# HUMAN LANGUAGES ARE CONSTRUCTED LANGUAGES

# 1. Language theory: managing evidence trouble

Whenever I point out that current grammar theory has no basis in science, linguists are taken aback. Surely, there is no evidence for any of the explanations given by our greatest theorists. But am I not just missing the point?

Since the cognitive revolution that began in the 1950s, previous ambitious attempts to explain the designs of human syntax from a rational perspective have been brushed aside. The current paradigm is plan B: if nothing works, resort to vague, unfalsifiable, hypothetically "cognitive" explanations. Since grammar cannot be rationally explained, it "must" have some mystical natural basis.

In this, linguistics makes up a bizarre exception in scientific practice. It is currently the only field within humanities which considers itself as something of a natural science (see Pinker & Bloom 1990; Katz & Postal 1991:515; Givón 2002; Christiansen & Kirby 2003; Boeckx & Piattelli-Palmarini 2005; Koster 2006, Fitch 2010; Jackendoff 2013).

As such, it is also the only known field of "natural science" which can go on decade after decade with consistently null results; since the beginning of the cognitive revolution ‒ indeed, since Schleicher's (1863) *Die Darwinsche Theorie und die Sprachwissenschaft* ‒ there has never been any proof of one single grammatical phenomenon being naturally-based. However, taking up the issue seems a blasphemy since the natural origin of language appears holier than God ‒ literally! ‒ as will be discussed below.

## 1.1. Who put the "natural" into languages?

In a normal case, humanities is a matter of studying aspects of human culture with analytical, critical, speculative or reflective methods (e.g. Kundu & Nayar 2010). According to a traditional nature‒culture divide, objects of study are regarded as being essentially man-made, in a diachronically opposite perspective to natural sciences. We do not do "natural literature", "natural art" or "natural music" research. The terms 'natural religion' and 'natural philosophy' are actually used, but in a different meaning (Chignell & Pereboom 2017; Del Soldato 2016). However, we do study *natural languages* as if they were fruit of nature.

So, what on earth are "natural languages"? If we compare musicology, for instance, we can indeed discuss the existence of "natural music". That is, music created by nature without human interference; something like bird song. By all means, natural language is a matter of animals spontaneously using communication systems that people may perceive as somehow corresponding to human languages. Whether those should genuinely be considered as "music" or "language", respectively, is not an issue. All things natural are by default outside the scope of humanities research.

Nevertheless, in current linguistics, even human languages are considered essentially natural, not man-made, as opposed to *constructed* *languages* (Lyons 1991). Languages are considered to "*have been learned and spoken naturally*", as opposed to "artificial systems" which "resemble" language (Matthews 2007). Most importantly, there seems to be no place for studying such man-made systems because language theory is a "*premise for the description of natural language*" (Bussmann, Trauth & Kazzazi 1996).

Believe it or not, there is currently no theoretical research based on something as obvious as that languages could just have been made up without any human-specific predisposition to guide the process. To make the absurdity of the current situation fully explicit: in theology, discussing religion or God as mere social constructs has not been revolutionary since the last millennium (cf. Milbank 2008). Yet, it is difficult to find one single syntactic PhD discussing grammar as a fundamentally non-natural construct.

The chances are that such a possibility thus far never occurred to any student anywhere. Or, that linguistics professors are systematically and in cross-scholarly mutual understanding silencing any such voices. Since there are no records on the issue, any explanation must be as good as the other.

## 1.2. A theory of what?

It might seem like new theories were springing up like mushrooms after rain, but this is only because the term 'theory' is ironically used to refer to practical solutions. Common concepts such as Basic Linguistic Theory, Optimality Theory, formal language theory, "constructionism" (i.e. *Construction Grammar*), Head-driven Phrase Structure Grammar (HPSG) plus a long list of other "grammars", are dubbed "theories" although they are in fact methodological approaches to language analysis (cf. Butler 2014:xxvii). In linguistics, the problem is dubbed *the theory‒metalanguage confusion* by Dryer (2006a, 2006b).

In this thesis, the general focus is in grammar, and the term 'theory' is reserved solely to *scientific theory* (see Merriam-Webster 2017). Although it must be admitted that, in the humanities context, it might be safer to discuss *explanatory* theory. That is, something which gives precise explanations to observable phenomena. Why do we have grammar (or do we)? And, why do languages, for instance, have nouns and adjectives? Why do all languages share similarities (supposing that they do)? These questions and many others are relevant for a scientific ‒ that is, evidence-based ‒ explanatory theory of language.

