natural selection: complex design for some function, and the absence of alternative processes capable of explaining such complexity. Human language meets this criterion: grammar is a complex mechanism tailored to the transmission of propositional structures through a serial interface. … Reviewing other arguments and data, we conclude that there is every reason to believe that a specialization for grammar evolved by a conventional neo-Darwinian process. (Pinker and Bloom 1990)

Although Pinker and Bloom understand language and its evolution in markedly syntactocentric terms, their plea to study language as an adaption seems to have a general appeal. Importantly, they did not found the science of language evolution in the sense that SLE emerged by following their programme. Rather, they published "Natural Selection and Natural Language" at the timely moment when the three factors – the Chomskyan, the empirical and the Kuhnian – were spawning a new quality in the study of language origins. But, it should be stressed, its role was not purely symbolic, as it provided inspiration and guidance for later efforts.

The outcome of this inspiration was far-reaching. Christiansen and Kirby (2003b) mention a tenfold increase in the number of papers on "language evolution" from the 1980s to the 1990s; the data for the following fifteen years also registers progressive growth, showing that this trend is not a temporary fad or an artefact of the general increase in the absolute number of published

papers.[68] Equally importantly, more and more "language evolution" papers were being published in high impact factor journals, such as *Science* and *Nature* (e.g. Atkinson et al. 2008; Lieberman et al. 2007). Starting in the 1990s, complete monographs on evolution of language also began to appear. Of the early ones, the most important titles included Bickerton's *Language and Species* (1990), Dunbar's *Grooming, Gossip and the Evolution of Language* (1996), Deacon's *Symbolic Species* (1997), and Jackendoff's *Foundations of Language* (2002). Dunbar's and Deacon's works should perhaps be located on the popular side of scientific discourse, but they did grow out of their authors' scientific achievements, while their format helped popularise the newly emergent SLE.

An important note must be made about the nature of SLE. Since its very beginnings – Pinker and Bloom's paper or the monographs listed above – SLE has been an enterprise that cuts across disciplinary boundaries. In fact, the very reason why it arose was to bring together pieces of evidence from a variety of scientific backgrounds that inform the problem of language origins, as insightfully observed by Kendon, who in 1991 noted that the study into the evolutionary emergence of language "provides a focus through which a wide range of highly diverse fields of knowledge and theory may be brought into relationship with one another" (1991: 202). Early SLE research could be described as multidisciplinary in the sense in which, for example, Bickerton used evidence collected by representatives of other disciplines in his 1990 linguistic study: neuroscience, primatology, genetics and evolutionary biology. Nowadays, a lot of SLE research is conducted in conditions of genuine interdisciplinarity, with its best centres – for example, the Center of Language Evolution at the University of Edinburgh, the Max Planck Institute for Psycholinguistics in Nijmegen, or the Max Planck Institute for the Science of Human History in Jena – forming research teams consisting of representatives of many different disciplines. Interdisciplinarity is also evident at the level of education; for example, the MSc course in language evolution conducted by Centre for Language Evolution at the University of Edinburgh contains courses in various linguistic subjects, programming and computer modelling, evolutionary science, statistics and elements of neurocognitive science. In this respect, SLE seems to reflect the nature of language origins. In this book, we have striven to show that language origins have never belonged to one specific area, but have flourished on the borders of various intellectual

68 Based on data retrieved from *ISI Web of Knowledge* (webofknowledge.com); see also Orzechowski et al. (2016a).

pursuits, such as theology, philosophy and, later, scientific disciplines including comparative and primate studies, linguistics or psychology.

