From SOV towards SVO

Explaining the word order distribution in terms of changing preferences

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Abstract

An explanation for the observation that most languages nowadays exhibit an SOV or SVO word order is provided by suggesting that SOV and SVO can both be seen as advantageous, but from different perspectives and under different circumstances. There seems to be an asymmetry in the preference for SOV and SVO word orders in the sense that SOV word orders are mostly adopted in newly emerging languages, while there also has been a general shift from SOV towards SVO in fully developed languages. The main point of this paper is therefore that the change into SVO can be explained as driven by functional preferences that become more prominent when more complexity arises in languages that evolve over time, while the emergence of an SOV proto-language can be explained because SOV is more preferred when languages are still in a rudimentary state and no stable lexicon is available.

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1. Introduction

Languages differ from each other in numerous properties, but this variation is not completely random. For example, when uttering a sentence containing a subject, a verb and an object, there are six logically possible orders in which one can put these constituents into a sentence. However, not all of these word orders are as widely used among languages. In fact, almost all languages put the subject or agent before the object or patient in basic transitive sentences, resulting in so-called SOV, SVO or VSO word orders in which 'S', 'O' and 'V' are short for subject, object and verb respectively (Greenberg, 1963). Word orders in which the object precedes the subject are quite rare: only about 5% of all languages exhibit VSO, VOS or OVS word order (Siewierska, 1988:15). An overview of the occurrences of the dominant word orders is given in table 1 below (Dryer, 2013a).[1] Note that the terms 'subject' and 'object', the 'S' and 'O' in the case of the abbreviations above, are used here in a general semantic sense: their use must be defined in terms of agent-like or patient-like properties respectively.

	SOV	SVO	VSO	VOS	OVS	OSV
Number of languages	565	488	95	25	11	4

Table 1: Word order distribution of all languages

Although there has been discussion on the exact numbers of occurrence, it is evident that SOV and SVO word orders are by far the most adopted among languages. The question that has kept linguists busy for decades is why that is the case. How can we explain that some word orders are much more common than others?

One way to explain this is to suggest that there are certain psychological principles at work that give rise to preferences for languages to adopt either SOV or SVO word order. An example of such an explanation can be found in the work of Russell Tomlin (1986), who shows that the typological data can be explained by three general linguistic principles by which both SOV and SVO are favoured over the other word orders.

The first principle that Tomlin (1986) defines is that of Verb-Object Bonding, which states that the relation between verb and the object is stronger than that between the subject and the verb. Languages in which the verb is adjacent to the object realize

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[1] The classification of languages relies on dominance in this case, which means that languages in which more than one word order are used are classified according to the order that is used most frequently. The distribution of word orders among languages can also be derived by looking at the basic (instead of the dominant) word order in "flexible" word order languages, in which only the order in stylistically neutral clauses is taken into account (Siewierska, 1988: 8).

this principle. The Animate-First principle is realized when more animated referents precede less animated referents. Assumed that subjects are prototypical agents and agents are prototypically more animated than other referents are, languages that put the subject before the object should be more common according to this principle than languages that do not. The last principle, the Theme-First principle states that old information should precede new information. Tomlin assumes that objects express new information more often than subjects do, because oftentimes subjects function as topics. Therefore, this also results in a preference for word orders in which the subject is placed before the object.

According to these principles, both SOV and SVO realize all three principles and are therefore the most common word orders according to Tomlin, followed by VSO that realizes only two principles and both VOS and OVS that realize only one principle (Tomlin, 1986). However, in formulating these principles, Tomlin makes quite a few assumptions, which are in fact not always uncontroversial (Blake, 1988). But, as Maurits and colleagues pointed out, perhaps the most crucial problem with Tomlin's approach is that "it is not clear *why* these principles work" (Maurits, Perfors & Navarro, 2010: 2); Tomlin himself does not show that these principles really are at work, why that should be the case and how they actually influence the word order distribution among languages.

1.1 A diachronic perspective

Another objection against Tomlin's explanation is that even though his principles explain the current data almost perfectly, the predicted preference for SOV word order cannot be observed when also regarding language change. That is, languages almost never seem to change into SOV and instead there even seems to be a shift away from that word order. From this perspective, Talmy Givón, one of the founders of functional linguistics, claimed that "the synchronic characteristics of syntactic structures cannot be understood without some reference to the diachronic processes which gave them rise" (Givón, 1979: 235). From a diachronic perspective then, the change from SOV to SVO is often documented (cf. Li, 1977; Bauer, 1995; Kiparsky, 1996; Weerman, 1993; Hroársdóttir, 2000; Holmberg & Platzack, 1995; Taylor, 1994; Leinonen, 1980) and seems to suggest that there exists a general bias for SVO word orders. From the fact that the change into SOV has (almost) never occurred in recent history (Givón, 1979; Newmeyer, 2000), it might be claimed that there exists no preference for SOV word orders. If word order change is driven by functional preferences, Tomlin seems to be at least partially wrong, because from a diachronic perspective it seems that not SOV, but only SVO is generally preferred.

It is not immediately evident however, that word order change actually is driven by functional preferences in the first place. In fact, several explanations have been

proposed that explain the shift towards SVO not in terms of functional preferences, but rather by suggesting that this shift is due to contact with other languages. However, with respect to these accounts, Kiparsky (1996) argues that an explanation for the change into SVO cannot be found solely in the influence of other languages, because there seems to be no clear correlation between the degree of contact with SVO languages and the distribution of SOV and SVO languages at all. Exemplary in this argument is Icelandic, a language that changed from SOV into SVO without having any notable contact throughout its history with other languages.