A theory is more than a *hypothesis* or an *argument* in that it is rigorously substantiated. To begin with, it must have sufficient explanatory power to answer the relevant questions. Secondly, it needs to be clearly and meaningfully formulated and its mechanisms must be carefully demonstrated. Thirdly, in order for any theory to be scientific, it needs to be supported by evidence.

So far there has not been a language theory to meet all the necessary requirements. For instance, Chomsky's nativist position is exhaustively explained but lacks research evidence, whether linguistic, genetic or neurological (1.X). As a different case, the theory behind cognitive linguistics depends on cognitive psychology; but there is no proof that the latter offers meaningful concepts for specific syntactic or morphological questions (1.XX). A third approach in grammar theory is old school functionalism which would seem to offer a valid starting point for humanities research; but remains to be demonstrated and validated in respect to cross-linguistic data (1.4.[3]).

### 1.3. Naturalism vs non-naturalism

The central theoretical question for this thesis is whether grammar has any natural basis. Modern naturalist approaches to linguistic theory are cognitivist ones (1.X). In their outlook, linguistic forms must somehow reflect human biological‒psychological makeup. In contrast, there are also non-naturalist, non-cognitivist views which hold that the very same linguistic forms can more simply be explained in terms of logical, sociological, or computational principles; although such explanations have lost much of their former glory (1.4.).

The natural vs non-natural dichotomy is not to be directly associated with the formalism‒functionalism divide which is more commonplace in the literature, especially in American context, but problematic in many ways. In humanities, formalism is traditionally exemplified in contrast to structuralism (Eagleton 2011:79‒109). From this perspective, the formalism‒functionalism divide is asymmetric. However, today's psychologically-oriented linguists use the dichotomy in a way that appears to refer to little more than *generative grammar* ("formalism") vs *generative syntax* ("functionalism"), both of which are naturalist approaches (1.X) with no clear historical link or ideological relation to functionalist theory as discussed in this thesis (1.4.[3]).

It would be too simplistic to split the current theories into ones that deny that language is a cognitive system, and to others that believe that functional factors cannot explain linguistic forms; no approach does this. The specific question is whether language can ultimately be reduced to universally applicable mathematical principles (1.4); or to neurobiologically defined cognitive functions, universal to all humans (1.X). Of course, it could be neither (1.4[1]). In the broad field, there are also mixed or eclectic approaches. These are at risk of failing to be consequential due to the inherently different intellectual bases of the opposing outlooks (1.X).

#### 1.4. Non-naturalist approaches

Although the idea of language as a man-made construct is old, non-naturalist approaches are in the margins of today's grammar theory. The notion of human languages as constructed ones can be linked to [1] social theory of language; [2] logical approaches; and [3] functionalism. It is also discussed how each of these approaches brings evidence trouble to the mainstream, non-evidential, cognitive theories.

[1] **Social theory of language**

In social constructionism, language is considered to play a central role as a tool for structuring social or societal hierarchies. However, the question whether language itself is a thoroughly artificial construct is not obvious. At any rate, there is a philosophical tradition ‒ including Searle, Dessalles, Worden, Locke, Dunbar and others ‒ which emphasises the importance of social construction as the source and origin of language (Edwardes 2010:25).

In sociolinguistics, the idea that modern controlled or standard national languages are unauthentic or non-natural (Ammon 2004), or that any written form is so, seems to have been established, reflecting de Saussure's concept of *la langue* (Linell 1982:45‒46,14); but this leaves room for the assumption that languages nevertheless may have a natural basis.

Durkheim considered language as one example of a *social fact* along with other social institutions, such as kinship and marriage, currency, religion and political organisation. Individuals must account for such institutions in everyday interactions with other members of their society and act conventionally to avoid becoming misfits of the group (Durkheim 1982:74).

Although a social fact, language can be susceptible to criticism. From a societal perspective, betterness of one expression over another is not determined on linguistic or aesthetic grounds, but on political ones (Holmes 2007). Linguistic forms themselves are considered arbitrary to a high degree (Meyerhoff 2011:60‒61). A view emphasising arbitrariness is called *cultural* *relativism* which, in linguistics, is frequently associated with American structuralists such as Boas and Hockett (Halliday 1983; Rauh 2010:33). Within the same tradition, Sapir and Harris among others have been described as constructionists (Hammerjohann 2019:615).