The growing field of SLE was acquiring the institutional characteristics of a science (Kuhn 1962). An invaluable role in integrating the field was played by EVOLANG (www.evolang.org), the biennial conference series that since 1996 has been gathering scientists conducting SLE research. In more recent years, special SLE conferences have been organised (e.g. "Cradle of Language", 2010, or "From Grooming to Gossip", 2012), and a new conference series PROTOLANG (protolang.org; organised biennially since 2009) has been initiated. SLE is often present in the form of thematic and special sessions at major congresses, for example, in the evolutionary sciences (European Human Behaviour and Evolution Association [EHBEA] 2011; Human Behavior & Evolution Society [HBES] 2011, 2014; International Society for Human Ethology [ISHE] 2014), linguistics (International Congress of Linguists [CIL] 2013, International Cognitive Linguistics Conference [ICLC] 2015) or semiotics (International Association of Cognitive Semiotics [IACS] 2014). As regards publishing, Oxford University Press in 2001 launched *Oxford Studies in the Evolution of Language*, which has been edited by Hurford and Turner. In 2016 SLE gained its own journal, *Journal of Language Evolution*, under the executive editorship of Dediu and de Boer and also published by Oxford University Press (Oxford Academic). There have also appeared special issues devoted to SLE in many IF journals (in, e.g. *Journal of Evolutionary Psychology*, 2010, edited by Scott-Phillips; *Physical of Life Reviews*, 2016, edited by Arbib; *Topics in Cognitive Science*, 2016, edited by Oller, Dale and Griebel; *Language and Communication*, 2016, edited by Wacewicz and Żywiczyński; *Journal of Neurolinguistics*, 2017, edited by Hillert; *Language Sciences*, edited by Żywiczyński, Gontier and Wacewicz).[69]

As already noted in the Introduction, SLE quite quickly became ripe for synthesis. The first textbook to appear was Sverker Johansson's *Origins of Language: Constraints on Hypotheses*, followed by the comprehensive text by Fitch *The Evolution of Language* (2010) and Hurford's concise introduction *The Origins of Language: A Slim Guide* (2014). There is also *The Oxford Handbook of Language Evolution*, edited by Gibson and Tallerman (2012), which contains well over 50 articles covering the most important SLE areas of investigation, organised into 5 topical areas: "Insights from Comparative Animal Behaviour", "The Biology of Language Evolution", "The Prehistory of Language", "The Development

69 Based on Johnasson's *Language Evolution and Computation Bibliography* (http://www.langev.com/author/sjohansson, DOA: 15 Mar 2017).

of a Linguistic Species" and "Language Change, Creation, and Transmission in Modern Humans" (2011). Additionally, some monographs, apart from presenting their authors' own views, take up the task of synthesising and organising SLE research, as is the case with Hurford's *The Origins of Meaning* (2007) and *The Origins of Grammar* (2011). The growth of SLE is also evident in the fact that introductory literature appears in languages other than English (in French: Dessalles 2000; Italian: Ferretti 2010; Polish: Żywiczyński and Wacewicz 2015; and Russian: Burlak 2011).

6.6 SLE's characteristics

We have noted a continuity between SLE and pre-scientific language origins in that they are not confined to a specific area of investigation, a fact confirmed by SLE's root-and-branch **interdisciplinarity**. But it is more important at this point to show how SLE and pre-SLE language origins differ from each other. We must carefully note that pre-SLE language origins cover a large expanse of the Occidental intellectual tradition and how much science there is in what constitutes pre-scientific language origins is a matter of degree – take for example, Abulafia's mystical account of language origins (2.2), Condillac's thought-experiment (4.5) and Jespersen's theorising about the beginnings of language (5.5). Drawing a line between the two does not serve to suggest that pre-SLE language origins make up some uniform intellectual formation. Rather, the distinction serves to capture the point that SLE has a new quality (see, e.g. Christiansen and Kirby 2003b, Christiansen and Kirby 2003c or Fitch 2002).

First of all, there is a figure-ground reversal of research interests. Whereas pre-scientific language origins were primarily concerned with scenarios of language emergence, SLE is much more focused on the **constraints** of such scenarios (cf. Deacon 2004, Johansson, 2005, Wacewicz and Żywiczyński 2012). Of course, scenarios are still important as they generate hypotheses, but now SLE researchers are not only interested in what may have happened, but also in what cannot have happened. Some of the most hotly debated constraints are the following:

- discrete units cannot have appeared before syntax (the logical constraint),
- language cannot have appeared in the recent past (e.g. 50 000 years ago) through a macromutation (a constraint established on the basis of predictions of evolutionary theory, evidence from population genetics and data on the migrations of *Homo sapiens*; see e.g. Dediu and Levinson, 2014);
- language cannot have evolved from primate communication (a constraint established on the basis of primatological data that testify to a radical difference

between primate and human communication and to a continuity between their cognitive systems; see e.g. Gallese and Umilta 2006);
- under standard conditions, cheap signals (i.e. those whose production does not involve a substantial cost for the producer) are not evolutionarily stable (a constraint established on the basis of predictions of evolutionary game theory; see e.g. Krebs and Dawkins).