Another fact that - at least intuitively - favours an explanation of the shift into SVO as to some extent driven by general preferences, is the fact that SVO languages seem to be relatively stable. SVO word orders are not only one of the most attested word orders, but are also one of the most stable ones in the sense that for a language exhibiting an SVO word order it is not very likely that the word order of this language will change as compared to languages that have other word orders (Maurits & Griffiths, 2014). From this perspective, a functional preference can perhaps not only be deduced from the fact that some languages change but also from the fact that others do *not* change.

Furthermore, from a synchronic perspective it is held that non-SVO languages are also less stable than SVO languages in the sense that SVO languages usually have less additional alternative orderings of the subject, object and the verb. In contrast, in non-SVO languages other word orders are used in specific contexts for example because of pragmatic or syntactic reasons (Steele, 1978). Another relevant fact is that languages which do not have an SVO word order as their basic order, tend to have an SVO order as an alternative word order as well (Greenberg, 1963). These observations can perhaps be seen as additional reasons to suggest that there is a general bias for SVO word orders, because even in non-SVO languages, SVO word order is widely used. That is, the fact that SVO word order is used so widely among different languages seems to suggest that these word orders are perhaps the easiest to produce or to comprehend.

If we thus conclude that the shift towards SVO is at least partially driven by functional preferences, questions about the origin of the large amounts of SOV languages still remain unanswered. The fact that these questions are not accounted for when explaining the unidirectional shift into SVO in terms of a universal preference for SVO has been considered as a "decisive flaw" in such functional accounts (Kiparsky, 1998: 15).

In fact, with respect to these SOV languages, Newmeyer (2000), like Givón (1979), argues that the combination of the typological data at hand and the fact that languages seem to shift away from SOV and never towards it, will necessarily lead us to the conclusion that the large amount of SOV languages cannot be a result of recent language change. And, if that is the case, what we need to conclude is that when we would go back in time, the percentage of SOV languages would only increase. The conclusion must be that at some point in time there were even more SOV languages than there are now. Suggesting that there are that many SVO languages because an SVO

structure is universally preferred, does not explain where these large amounts of SOV languages come from. So when claiming that functional preferences drive the change into SVO, we are obliged to also provide an explanation of the predominance of SOV word orders.

To summarize, to account for the observation that most languages nowadays exhibit an SOV or SVO word order, language change should be taken into account. Information about language change suggests that there have been a general shift from SOV towards SVO, which points in the direction of SVO as the word order that is mostly preferred. However, there still exists a very large amount of SOV languages as well. A functional account that states that SVO is a generally preferred word order cannot explain that SOV languages are also that common - except when we also conclude that these SOV languages were always there. In this paper, I will therefore argue that it seems legitimate to suggest that almost all of these SOV languages are remnants of an earlier (or even: the earliest) SOV proto state.

The crucial question that arises then is twofold: firstly, if there is a reason that SOV was adopted in earlier states of language, why do we also observe a tendency away from it? And secondly, if there exists a functional advantage for languages to change into SVO, why do almost all languages seem to have origins that are clearly not predominantly SVO?

The inability to answer the latter question is often seen as an objection against the claim that the shift into SVO is driven by functional preferences (cf. Lightfoot, 1987). As Kiparsky (1996: 16) points out, however: "this objection misses the mark", because "there is not a single dimension of optimization but numerous partially conflicting ones". In this paper, I will adopt this line of thought to argue that Russell Tomlin was essentially right in suggesting that both SOV and SVO can be seen as generally preferred from a functional perspective. However, I will argue that general preferencesdo not have such a direct influence on the word order distribution as Tomlin proposes, but instead I will suggest that the relative preference for SOV or SVO varies under different circumstances. The main point will be that the change into SVO can be explained as driven by functional preferences that become more prominent when languages evolve over time, while the emergence of an SOV proto-language can be explained because SOV is more preferred when languages are still in a rudimentary state.

1.2 Overview

In the next chapter, Chapter 2, I will argue and hopefully demonstrate that both SOV and SVO word orders have different functional advantages over other word orders, but from different perspectives. In Chapter 3 I will conclude that SOV word order is, most probably, the starting point from which most languages that are now spoken have

evolved. That is, I will argue that it seems plausible that almost all existing languages have an SOV ancestor that can be traced back to earlier, not fully grammaticalized states of language. In Chapter 4 I will argue that the preference for SOV word order is more prominent in these ancestral, not fully-fledged proto-languages, whilst the emerging complexity of language results in a preference for SVO over SOV when languages develop over time. I will further support this latter claim by referring to existing data of languages that actually changed from SOV into SVO. In the last chapter, Chapter 5, I will summarize the most important arguments and evaluate the main point made in this paper.

2. Word order preferences

In the introduction I showed that – when looking at the dominant word order in all languages – SOV and SVO word orders are by far the most adopted. I also argued that this might be due to general preferences for both word orders, because it seems implausible that these large amounts of SOV and SVO languages are a result of language contact.The question then is: what is so special about these SOV and SVO word orders?

Existing explanations of the preference for one of these word orders rely on the assumption that either SOV or SVO has a processing advantage for either the hearer, the speaker or both. This assumption can be split up into two claims, in which the first represents the perspective of the hearer and second that of the speaker. Firstly, word order is claimed to be an important mechanism for retrieving the argument structure of a clause and secondly it is argued that some word orders are easier to produce than others because of working memory advantages. Both claims can easily be defended, but do they predict SOV or SVO to be preferred?

In this chapter, I will argue that both SOV and SVO can be seen as advantageous, but from different perspectives. On the one hand, both SOV and SVO word orders share the two properties in (i) and (ii). On the other hand, SOV word order has one important property that makes it different from an SVO word order: the verb is placed clause-finally (iii).

> (i) the subject precedes both the object and the verb
> (ii) the verb and object are placed adjacent to each other.
> (iii) the verb is placed clause-finally.