In practice, there is often no clear distinction made between structuralism, relativism and constructionism in a language-theoretical context. In terms of this thesis, it is most important to recognise a difference between the structural method ‒ structure analysis ‒ and "structuralism" as an (anti-)explanatory theory. That is: relativism.

Though cultural relativism was a trend in the early 20th century research, it was discredited by many psychologists and typologists in the 1960s as a result of a long-lasting debate on semantic universals; with universalists prevailing over relativists (Regier et al. 2010; Evans 2010).

Of course, looking at typological evidence as a whole, perhaps browsing through the maps of WALS (World Atlas of Linguistic Structures: Dryer & Haspelmath 2013), it seems today well-established that many languages with no known historical link share a number of similarities. Since classical relativism has no objection to the claim that the space of possibilities is unbounded (chapter 2), any such coincidence would have to be infinitely unlikely and therefore relativism would seem fatally at odds with ample empirical evidence.

**● Evidence trouble from language as a social construct**

Although at least a strong version of cultural relativism seems unsustainable, the idea that language is socially constructed by human communities, and that the view that language originally emerged as an artificial tool for various purposes is the simplest available explanation per Occam's razor.

Although the idea of all languages being socially constructed has been largely unexploited in grammar studies, when considering its potential for research evidence, there can hardly be any approach equally fruitful. Language appears to be constructed all around as and literally as we speak. Education, good language guides, and automatic grammar checking add-ons are only some of the most obvious examples of how conventions are imposed upon language users.

Durkheim's idea of a social fact is to be understood as directly applicable to indigenous cultures and languages as well as to modern ones. There is no scientifically-based objection in the literature to the logic that social construction accounts for all language forms from start. It is widely agreed by developmental psychologists that children cannot develop language outside human culture (Jarman 2016). The most obvious conclusion would be that language structures are equally artificial as any other cultural artefacts, such as folk songs or miscellaneous utility objects.

[2] **Logical approaches**

The idea of language as a logical system is historically associated with 17th century language philosophy, although it was an academic tradition dating back to the Middle Ages to place grammar studies into the same faculty with logic and rhetoric. While the tradition considered languages as having been divinely inspired, Dalgarno claimed to have found Biblical evidence that language was a human invention. (Cram 2010.)

One of the most influential theoretical works of the period is the *Port-Royal Grammar* (Arnauld & Lancelot 1662/1810). In this volume, Arnauld argues that God created man to be a thinking and social being; so, it was for man to construct language from scratch through a step-by-step process, resulting in a rationally-based system with the purpose to communicate man's experience of the world to others (ibid. 14‒17). According to Arnauld, logic is the universal force which gives all languages the same skeleton:

"*Comme il n'y a qu'une Grammaire dans le monde pour toutes les Langues, parce qu'il n'y a qu'une Logique pour tous les hommes, il ne faut pas être surprise de trouver dans une [l]angue* […] *les mêmes principes & les mêmes règles que dans les autre [l]angues; mais, outre ces principes communs & ces régles générales, chaque [l]angue a ses tours propres & ses usages particuliers.*" (ibid. xii).

Much of the language theory of the time was focused on reconstructing the original language, *Lingua Adamica*, by comparing modern languages to discover universal traits amongst them (Cram: ibid.; Jermołowicz 2003). In seventeenth-century usage, languages such as English and French were termed 'instituted languages', in contradistinction to 'natural languages' or 'languages of nature'. Dalgarno's examples of the latter included e.g. Adamic language and the language of gesture (Cram ibid.: 277). Although attempts to decode natural language ultimately failed, the more logically-oriented approaches of the time eventually laid a ground for modern mathematical linguistics (Jermołowicz ibid.).

Arnauld's idea of universal grammar as logical or rational grammar lived on in the works of Husserl; and Montague (v. Kutschera 2012:217) who famously claimed that there is "*no important theoretical difference between natural languages and the artificial languages of logicians*" (Montague 1970:222). There was also an unfinished attempt to construct a model of mental language that would generate English syntax during the 'linguistic wars' of the 1970s (Harris 1993:214‒239).

Today, the idea of logical grammar is survived by linguistic realism (Katz & Postal 1991) or *realistic rationalism* (Katz 1998). In this philosophical view, linguistics is comparable to logic and mathematics in that it has no psychological status. Instead, "*linguistics is an autonomous formal science with its own goals and domain of facts*" (Katz & Postal ibid.:515).