Another important change relates to the increasing engagement of SLE research in "**puzzle-solving**", which Kuhn identifies as one of the characteristics of normal science (1962: 35–42; see also 6.8). Although SLE does not avoid asking big questions about language origins, nowadays SLE researchers realise that providing definitive answers to such questions is difficult if not impossible. What can be done is to evaluate the correctness of the answers to such questions by pursuing more detailed and hence less dramatic questions, for which it is easier to find definitive answers. Problems of this kind which are currently being discussed include, for example, questions about intentionality of ape gestures (Cartmill and Byrne 2010), the role of sound-symbolism in language acquisition (Imai and Kita 2014) or the potential of pantomime to change into a codematic system of communication (Żywiczyński et al. 2016; Zlatev et al. 2017).

Such a research programme is closely connected to **the methodology of converging evidence** (see 6.3.4, 6.8; see also Wacewicz 2016). Accordingly, one way of evaluating the correctness of answers to big questions consists in amassing evidence from a variety of disciplines that are relevant to the problems being investigated. Take for example the question about whether Neanderthals had language. Contrary to the early work by Lieberman and Crelin (1971, 6.3.3), the converging testimonies of archaeology, palaeoanthropology and genetics corroborate the hypothesis that *Homo neanderthalensis* was a linguistic species (for an overview of the debate, see Johansson 2012, 2014; Dediu and Levinson 2013). Recent reconstructions of the Neanderthal articulatory and auditory anatomy suggest a lack of the essential anatomical differences in this regard between *Homo neanderthalensis* and *Homo sapiens*. Next, Neanderthal material culture is more similar to human culture – a view supported, for example, by the analysis of Neanderthal artefacts interpretable as art, or the presence of ceremonial burial. Finally, the human version of the *FOXP2* gene (see 6.3.2) has been found in Neanderthal DNA. Taken together, this evidence does not allow us to definitively conclude that Neanderthals had language, but makes a positive answer to the question much more probable than a negative one.

The methodology of converging evidence motivates SLE to be on the constant lookout for **new types of evidence and new methodologies** by means of which

this evidence can be acquired and interpreted (see, e.g. Wacewicz 2013). Such expansion (cf. Klawiter 2004) takes place in the area comparative studies, where SLE's interests are no longer limited to primate communication and cognition but include many other mammalian and non-mammalian taxa. For example, vocal imitation, which is crucial to language acquisition, is poorly developed in primates. Hence, it is studied in songbirds and dolphins, and the results of this research suggest that similarities in vocal behaviours may be the effect of a deep homology, i.e. a genetic similarity in unrelated organisms. Another important expansion concerns new types of linguistic data. The construction of large databases of world languages, such as *The World Atlas of Linguistic Structures* (*WALS Online*, Dryer and Haspelmath 2011), facilitated automated searches for interlinguistic structural dependencies or dependencies between linguistic structures and other types of data, for example of an ecological or demographic nature (e.g. Atkinson 2011, Dunn et al. 2011; see Roberts and Winters 2012 for **nomothetic research** in SLE). For example, this line of study has led to the discovery of a significant correlation between the mean air temperature and the occurrence of tonal languages (Everett et al. 2015). Nomothetic research of this type remains an exploratory tool – although it is unable to test existing hypotheses, it may be very useful in formulating new ones. Regarding methodologies, SLE increasingly relies on experimental research. In the early days, SLE mainly employed computer and mathematical modelling. Later, **experimental designs** with human subjects gained more popularity. A good illustration of this trend is the iterated learning paradigm, which emerged from modelling research (see, e.g. Hurford 1989, Smith 2014) to become one of the most widely used experimental designs in SLE (most importantly Kirby et al. 2008) and the dominant design in experimentally studying cultural transmission (for an overview, see Kirby 2017).