In this chapter I will try to give an overview of different principles that may be of influence on apparent preferences for languages to adopt either an SOV or an SVO word order. Since both SOV and SVO word orders are by far the most attested languages in the current and the historical data, it can be claimed that word orders exhibiting the first two properties have a functional advantage over word orders that do not. In the first part of this chapter I will therefore discuss the properties that SOV and SVO word orders have in common; in the second part I will give an overview of principles that either make an SOV or a SVO word order more preferred.

2.1 The Subject First preference

A study of Klein & Perdue (1997) shows that when speakers learn a second language without explicit instruction, the version of this second language that they speak will differ from the version of native speakers. Klein & Perdue call this L2-version of the target language 'the Basic Variety' and they claim that it has some characteristic

properties. One of these properties is that the agent is expressed first in many clauses, independently from the word order of the second or the first language. This provides some additional evidence for the claim that putting the agent (or the subject) first is a default way of expressing ourselves. To thus begin with the first property in (i) mentioned above, we should ask ourselves why subject-initial word orders are advantageous in terms of either the hearer, the speaker, or both compared to other word orders.

According to Jackendoff (2002), underlying the 'Subject First' preference there is a more semantically defined 'Agent First' preference. This Agent First preference is one of the most basic principles that reveals itself not only in less fully developed language systems, but also in fully-fledged languages. Jackendoff states:

> A speaker employing Agent First would use *hit tree Fred* to mean only that the tree hit Fred and not that Fred hit the tree; this principle enables one to disambiguate a large proportion of utterances involving two characters (Jackendoff, 2002: 247).

Of course, every consistent use of a certain word order enables one to disambiguate utterances involving two characters. Therefore, the preference to put the agent first when uttering a sentence cannot solely be explained in terms of referential ambiguity from the addressee's perspective. Schouwstra & de Swart (2014) therefore propose that the Agent First preference is a result of the fact that the element that has most control is expressed first. In this sense, the Agent First principle is thus explained in terms of the speaker: the agent is the most prominent referent in the discourse and it is therefore easier to express this referent first.

Another way to argue that it is natural to put agents before other constituents is to suggest that agents are usually expressed first, because it is the agents that instantiate the action itself. According to Delancey (1981) speakers grammatically encode the way they naturally see events: when one thinks about a certain action being performed, one would first think of the agent performing the action and only then of the action itself or the patient to whom the action is directed. An action thus involves an attention flow that begins at the agent and ends at the patient. It is therefore the most natural way to grammatically encode this attention flow by first expressing the agent.

As already noted in the introduction, Russell Tomlin (1986) suggests that the Subject First principle is not only about agency, but also about animacy. In his terms it is not an Agent First principle that underlies the Subject First preference, but an Animated First principle. One can extend this idea even further: Cooper & Ross (1975) suggest that the Subject First principle is essentially about putting the referent that we identify with the most in the first position of a clause. This referent is then of course by definition animate and therefore also a prototypical agent. Additionally, Bates & MacWhinney (1987) argue that the topic of a sentence, that is, what the sentence is about and what is usually regarded as old or given information, is preferred to be

expressed first. They call this principle 'Topic Initialization', which "can be viewed as an efficient solution to a simple perceptual processing constraint: points will be understood better if their topic is understood in advance" (Bates & MacWhinney, 1987: 223). Since subjects are in most cases the topic of a sentence, the Subject First principle essentially boils down to a Topic First principle in the argument of Bates & MacWhinney.

In short, several factors are proposed to explain the Subject First preference: agency, animacy, identification and topic initialization. The problem with all these explanations is not that they are necessarily contradictory, but that it is unclear which of these explanations is primary. That is, in these cases, the *explanans* can at the same time also be an *explanandum*. The fact that subjects are prototypically agentive could be an explanation for the preference to put the subject first, but at the same time we could ask ourselves: why do we tend to put agents first? If the answer is because of their animacy, the same question can be asked for animates.

However, instead of regarding these properties as separate explanations, they can perhaps also be combined into one explanation by accounting for the Subject First preference using a notion of *accessibility*. Accessibility can be defined as the ease with which a concept or word can be accessed from our memory (Ariel, 1999) and subjects are often claimed to be highly accessible, because of the properties just mentioned (cf. Keenan & Comrie, 1977). Because language production is an incremental process (Levelt, 1989), it is easier for the speaker to formulate utterances in which less accessible information is expressed later on in the sentence; first expressing information that can more easily be retrieved seems the most convenient, because the parts of a sentence that are already processed by speakers can then be expressed immediately when these parts are available for the speaker to produce, while at the same time expressing these available parts creates more time to retrieve less accessible information.

In general, animate referents are more accessible than inanimate referents are (Branigan & Feleki, 1999). Research by Prat-Sala & Branigan (2000) showed that there is a general tendency to put animates before inanimates when producing sentences. This tendency was shown to be independent of the word order of the language in which the sentences were produced. Speakers inverted the basic word order of their language in order to make the animate referent precede the inanimate referent. Also, topicality seems to be of influence on the accessibility of referents, which means that old or given information can be more easily retrieved in our memory than new information (Ariel, 1999). Agency is linked to accessibility in the sense that more 'agent-like' referents are more prominent than 'patient-like' referents and more prominent referents can be retrieved more easily from memory (Bornkessel-Schlesewsky & Schlesewsky, 2009).

In this way, different explanations of the Subject First principle converge into one explanation, since prominence of the arguments in a clause is influenced by animacy, agency and topicality. Although I have claimed in the above that it is mainly speaker preferences that drive the preference for an SOV or SVO word order, it can also

be held that prominence of the constituents in a clause affects the way in which hearers interpret these clauses. An explanation in terms of the addressee can also account for the Subject First preference by suggesting that hearers interpret subjects in the first position more easily than they interpret other constituents in this position. This difficulty may arise, for example, because in temporally ambiguous sentences a subject-initial order is parsed by default and has to be reanalyzed when this subject-initial order appears to be inaccurate (cf. Lamers, 2001; Bickel, Makarevich, Choudhary, Schlesewsky & Bornkessel-Schlesewsky, 2015). This process of reanalysis then takes extra time and effort for the hearer, which makes it easier for the hearer to interpret subject-first clauses.