● **Evidence trouble from logical approaches**

The evidential basis of logical-philosophical argumentation is different from empirical sciences because the goal is to find the simplest plausible explanation per *a priori* simplicity (Katz 1998; cf. Baker 2016). On the other hand, looking at the (un)available evidence from the point of Occam's razor, logical grammar prevails: since all features of human morphosyntax can be expressed mathematically by formal grammars, it is simpler to describe languages as logical systems rather than as logical‒psychological ones; the burden of proof is on the psychological claim.

As for a statement that there is no important structural difference between culturally-based and clinically constructed languages; since the topic is a taboo in mainstream linguistics, it has no way no answer it. For lack of response, one cannot but assume that claims made by Arnauld, Montague, and others, are indeed correct.

Logical languages, for example arithmetic syntax, seem apparently constructed on spoken languages. The historical connection may of course be impossible to prove directly. Fortunately, there is firm evidence that predicate calculus is based on human language: in his article, Peirce explains having modelled his version of formal logic on English ditransitive verbs (Peirce 1903). Although there are no linguistic studies available on the topic, this same basic predicate-argument structure appears to be the core of all mathematical and computer languages. While it is yet to be established that human languages are based on logical languages, there is sufficient evidence for the connection working the other way around.

[3] **Functionalism**

Though social and logical theory are also valid starting points for a humanities-based approach to grammar, functionalism may seem even more tempting. One reason is because functional analysis is widely used in linguistics, including philology and modern languages. A second one is that functionalism seems to be the only theory which can at least in principle offer explanations without referring to sciences other than linguistics.

It needs to be noted that there are many ideas of what functionalism might mean. This thesis remains committed to its goal of defining theories as explanatory ones. For this purpose, only a pure definition of functionalism is considered in order to avoid overlapping with other theories. Mixed and eclectic approaches are however discussed in (1.X).

As understood here, linguistic functionalism emerged in the early 20th century from the Prague Linguistic Circle, and belongs to a larger intellectual framework which also includes philosophical, sociological, and anthropological applications. Functionalism considers its objects of study as being shaped by their instrumental usefulness, i.e. *teleology* or *teleonomy*, and sees language as an artificial, man-made system based on people's needs in respect to their communicative goals. (Daneš 1987.)

In a functionalist view, "*Language is a part of culture and the development of cultural values cannot be explained from a biological point of view*." (Vachek 2003:97.) Mathesius, who laid out the methodological ground of functional grammar (ibid:16), viewed language as a system and considered Humboldt's introduction of psychology as an undesirable element that lead to a weakness in 19th century research:

"*Psychology* [...] *is still in such an unsettled state that application of psychological methods in linguistics leads to the transfer of confusion from one science into another*." (Mathesius & Vachek 1975:11.)

Understanding human languages as constructed ones is the key to understanding why languages have the properties they have. In each construction process, practical solutions for abstract problems are needed. Functionalism considers language as a problem-solving system and sees different languages as various solutions to the same problems (Skalička 1935:10).

One example is the problem of mapping nonlinear meanings onto a linear form, as exemplified by the necessity to choose between six different possibilities concerning the sentential morpheme order of subject, object and verb. Since no solution is perfect, there will be constant *functional pressures* toward change within any language community (Bates & MacWhinney 1987:213, 1989; cf. *functional sentence perspective* and *the semiological problem*, Vachek 2003:82). Each language project demands new solutions to tasks that are constantly posed in communicative situations (Seiler 1973:11).

Like other non-relativist approaches, functionalism can be understood as a universalist enterprise where functionality gives the basis for a universal framework of teleologic explanatory patterns. The goal is not to search for physical evidence, but to demonstrate that it is possible to explain linguistic forms as having been caused by certain fundamental teleological tendencies as a common ground. (Onea & Victor 2006:30‒31.)

The functional approach to grammar can be more precisely called *functional structuralism*. This, however, should not lead to the confusion of taking it for a mixed approach. From a functionalist perspective, the goal is to observe what functional roles the linguistic structures take in a given context. In this, a functional analysis is different from a semantic analysis. Functional grammar comprises structure and function analysis (e.g. Mathesius & Vachek 1975). There is no non-structural functionalism; functional linguistics is critically a rule-based approach to grammar (Seiler 1975:10; Vachek 2003:97; Nuyts 2007:556).