A **critical** approach constitutes the other important characteristic of SLE. Jackendoff remarked that "Your theory of language evolution depends on your theory of language" (2010). But at the same time SLE research reflects back on conceptualisations of language and linguistic theory. The most spectacular case is probably Chomsky and colleagues' famous distinction between faculty of language in the narrow sense (FLN) and faculty of language in the broad sense (FLB),[70] which was introduced in the evolutionary context but fed back into linguistic debate

70 In the 2002 article, FLN constitutes the syntactic computational core of language, while FLB contains, apart from FLN, elements of the conceptual-intentional system (conceptual-lexical resources) and the sensorimotor system (responsible for the production and comprehension of speech). This definition is modified in the 2005 text; for a discussion, see Wacewicz (2012).

(Hauser et al. 2002, Fitch et al. 2005). Other examples are not difficult to find. For example, the work on **the evolution of pragmatics** (e.g. Sperber and Origgi 2010, Scott-Phillips 2014) brings into linguistic pragmatics ideas from comparative studies and the evolution of cognition, such as **theory of mind** (e.g. Premack and Woodruff 1978, Tomasello 1999). **The application of evolutionary game theory** (see 6.4) **confronted Grice's notion of cooperation with a more robust and basic type of cooperation** that is required of a stable communicative system (see, e.g. Zlatev 2014, Knight 2014). Our understanding of the neural basis of linguistic communication gained new insights from SLE research, a good example of which is Michael Arbib's conception of a *language-ready brain* (2005, 2012) that draws on the discovery of **mirror neurons** (i.e. neurons that are activated when performing an action but also when seeing somebody else perform an action; Rizzolatti et al. 1996, Iacoboni et al. 1999). There are numerous examples of SLE's impact on the way in which we think about language.

But **SLE has an evolutionary agenda, which necessitates a specific approach to the components of language**. Evolutionary theory predicts that such a complex system as language cannot have emerged suddenly. Most SLE researchers accept that language evolved gradually, which leads to the problem of **stages of language emergence.**[71] The starting point of this process refers to **the hypothetical cognitive and communicative abilities of the Last Common Ancestors shared by humans and chimpanzees**. What this stage could have looked like is informed by comparative data from our closest relatives – chimpanzee species, but also other non-human apes. **Pre-adaptations** constitute the next stage; they refer to features whose evolution was dictated by adaptive pressures independent of language but without which language would not have emerged. They comprise pre-adaptions related to the anatomical and cognitive infrastructures – for example, cooperation, shared intentionality or theory of mind, to mention a few of the latter kind. Then there follows the stage of **protolanguage**, i.e. a hypothetical communication system that is simpler than language but nevertheless possesses some characteristics of language. The heuristics of protolanguage allows us to identify important divisions in SLE. Following Żywiczyński et al. (2017), protolanguage debates can be viewed as dichotomies arising on three semi-independent dimensions:

- function of protolanguage: the dichotomy between **representational** and **communicative protolanguage**, i.e. whether protolanguage developed to enable inner thought or communication with conspecifics; if the latter, the dichotomy

71 The discussion of stages largely follows Żywiczyński and Wacewicz (2015: 180–190).

between **semantic** and **musical** protolanguage (i.e. whether it served communication of semantic content or musical-emotional expression);
- structure of protolanguage: the dichotomy between **combinatorial** and **holistic** protolanguage, i.e. whether its units were approximately lexeme-sized or proposition-sized; and
- modality of protolanguage: a richer set of distinctions into **vocal**, **gestural**, **multimodal** and **pantomimic** protolanguage positions (for details on this classification and representatives of various protolanguage positions, see Żywiczyński et al. 2017: 3–5).