Speaker and hearer driven explanations do not necessarily contradict each other, so I will not argue that it must be either the speaker or the hearer that affects word order preferences. Providing an explanation in terms of speaker preferences is perhaps, however, more straightforward than relying on preferences of the addressee. That is, it is clearer in what way speaker preferences actually affect language production, since speakers actually *produce* language. It is less evident on the other hand, to what extent speakers, while they are speaking, take preferences of the hearer into account. Therefore, even though explanations in terms of the addressee do not seem to be implausible at all, I focus mainly on the perspective of the speaker in arguing that the Subject First preference is essentially a result of the subject being the most accessible argument in a clause.

2.2 Verb-Object bonding

As an explanation for the fact that word orders in which the verb and object are adjacent are more common than word orders that do not exhibit this property, Tomlin (1986:74) argues that "a transitive verb and its object form a more cohesive, unified syntactic and semantic whole than do a transitive verb and its subject." The tight relation between verb and object can be explained from a semantic and from a syntactic perspective.

To begin with the first, it can be claimed that the verb and object are semantically more unified than verb and subject are. For example, Marantz (1984) claims that the verb and object together form a predicate, which together determine the semantic role of the subject. This can be observed in idiomatic expressions like *throw a party* as opposed to expressions like *throw a ball* in which the meaning of the verb is influenced by the object, but not by the subject. Furthermore, idiomatic expressions in which the object and the verb form a whole are more common than expressions in which subject and verb do, which - according to Marantz - implies that the semantic relationship between object and verb is stronger than that between subject and verb.

From a syntactic perspective, Song (1994) also claims that there is cross-linguistic evidence for this cohesive bond between object and verb. He notes that - from a cross-linguistic perspective - it is not very common that languages put constituents

like modal elements, sentence adverbials, negation markers in between the verb and the object, whereas the placement of these constituents is very common in between the verb and the subject. Song (1994: 519) also states that "the object is incorporated into the verb more frequently than the subject is". In contrast, Song notes that the transitive subject is not normally incorporable in the verb (Mallinson & Blake 1981:76-77; Mithun 1984:875). Therefore, word orders in which the semantic relationship between object and verb are reflected seem to be preferred over word orders that do not.

2.3 Interim conclusion

The above suggests that it is a tie for SOV and SVO word orders, since they both exhibit the properties described above. However, what crucially distinguishes SOV word order from SVO word order is the fact that the verb is placed last in sentences exhibiting SOV word order. whereas the verb is placed in the medial position in SVO sentences. To fully explain why and when certain word orders may be preferred, it must thus be explained in what sense it is advantageous to either put the verb in the end or to put it in the middle. In the remaining part of this chapter I will therefore discuss several reasons why either of those word orders may be preferred.

2.4 Word order preferences and communicational efficiency

One way to argue that either SVO or SOV has a communicational advantage over other word orders is to suggest that one of these word orders allows the least ambiguity from a semantic perspective compared to other word orders. Ferrer-i-Cancho (2014) argues that the placement of the three constituents, subject, object, and verb, can be influenced by different principles. One of these principles is predictability. From the perspective of the addressee, he argues that the constituent that is placed clause-finally is the most predictable, since the preceding constituents already give us information about the last one. In this way, Ferrer-i-Cancho states that: "Verb initial orders suggest a strategy of maximizing the predictability of the subject and the object; verb final orders suggest a strategy of maximizing the predictability of the verb" (Ferrer-i-Cancho, 2014: 2). In sentences exhibiting SOV word order, the verb is thus maximally predictable, which is important according to Ferrer-i-Cancho because the verb is the head of the clause.

Putting the subject in a position that is the least predictable seems to be the most convenient: the subject often expresses the topic which is by itself the most predictable unit in a sentence independent of the position it is placed in. However, Ferrer-i-Cancho's explanation of the placement of object and verb in terms of predictability does not seem to be as straightforward. Why would we want the verb to be the most predictable constituent of a clause and not the object? Knowing in advance what the

argument structure of the verb will be like can perhaps help in interpreting the arguments themselves. In that sense, putting the verb before the object may even be more efficient in terms of predictability of the object than an object-verb word order.

In fact, Schouwstra et al. (2011) showed in their experiment that participants preferred to use an SVO word order when objects are more dependent on the verb.Using an improvised gestural task, like Goldin-Meadow et al. (2008), they showed that whereas speakers have a preference for SOV word orders when extensional events need to be expressed, an SVO preference is observed when participants had to communicate intensional events. Extensional events involve actions that are transitive, imply a motion in space and in which the agent and the patient are relatively concrete; intensional events on the other hand are events including intensional verbs that have objects which are non-specific or even non-existent. Examples of extensional verbs include *to kick* or *to cover*, whereas *to want* or *to admire* are examples of intensional verbs. Schouwstra et al. (2011) conclude that because objects of intensional verbs are semantically more dependent on the verb, they are expressed after the verb is expressed.

Moreover, Gibson et al. (2013) showed in their experiment that a preference for SOV is changed into a preference for SVO when events are reversible. In this latter case, the event is reversible in the sense that the inherent semantic properties of both the agent and the patient are not enough to distinguish them from each other, which is not the case when the theme is inanimate. In an improvised gestural-communication task in which participants had to communicate a non-reversible transitive event that included an animate agent and an inanimate theme (like an event in which a ball is kicked by a boy), an SOV order was mostly used (cf. Goldin-Meadow et al., 2008). However, in a second experiment, when the action that needed to be communicated using improvised gestures involved both an animate agent and an animate patient (like an event in which a boy is kicked by a girl), participants mostly used an SVO word order independent of their native language.