The most widely applied functionalist principle is economy, a mathematical concept (cf. Zipf 1949; Crystal 2006:162‒163). Since teleology is computational (Sun 2001), this aspect is present especially in the functionalist ambition to study teleologic consequences in a competing motivations model (CMM; see Butler 2006; MacWhinney, Malchukov & Moravcsik 2014). Such models are sometimes called "biological" (e.g. Croft 2000, 2002:287‒288). They are in fact mathematical models which can be applied to a variety of sciences ranging from logic to economics and political sciences, and more (see Barron 2013:xv). In linguistics, it is more appropriate to call them *linguistic* models.

Modern computational terminology is not frequent in functionalist sources, perhaps because the main weight of functionally motivated theory dates back to before digital age (cf. Vachek 2003:1‒16). It is vital to recognise that some of the consecutive approaches that today call themselves "functionally-oriented" belong to a cognitive framework (Nuyts 2007) which is not based on functionalist theory (cf. Croft 2015:6323). Or, according to Butler (2010:268), there may be confusion surrounding the American label, which defines functionalism against a generativist background (1.X), and often has "little reference" to European functionalism.

● **Evidence trouble from functionalism**

After over a century of existence, little evidence has emerged from the functionalist movement that functional motivations or pressures account for grammatical data. The problem in the tradition is that it takes functional motivation for granted and, instead of justifying the foundations of the theory on a large scale, research has been centred in case studies (cf. Fried & Dirven 1987).

The biggest issue is that functionalism has failed to create a parametric model that accounts for linguistic variation among the languages of the world. As such, it is impossible to know whether parameters (e.g. economy, disambiguation etc.) used in the case studies are relevant, or whether results are based on chance or the expectations of the researcher. In this, functionalism has not developed into a fully-fledged theory. As noted by generativists, discussions of (all kinds of) "performance systems" are still at a pre-theoretic stage (Smith 2004:38).

But there is recent computational evidence for functional motivation in lexical research. Zipf's *law of least effort*, known in classical functionalism as *the functional load* (*rendement fonctionelle*: Martinet 2005) suggests that languages favour short words for the most frequently used ones in order to facilitate speaking and writing (Zipf 1949).

A statistical analysis of eleven (Indo-)European languages supports the idea that word lengths are optimised for efficient communication. Interestingly, in a slight contrast to Zipf's hypothesis, the findings suggest that *predictability* may be a more important factor than frequency in explaining statistical word lengths. (Piantadosi, Tily & Gibson 2011.)

Furthermore, as a general example of lexical functional pressures, dictionarists report a recent shortening of words in written language due to constraints in social media and messaging (Willgress 2016). Surely, there could be grammatical evidence waiting to be unveiled in the same sources.

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...TO BE CONTINUED:

1.X **Naturalist views**: generativism/cognitivism + mixed & eclectic approaches: criticism.

2. **The space of possible grammars**

This chapter examines the space of possibilities as defined by the semiological problem of functionalism, or the problem of linear representation. It demonstrates how American structuralism and generativism/cognitivism are laid on a broken foundation: while assumed unbounded, the semiological problem sets clear limits to what is possible in languages.

In a closer examination, two further issues are studied:

(1) As the mainstream approaches are obviously misguided... does this mean logical factors alone determine what is possible in languages?

(2) One of the tenets of functionalism is that, as there is no perfect solution, the semiological problem triggers language change. Is the claim sustainable? Plus: can there be other (sociopsychological, radical vs conservative contact) factors at play?

3. **CMM: variation of dominant word order**

The third chapter will introduce a competing motivations model which explains subject‒object‒verb-order variation among the languages of the world (WALS) in terms of just two competing functional motivations: economy and disambiguation.

Although the principle is simple, the research requires some work, but the core task is manageable by one person within the time limits of a PhD study. That excludes any programming: all simulations are done manually, focussing on the algorithmic design, and leaving the work explicit so that it can be checked and criticised by linguists, not engineers.

Why is this relevant to linguistics?

This research validates functionalism against crosslinguistic evidence. That means functionalism (as defined by Mathesius etc.) becomes the first scientific theory in the field.

Consequently, cognitivist research will continue ‒ nothing will of course be admitted ‒ but, if the CMM results are "convincing" enough, it will be more difficult to recruit talented students for cognitivist approaches or evolutionary linguistics in future. It looks unlikely they will gain substance in the meanwhile.

These three chapters are to be finished during the academic year 2017/18.

Green light?

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