Finally there comes the stage of the **transition from protolanguage to language**. The way it is discussed depends on a particular author's conception of protolanguage. For example, for the supporters of combinatorial protolanguage (e.g. Bickerton 1990, Jackendoff 2002) the transition involves the lexicon acquiring syntax, while for the supporters of holistic protolanguage (e.g. Arbib 2012, Wray 1998, Mithen, 2005) it involves the decomposition of holistic utterances. Another important problem that is discussed here is the role of cultural factors in the emergence of language from protolinguisitc communication. Researchers who emphasise cultural evolution appeal to linguistic processes such as **grammaticalisation** (Heine and Kuteva 2007, Hurford 2011) or more generally the effects of cultural transmission on a communication system, as shown **iterated learning** research (see above).

The last point brings us to yet another characteristic of SLE. The overwhelming majority of SLE researchers accept that the evolution of language depends on **an interplay of biological and cultural factors**. In this sense, the standard SLE view subscribes to a version of the Dual Inheritance Hypothesis (6.4). Somewhat reminiscent of the Neogrammarian sentiments (see 5.2.1), it is furthermore assumed that languages as systems of rules and elements change following the patterns of cultural evolution (Christiansen 1994, Christiansen and Chater 2008). This explains the popularity of the iterated learning paradigm, which allows researchers to formally capture mechanisms of cultural evolutionary changes.

6.7 Terminological conundrums

One of the problems with the reception of SLE is a terminological one. The biggest problem seems to spring from the fact that "**language evolution**", the commonest term for SLE in the literature, is a descriptive phrase, which unfamiliar readers often understand as the process of language evolution or confuse it with historical linguistics. That is why in this book the term "**the science of language**

evolution", abbreviated to SLE, has been used. In some works, there is also an evaluative distinction between SLE and **language origins**, which smack off earlier traditions of more speculative and less rigorous treatment, not anchored in empirical data. In our view, this distinction is incorrect. "Language origins" is just a more inclusive term that describes the area of investigation of how language emerged, irrespective of methods or theoretical sentiments on which such investigation is based. Hence, in this book, language origins have been taken to contain both SLE and prescientific reflection on the subject, which was documented in the preceding chapters. There are also terms that relate to various sub-fields of SLE. **Evolutionary linguistics** is sometimes used synonymously with SLE, although it has less interdisciplinary and more strictly linguistic connotations, as well as a certain focus on the evolution of languages. Then, the **evolution of languages** (Hurford 1999) is a related endeavour and a subfield of language evolution, specifically interested in the evolutionary changes in language itself and processes of cultural rather than biological evolution. Some authors use the term "**glossogeny**" to refer this area of SLE (Kirby and Hurford 2002), but in this work glossogeny and **glottogony** refer to traditional and/or speculative reflection on language origins. Finally, **biolinguistics**, while practically coextensive with language evolution in scope of interest, connotes a specific approach ("school of thought") closely allied with the generativist perspective in linguistics (see, e.g. Boeckx and Piattelli-Palmarini 2005).

6.8 In what sense is the science of language evolution a science?

Writing about the condition of modern-day SLE, Tecumseh Fitch, one of its towering figures, presses the point that now it constitutes a **normal science**:

> We have whole new classes of data that provide new insights into key issues and problems (e.g., paleo-DNA). The field also profits from a productive new inter-disciplinary community that is constructively engaging with these problems (centered around the biennial EvoLang conference series), and a flood of more traditional sorts of data (e.g., regarding animal cognition and communication, genetics, and neuroscience). This combination has led to increasingly sophisticated models of language evolution that make multiple testable predictions, and improved evaluation criteria for assessing such models. The result, I will argue here, is an ongoing transition of scientific research on language evolution from one dominated by speculation and pet hypotheses to "normal" science, marked by attempts to empirically evaluate multiple plausible hypotheses. (Fitch 2017: 3)