Gibson et al. (2013) explain these findings by suggesting that communication takes place via a noisy channel: there are always potential factors that can corrupt the message, either because of errors made by the speaker or the hearer or because of external noise. In expressing reversible events, the use of an SOV word order is less immune to noise than an SVO order is. Using an SOV order means that it can never be retrieved which argument is omitted when the hearer is only able to interpret one of these arguments: both arguments are placed on the same side of the verb so when one of these is lost it can never be retrieved which one it was. Using an SVO order on the other hand is in this perspective more convenient when expressing reversible events. If one argument would not be conveyed adequately, the hearer can still recover the intended semantic role of the remaining argument: the position of the remaining argument is enough to tell whether this remaining argument is the agent or the patient.

An argument with a similar assumption is formulated by Maurits, Perfors & Navarro (2010: 2), who claim that "language producers unconsciously endeavor to keep the rate of information transmission as close to constant as possible when speaking."

Like Gibson et al. (2013), Maurits and colleagues argue that, when communicating, speakers have to convey information over a noisy channel. Therefore, the most error-resistant strategy is to spread the information that speakers want to convey as equally as possible across different units of speech, a principle which they refer to as the uniform information density (UID) principle. Evidence for the claim that speakers' choice for a certain expression is indeed affected by such a principle comes from Levy & Jaeger (2007), who showed that speakers spread the information flow of their message by inserting extra optional words to units with a high information density.

This principle results in a dispreference for OV word orders according to Maurits et al., because knowledge of the object often determines what the verb is going to be like. Because of this, the verb is often disproportionately uninformative compared to the object when the verbs follows the object, which thus makes a OV word order deviate from the UID principle. A verb-object word order is in this sense more ideal since information is provided in a more gradual fashion.

In sum, the choice for a certain word may be affected by semantic factors such as abstractness, predictability of the constituents or whether or not the event is reversible. When using an SVO word order, it is less probable that the intended message will be misunderstood. If the object of the clause is less concrete or more difficult to distinguish from the subject, an SVO word order seems to be the most convenient word order to still be able to convey a certain message. SVO word order also seems to be less prone to communicational problems, because the rate in which information is conveyed is kept as constant as possible, which makes the uttered clause easier to comprehend.

2.5 Word order preferences in terms of accessibility

The above seems to point out that an explanation in terms of minimizing ambiguity for the addressee does not seem to be fruitful in explaining the SOV preference that is also observed. Another reason to suggest that SOV is not preferred from the perspective of the hearer is provided by Goldin-Meadow et al. (2008), who argue that the perspective of the addressee does not explain the SOV preference, because participants in their experiments also used the SOV word order when their task was explicitly non-communicative in nature. They therefore provide an explanation of the dominating occurrence of verb-final sentences in their data in terms of speaker preferences. They argue that both the subject and the object naturally precede the verb since "entities are cognitively more basic and less relational than actions, which might lead participants to highlight entities involved in an action before focusing on the action itself" (Goldin-Meadow et al., 2008: 9166).

That verbs in general are less accessible than nouns or pronouns is not a new idea. Intuitively it seems plausible that concrete entities often expressed by nouns are more accessible than more abstract changes-of-states, events or activities. As evidence

for the hypothesis that nouns are conceptually more accessible than verbs, it is often reported that the first words that children learn are in fact nouns (Gentner, 1978; Macnamara, 1972; Nelson, 1973).

In terms of accessibility then, it can be said that it is the most convenient to put the verb in the last position, since this is semantically the least accessible constituent and at the same time it is conceptually the most complex constituent. Assuming that language production is a highly incremental process, it seems legitimate to suggest that speakers first produce the parts of a sentence that they have already processed and by doing so perhaps also buy themselves some time to process the verb by putting this verb in the last position. An advantage for the addressee can then perhaps also be formulated: because the verb is the least accessible constituent it can also be convenient for the addressee to have some more information about what the verb is going to be like before actually processing the verb itself.

The relatively low accessibility of verbs compared to expressions referring to the subject and the object, becomes only clearer when speakers do not have access to a stable lexicon. Langus & Nespor (2010) showed that whether or not participants had access to existing lexical knowledge influences their preference for a certain word order. When words of the participant's native languages are used instead of improvised gestures, an SVO word order was easier to comprehend, whereas an SOV word order seemed easier when participants had to interpret unknown gestures. Both native speakers of Italian, an SVO language, and of Turkish, an SOV language, prefer verb-object orders when perceiving artificially synthesized prosodically flat sequences of known words.

The effect of lexical input is not only shown in comprehension in the experiment by Langus & Nespor (2010), but is also confirmed in production by findings of Marno et al. (2015). Marno and colleagues used pictures of simple events that participants had to describe by gesturing and tested these items in two different situations: one in which the relevant gestures were taught beforehand, and one in which participants had to use their own improvised gestures. In this way, they showed that having lexical knowledge influences the choice for a certain word order. When participants had no lexical knowledge they mostly opted for an SOV word order, whereas participants that did learn the gestures beforehand used an SVO word order.

Not knowing the word for the verb beforehand, makes the low accessibility of the verb even more prominent. That is, when speakers do not know a conventionalized word or sign beforehand, they have to come up with a gesture for the verb on the spot. In general, it will take more effort to come up with an adequate gesture for this less accessible verb on the fly than it is to think of a gesture for the subject or the object. Therefore, the advantage of putting the verb in the last position seems only more prominent when speakers and hearers do not have a conventionalized sign to express the verb with.