The majority of SLE researchers would probably agree with Fitch's observation that the area is becoming more scientific. This process has been accomplished through amplifying the characteristics that distinguish SLE from pre-scientific

language origins (see 6.6), most importantly through an increasing commitment to empirical research and the resultant methodological commitments to the formulation of falsifiable hypotheses. But does this mean that SLE is a normal science? Kuhn's notion of normal science describes the non-revolutionary stage of a science, which is dominated by one **paradigm** that succeeds in dealing with anomalies and in this way prevents a scientific revolution and a concomitant paradigm shift (Kuhn 1962: 102; cf. Żywiczyński 2004: 26–32). A paradigm supplies scientists with "methods, problem fields, and standards of solution", and scientific activity primarily consists in "**puzzle-solving**", i.e. solving problems identified by a paradigm by means of methods supplied by a paradigm and measuring the strength of solutions by standards likewise defined by a paradigm (1962: 35–42).

As noted above, one of the features of SLE is indeed a growing involvement in "puzzle-solving", but on closer inspection it is difficult to apply the Kuhnian yardstick of normal science to SLE. First of all, SLE uses "puzzle-solving" – in accordance with the methodology of **converging evidence** – to tackle the grand question about the evolutionary emergence of language (see 6.6). Take the case of a geneticist who studies ancient DNA and participates in an SLE programme. Such a researcher relies on the paradigm of his or her discipline, which identifies puzzles to solve, gives them methods to solve them, etc. But for the results she obtains to be used in building SLE arguments, they must be confronted with results obtained by her colleagues representing, for example, archaeology or palaeoanthropology, who have been engaged in their own puzzle-solving activities, delimited by the paradigmatic confines of their disciplines. Importantly, a model constructed in this way can generate testable hypotheses (as Fitch stresses), but due to SLE's thoroughgoing interdisciplinarity, it cannot be designated a normal science, at least not in the Kuhnian sense. Alternatively, it could be argued that the neo-Darwinian model of evolution (see 6.4) constitutes SLE's paradigm. Kuhn develops the notion of paradigm into what he calls a "**disciplinary matrix**", which has the paradigm characteristics given above but also contains a set of beliefs and preconceptions shared by its practitioners (Kuhn 1977: 294), such as metaphysical and epistemological commitments, preferred analogies, standard examples and metaphors as well as research methods (Kuhn 1977: 297–299; cf. Żywiczyński 2004: 30). Most SLE scientists subscribe to the general conceptual import of the neo-Darwinian model, but – as shown above – it is difficult to see how this model could guide their puzzle-solving activity defined by the paradigms of their own respective disciplines. Another constituent element of a paradigm listed by Kuhn is "**exemplar**", understood as a concrete problem solution

that provides a model for generalisations, often stipulating the formation of a given paradigm (Kuhn 1977: 298–299; cf. Żywiczyński 2004: 30). Again, it is difficult to see how the neo-Darwinian model could supply SLE with the exemplar able to guide the scientific activity of all its researchers. This said, there are areas of SLE that do seem to meet the characteristics of normal science. Certainly, one of them is research on the cultural transmission of communicative systems. This field is dominated by the iterated learning paradigm developed by Simon Kirby (2001), which has been successfully applied in the study of various types of cultural transmission (for an overview, see Kirby 2017), including research on cultural transmission in non-human apes[72] (Claidière et al. 2014). Furthermore, the huge impact exerted by the research described in Kirby et al. 2008 makes it an obvious candidate for the exemplary solution in this area.

Taken together, the nature of SLE is much better captured by Lakatos's conception of a **scientific programme**. Lakatos characterises a scientific programme as "a powerful problem-solving machinery", i.e. one that is able to explain known facts and uncover unknown ones (1979: 4). This heuristic quality, as he calls it, ensures that a scientific programme leads to "**a consistently progressive theoretical problemshift**" (Lakatos 1979: 48).[73] "Problemshift" refers to the ability of a research programme to **uncover connections between known but hitherto unrelated facts**; a programme is "consistently progressive" if it leads to the **discovery of new facts** (Lakatos 1979: 4–5). SLE has both of these characteristics, but it should be noted that its thoroughgoing interdisciplinarity combined with intensive development sometimes makes it difficult to separate the two characteristics. To give just one example, the iterated learning experiments brought forth the discovery that – under certain conditions such as pressures for learnability and expressivity – cultural transfer of an artificially constructed lexicon leads to the emergence of compositional characteristics (most importantly, Kirby et al. 2008; see also 6.6). Then, this discovery was related to the findings of the research on the emergence of compositionality in spontaneously developed sign languages, such as the Nicaraguan Sign Language (see, e.g. Kegl et al. 1999

72 This research focused on non-communicative behaviours, the cultural transmission of which led to an increase in their orderliness and schematicity.

73 Lakatos himself described Darwinism as pseudo-science because – as he claimed – it lacks the essential characteristics of a scientific programme, i.e. Darwinism is unable to uncover connections between known but hitherto unrelated facts and to help discover new facts (1979). It should however be stressed that Lakatos's analysis primarily focused on the traditional 19th-century Darwinism and did not consider the empirical successes of modern neo-Darwinian models (see 6.4, cf. Cronin 1993).

or Senghas and Coppola 2001). But given SLE's broad comparative scope, these results are now also considered in the light of deep homologies (see 6.6), for example with reference to the studies of birdsong, such as the *de novo* emergence of wild-type song in the zebra finch (Fehrer et al. 2009).

This shows SLE's "powerful problem solving machinery" at work, which is capable of discovering new facts and relating them to both established facts and other newly discovered facts. What is of equal value and confirms SLE's status as "a scientific programme" *sensu* Lakatos is that research of the type described above opens up new theoretical vistas – in the above case, it leads to the question about general conditions that promote the emergence of systematicity in communication, or even more broadly, in behaviour (see also Claidière et al. 2014; Kirby 2017). Crucially, it would be difficult to formulate this question in a scientifically motivated way outside SLE's current framework. Without SLE's conference platforms, such as EVOLANG (see 6.5), or SLE-dedicated projects, it is difficult to imagine the type of communication and collaboration between, say, linguists and ethologists that is necessary to notice similarities between the results they have respectively obtained, to give integrated interpretations of these results and – based on such interpretations – to launch joint projects. In this way**, SLE's interdisciplinarity leads to the generalisation of results and research procedures**, whereby disciplines accommodate themselves to each other so as to facilitate cross-disciplinary understanding and to accomplish common research goals. **This generalisation also manifests itself at the theoretical level: if one theory is able to account for greater types of facts, then its explanatory power automatically increases. But it also takes place at the nuts and bolts level of scientific research, for example, by adopting methods and techniques from one discipline to a different one** (e.g. adopting systems for annotating human movement, such as the Facial Action Coding System, to annotate movements of non-human animals, see, e.g. Waller et al. 2012; or adopting the Conversation Analysis methods to study non-human animals' vocal behaviours, see, e.g. Chow et al. 2015).

Lakatos also identifies **two basic types of heuristic – negative and positive**:

> The negative heuristic specifies the "hard core" of the programme which is "irrefutable" by the methodological decision of its proponents; the positive heuristic consists of a partially articulated set of suggestions or hints on how to change, develop the "refutable variants" of the research-programme, how to modify, sophisticate, the 'refutable' protective belt (Lakatos 1979: 50).

For SLE, the neo-Darwinian model can certainly be considered as its negative heuristics, i.e. SLE's hard core is the view that language emerged through Darwinian processes (importantly, not only in the course of biological evolution, as

Pinker and Bloom 1990 claimed, but also through cultural and bio-cultural evolution). Everything else is the refutable protective belt. For example, in the course of SLE's development, the understanding of language has undergone a significant change. As already noted, many of the early SLE works emphasised the syntactocentric conception of language and its evolution (e.g. Pinker and Bloom 1990, Bickerton 1990). Nowadays, SLE researchers look at a variety of aspects of language – for example, pragmatics (see 6.6), conversational structure (e.g. Levinson 2016), politeness (e.g. Żywiczyński 2012, Wacewicz et al. 2015) or gesture (e.g. Kendon 2014). Furthermore, there has also been a noticeable shift of focus regarding the type of evolutionary processes that are thought to have been involved in the evolutionary emergence of language. The early preoccupation with biological evolution (e.g. Pinker and Bloom 1990) has been replaced with an increased attention given to cultural evolutionary and co-evolutionary processes (see 6.6 and, e.g. Smith 2018, Dor and Jablonka 2014). What is important is that these modifications and developments – sometimes of the fundamental concepts, as shown here – follow a certain "positive heuristic", i.e. they are introduced in consonance with what was described as SLE's characteristics (6.6). Most importantly, they are introduced paying due attention to constraints on language emergence scenarios, by means of the methodology of converging evidence and through the inclusion of new types of evidence.