2.6 Word order preferences and syntax

When it comes to preferences that are related to syntactical structures, it is often argued that an SVO word order is easier for speakers and hearers to produce and to comprehend than other word orders with another syntactic configuration are. For example, according to Kayne (1999), SVO is the underlying structure of all languages and other word orders are derivations from this default order. Kayne assumes that all languages essentially exhibit a specifier-head-complement structure, because he argues that there is a link between linear and hierarchical word order in the sense that complements ideally always follow their heads (Koster, 1999). However, this account does not explain why derivations from this underlying word order take place at all. Why typological word order variation exists in the first place and, more specifically, where such large amounts of SOV word orders come from, then remains a mystery within this account.

Syntactic accounts of the SVO preference can also be formulated while taking on a less extreme position. These alternative syntactic explanations of the SVO preference suggest that it is our cognitive grammatical system, i.e. the cognitive system responsible for generating the structure of sentences, that prefers SVO over other word orders. In this sense, SVO is a preferred structure for syntax itself. Evidence for this line of thought can be found in the study by Langus & Nespor (2010) mentioned in the previous section. Apart from the effect of existing lexical knowledge, they showed that, independent of semantic factors and native language, participants favored SVO word order over SOV when events become more complex. The influence of complexity on the preference for SVO was found when comparing gestural utterances that participants produced when they had to express a simple transitive event to the utterances with which both a main and an embedded clause needed to be expressed. In the first case participants mostly used an SOV order, whereas in the latter case the main clause was expressed before the embedded clause in almost all utterances. This shows that when a form of recursion needs to be implemented in the utterance, a right-branching SVO word order is universally preferred over an SOV order. Since recursion is a property typical to languages that are fully developed and have grammaticalized, it seems to be the system of grammar itself that prefers SVO over SOV according to Langus & Nespor.

Langus & Nespor (2010) as well as Marno et al. (2015) argue that the SOV sequences elicited in improvised communication experiments as carried out by Goldin-Meadow et al. (2008) are a result of participants bypassing their "computational system of grammar" (Langus & Nespor, 2010: 292). When participants gestured these SOV clauses, they were mostly driven by preferences of other cognitive systems: the sensory-motor system and the conceptual system.The structural complexity of sentences then triggers the use of the grammatical system: when sentences are structurally complex a system of grammar is recruited simply because it is needed.

The recruitment of this grammatical system can then also provide an additional explanation for the effect of a conventionalized lexicon as is discussed in the previous section: according to Langus & Nespor, when a lexicon is available, the grammatical system is used because it *can* be used. This means that not having to come up with new gestures on the fly, but instead relying on information already available, makes it possible to use a computational system of grammar at all. And again, when this system is used, SVO structures are preferred.

However, although it is argued that the computational system of grammar can only operate when lexical items are easily accessible (cf. Hudson & Eigsti, 2003), this latter explanation of the SOV preference in languages without a conventionalized lexicon seems to be a rather weak one, as it expresses only a necessary condition under which a grammatical system can operate. The existence of a stable lexicon is therefore not a sufficient reason for the use of a cognitive system for grammar.

Another disadvantage of this explanation of the preference for SVO that is based on the use of a cognitive system for grammar, is that it is not clear why exactly SVO structures would be favoured by the computational system of grammar in the first place. Additionally, another possibly problematic aspect is that in these arguments a crucial assumption is that such an independent computational system of grammar exists at all. This is not an uncontroversial statement, however. It goes beyond the scope of this paper to go into the discussion of the autonomy of a cognitive system for grammar, but as Ferrer-i-Cancho (2014) argues, the argument of "cognitive systems struggling for word order", as Langus & Nespor (2010: 291) themselves call it, can also be formulated in more (domain-)general terms. That is, Ferrer-i-Cancho suggests that it is not about the cognitive system of grammar itself that favors SVO, but about online memory costs that are minimized when the verb is placed in the center.

Whereas Ferrer-i-Cancho claims that SOV is an advantageous word order from the perspective of predictability – as is discussed above, he also argues SVO word order is in general advantageous from a syntactic perspective: when the distance between a head and its dependents is longer, it will take more effort to keep an unresolved head-dependent dependency activated in online memory (Morrill, 2000). This means that it will take more effort to link syntactically related words (like linking the subject to the verb for example) when the distance between those words is longer. To make this argumentation complete, Ferrer-i-Cancho argues, following Hawkins (1994) that the distance between the head and its dependents is the shortest when this head is placed right in between these dependents, which is the case for SVO and OVS word orders.

The underlying idea in this explanation is thus that language users try to minimize syntactic dependency lengths. Dependency length minimization (DLM) seems, quoting Futrell, Mahowald & Gibson (2015: 10336), "a promising hypothesis". They provide large-scale, cross-linguistic quantitative evidence that minimization of syntactic dependencies indeed plays a role when it comes to language production. Data from 37 languages revealed that in all those languages the average dependency length in sentences was below chance level, which means that the average dependency length of

sentences that were actually used in a language was lower than when the word order of grammatical sentences was created at random. This suggests that a null hypothesis stating that dependency length minimization does not play any role in language production is less plausible than a hypothesis which states that dependency length minimization does play a role.

Sentences with long dependencies do not only seem to be avoided in production, but they also seem to cause more difficulties in comprehension. Evidence for dependency length minimization in language comprehension has also been provided by several studies (cf. Gibson, 2000; Morrill, 2000). For example, a study by King & Just (1991) showed that subject-extracted relative clauses are easier to process than object-extracted relative clauses, because the dependency between the relative pronoun and the verb in the relative clause is longer in object-extracted relative clauses. To give a concrete example, this means that a sentences such as in (iv) should be easier to process than a sentence like in (v) below.

(iv)   The novelist$_i$, that __$_i$ admired the poet, wrote two masterpieces last year.
(v)   The novelist$_j$, that the poet admired __$_j$, wrote two masterpieces last year.

Also, in structurally ambiguous sentences, the structure with the shortest dependency length is often the preferred interpretation (e.g. attachment of prepositional phrases, as in Gibson & Pearlmutter, 1994; Thornton, MacDonald & Arnold, 2000).

Ferrer-i-Cancho's (2014) account of the SVO preference then also explains the difference in adopted word order in simple and complex sentences found by Langus & Nespor (2010). That is, placing the verb after the embedded clause in complex sentences is more costly in terms of online memory costs than this would be the case in simple sentences; the distance between the subject and the verb in the main clause would become relatively long in complex sentences. For example, in the sentence with an SOV word order in both main and embedded clause in (vi) below, the distance between the main clause verb and the subject is much longer than the distance between BOY and DREAM in the SVO-sentence in (vii).

(vi)   BOY$_S$ [MONKEY$_S$ DOG$_O$ FEED$_V$]$_O$ DREAM$_V$
(vii)   BOY$_S$ DREAM$_V$ [MONKEY$_S$ FEED$_V$ DOG$_O$]$_O$

2.7 Conclusion

In conclusion, different semantic as well as syntactic explanations are proposed to account for the general preference for SVO and SOV word orders. For the SVO preference, semantic explanations mainly rely on predictability of the argumentstructure that is optimized when the verb is placed in the middle, whereas syntactic accounts explain the advantages of placing the verb in the medial position mainly in terms of

processing efficiency, because syntactic dependencies are minimized in SVO sentences. In this sense, SVO seems to have advantages for both hearer and speaker: for both of them short syntactic dependencies are easier to process than longer ones, and for the hearer semantic roles are easier to distinguish in a verb-medial order than in other word orders.

The SOV preference can mostly be explained from the perspective of the speaker: because of the different rates of accessibility of different constituents, it is mostly the speaker who prefers to put the subject in the first position of a clause, the object in the second and the verb in the last. That is, the subject as a prototypical agent, animate and topic, is, prototypically, the most accessible constituent of the clause and is therefore placed first. The verb however, is - all other things being equal - the least accessible and is therefore placed in the last position. Because the verb is also conceptually more complex to comprehend, this latter property may have some advantages for the addressee as well.

3. Deriving earlier SOV states

In the previous chapter I have argued that both SOV and SVO word orders are advantageous, but from different perspectives. As is discussed in the introduction, since language change seems to be directed away from SOV and towards SVO, it is implausible that the large amounts of SOV language are a result of language change. To account for the large amount of SOV languages, I will instead conclude that these SOV languages were always there: the existence of the SOV languages is a result of SOV word order being predominant in the earliest stages of language.

The question that should be answered first when explaining the current data in terms of an earlier state of language is whether it is legitimate to draw conclusions about this so-called 'proto-language' based on the data at hand and what we know about language change. We can probably never provide a watertight proof to show that the earliest human language was an SOV language. Can we however make it plausible that we would keep finding more and more SOV languages when we would go back in time?

In this chapter I will argue that there are at least three different ways to derive the origin of language and its word order. The first method is simply trying to go back in time as far back as possible by taking typological data and language change into account. Another way of deriving the proto word order is based on an analogy between the emergence of the first language and the emergence of new languages that have developed spontaneously and independently of other languages. The last method will consist of evidence from experiments that also show a preference for SOV word order when new ways of communicating have to be invented on the spot.

3.1 Reconstructing the past

In 1963 Greenberg published a paper called ´The Universals of Language´, in which he tried to find correlations between different word order properties. Although some of these 'Greenbergian correlations´ did not appear to be statistically significant, others did appear to hold universally (Dryer, 1992). For example, a vast majority of OV languages is postpositional, whereas VO languages tend to be prepositional. This means that languages that put the verb after the object also tend to put adpositions after their objects and the same holds *mutatis mutandis* for VO languages: languages that place verb after the object, also place adpositions after their objects (Greenberg, 1963; Dryer, 1992; Hawkins, 1979).

Based on these correlations, Givón argues that properties like these can reveal former states of languages. VO languages that also exhibit properties that correlate with an OV word order, indicate that a change from OV to VO has taken place, in which the basic word order itself has changed, but the placement of adpositions still reveal a

former syntactic state. Therefore, he concludes, in his own words: "the overwhelming majority of languages and language families which do not show actual SOV syntax currently, can be nevertheless reconstructed via internal and comparative methods back to an earlier SOV stage" (Givón, 1979: 275). In this way, Givón comes to the conclusion that the change from SOV to SVO can be traced back at least 8.000 years.

The are several problems with this line of thought, however. One of these problems is that it does not explain why the placement of adpositions and not the word order itself reveals former syntactic states. So the question is what is it that actually changed: the word order or the placement of adpositions? That is, why assume that the postpositions in an SVO language reveal a former SOV state, while the SVO order itself does not reveal anything about the historical word order?

Moreover, Gell-Mann & Ruhlen (2011) argue that, based on the data at hand and the information we have about how current languages have developed over time, the shift away from SOV can be traced back even further than 8.000 years. They compared the existing typological data to the putative phylogenetic tree of human languages and claimed that "the direction of syntactic change, when it occurs, has been for the most part SOV > SVO […]". This family tree of languages that is used by Gell-Mann & Ruhlen is based on lexical information that we have about languages. This lexical information usually consists of so-called "cognates", words that have similar sound and meaning in different languages. Cognates can indicate a relation between different languages and in this way they can show to what extent languages are related. Using this sort of lexical and other linguistic information, languages can be clustered into families (Pompei, Loreto & Tria, 2011). In many cases, word order seems to be uniformly SOV within these families, which indicates that the current word order of these different languages most probably also represents the initial state of the language family as a whole. Furthermore, Gell-Mann & Ruhlen argue that in the language families in which this is not the case, either SOV seems to be at least predominant or the languages that are the oldest or the closest to the root of the language tree exhibit SOV word order (Gell-Mann & Ruhlen, 2011; Givón, 1975; Hyman, 1975; Lehmann, 1975; Janhunen, 1992:208). Only one out of eight attested language families remains problematic in this light: the Austric languages have an ancestor that most probably was SVO and not SOV (Pawley & Reid, 1980:116).