Concluding remarks

A book such as this can be criticised both for being too detailed and too general. One of its aims has been to trace the emergence of the science of language evolution (SLE), and some might argue that, for example, Chapter 2 about the Adamic debates contributes little to the accomplishment of this goal. Two principal points can be raised to address such a criticism. First of all, although SLE constitutes a focal theme of this book, it is dedicated to discussing the history of language origins as a whole, not just the emergence of SLE. As noted in the Introduction, the lack of comprehensive works on language origins was in fact the main reason for writing this book. Another point relates to the vagarious life of ideas, which sometimes disappear but rarely disappear completely and for good. Here, I tried to show that even those intellectual traditions that seem very far from present-day discussions on language origins make use of ideas that also appear in the modern context, such as the idea that there must be a core of universal properties shared by all languages, which goes back to ancient philosophy but is also present in the Adamic debates.

The charge that the book fails to include some important topics in the history of language origins is much more difficult to refute. For instance, it does not discuss the mystical and magical conceptions of language, nor the projects of constructing *a priori* philosophical languages, nor the tradition of linguistic anthropology initiated by Boas, Sapir and Whorf – examples of topics of possible relevance to language origins that are not included here can easily be multiplied. This said, it should be stressed that the book reflects a particular vision of the topic of language origins and its development, and needless to say alternative visions that rely on different intellectual stances are possible. Actually, the book invites such alternative proposals, which could then be confronted with this one and thus lead to a better understanding of language origins.

One of the most important achievements of this book is the successful – in the author's opinion – presentation of language origins as a distinct line of investigation in Occidental thought. "Distinct" here does not mean autonomous, and special care has been taken to show the dependence of language origins on various intellectual traditions, first pertaining to religion and philosophy, later to different branches of science. In fact, this all-embracing character is reflected in the thoroughgoing interdisciplinarity of SLE. However, since the beginning of the Adamic debates, language origins have constituted a separate and important topic of investigation. It would be interesting to compare this status of language

origins in the Occident to language origins in other scholarly traditions – the philosophically rich cultures of India and China being obvious foci of such comparative work. Eventually, comparative research could lead to the identification of essential *topoi* – recurrent themes and topics that run through different traditions of reflection on language origins (see Żywiczyński 2004: 260–266).

Will this and future projects on language origins have a bearing on contemporary SLE? It is difficult to see how they could directly inspire specific empirical projects. But seeing one's science from a wide, historically informed perspective should allow SLE researchers to better understand the nature of their own scientific pursuit – its strengths, but also weaknesses. Kuhn begins *The Structure of Scientific Revolutions* (1962: 1) by emphasising the significance of history for the present and future of a science: "History, if viewed as a repository for more than anecdote or chronology, could produce a decisive transformation in the image of science by which we are now possessed". It is hoped that the knowledge of language origins afforded by this and future projects of this sort will help nurture a habit of self-reflection in SLE researchers, which currently may be numbed by the spectacular growth of the discipline but which is essential to its future development.

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Przemysław Żywiczyński

Language Origins

The *science of language evolution* appeared at the end of the last century but topically belongs to *language origins* – the domain of investigation that is concerned with the beginnings and diversification of language. Language evolution as a research area contrasts with the antiquity of language origins, which can be traced back to the earliest forms of traditional reflection. Language evolution emphasises its scientific orientation, whereas throughout most of its history language origins constituted a complex mixture of mythology, philosophy of language, as well as religiously and scientifically inspired speculation. This work is the first book-long attempt to document the whole history of language origins and situate language evolution in this wide intellectual context.

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