Recent findings by Maurits & Griffiths (2014) suggest that if there is such thing as a common proto-language, this language was most probably an SOV language. Using Bayesian phylogenetics, they tried to infer the probability of different ancestral word orders of seven different language families and argued that the most probable scenario must be that at least four out of seven language families have SOV origins. They also argued that if these seven language families have the same ancestor, this common ancestor would most probably have been an SOV language. Furthermore, they showed that both SOV and SVO languages are the most stable of all word orders, which means that these word orders are least probable to change into other word orders. One question that needs to be asked however, is whether these results really are representative from a

linguistic perspective, given the fact that the used method is for the most part based on mathematical assumptions, and - in contrast to the approach of Gell-Mann & Ruhlen - pays less attention to internal linguistic evidence.

Although information about language change does point in the direction of SOV, it certainly is not enough to conclude that the first language exhibited this word order. Or as Maurits & Griffiths put it: "SOV might be the safest bet for a common ancestral word order, but it is not especially a safe bet to take" (Maurits & Griffiths, 2014: 13579). What can be concluded however, is that the shift away from SOV can be quite legitimately traced back even further than documented language change.

3.2 Newly emerging languages

Supporting evidence for SOV as a proto-word order also comes from a different field in linguistics. That is, for observations of newly emerging languages we do not necessarily have to go back in time. When speakers need to communicate with each other but do not have the linguistic means at their disposal to do so, new languages may emerge even if other languages already exist.

For example, newly spoken communication systems, also called pidgins, can emerge in language contact situations in which speakers do not speak the same language. One may think that evidence for specific properties of a proto language can be derived from pidgin 'languages', because these pidgins also emerge naturally. However, Speakers of these pidgin languages already have their own mother tongue, but need to construct a new language in order to communicate with speakers of another language community. As a result, the word order distribution among pidgins is similar to that of all existing languages in general, because most of the newly emerging pidgin languages adopt the word order of one of the native languages of their speakers (Bakker, 2008). The problem with pidgins in this light is thus that although these languages are 'new' to some extent, the speakers of the community can never remain uninfluenced by the linguistic input they have already received. Pidgins are therefore never entirely new since they borrow features of the languages they are derived from (Meir, Sandler, Padden & Aronoff, 2010).[2]

Interestingly, this problem does not occur with newly emerging sign languages. When deaf children grow up in a predominantly hearing environment, among speakers that are not familiar with sign language, they cannot learn the language that their parents speak. Since these so-called home signers cannot be exposed to any adequate linguistic input, they have to construct their own strategies for combining self-made signs into messages. These home signs typically have a small vocabulary and limited syntactic

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[2]Creoles, languages that emerge when pidgins develop into fully-fledged language systems, quite consistently exhibit an SVO word order (Bickerton, 1984). I will come back to this finding in the following chapter.

complexity, but may develop into fully-fledged sign languages when a speech community of these home signers comes into being (Arbib, 2012: 298-299).

Newly emerging sign languages provide evidence for SOV as an ancestral word order in different ways. Not only do most home signers adopt a consistent word order of two-gesture utterances in which actions or verbs occur in the final position (Goldin-Meadow & Mylander, 1998), but it also seems to be the case that the majority of sign languages that have developed from home sign starts out with an SOV word order.

For example, Nicaraguan Sign Language (NSL) is an SOV sign language that emerged in the 1980's in a community of deaf Nicaraguans who like other home signers "lacked exposure to a developed language" (Senghas, Kita & Özyürek, 2004). In 1977, the first elementary school in the area for special education of deaf children opened his doors and with it a new speech community of primarily home signers was founded. In this community NSL emerged as a sign language within less than 20 years. The version of NSL spoken by the first generations exhibited an NNV word order, in which two nouns are always followed by a verb. The first noun refers in most cases to the subject and the second to the object, although variation between the placement of subject and object is also observed (Senghas, Newport & Supalla1997).

Another example of a sign language that emerged *de novo* and exhibits an SOV word order is the Al-Sayyid Bedouin Sign Language (ABSL) that developed in the present-day Israel some 200 years ago. ABSL is now seen as the second language of the Al-Sayyid Bedouin group, in which about 150 deaf people descended from two deaf brothers who initiated ABSL. Although ABSL is spoken in a community of both hearing and deaf speakers (or signers), ABSL arose independently of spoken language, because the first generations of ABSL speakers were completely deaf and had no access to spoken language at all. This independence can also be observed in ABSL word order, which is SOV in contrast to the spoken Arabic dialect of hearing members of the community which exhibits SVO word order (Arbib, 2012; Meir, Israel, Sandler, Padden & Aronoff, 2012).

Arbib concludes that "language systems that have developed without input from conventional language appear prone to exhibit OV order, at least in their early stages" (Arbib, 2012: 313). As far as we can tell based on only two newly emerging sign languages, this may indeed be the case. At least it may shed light on the way new languages in general develop and have developed.

3.3 Experimental findings

The third and last piece of evidence for SOV as the origin of (at least most) languages, comes from new communication strategies elicited in experiments. That is, when naive speakers that are not familiar with any sign language have to communicate simple transitive clauses by using gestures only, they tend to use an ordering of these gestures

that resembles SOV word order (Goldin-Meadow, So, Özyurek & Mylander, 2008). Goldin-Meadow and colleagues showed that speakers used an actor-patient-act ordering of constituents, which is analogous to an SOV word order, independent of their native language. Both speakers of languages with an SOV word order as well as speakers with an SVO native language, used an SOV order to express themselves nonverbally.

Therefore, Goldin-Meadow and colleagues argue that SOV word order is the natural order of early communication and newly developing languages in general and that an SOV word order - or "ArPA" (actor-patient-act) in their own words - "may reflect a natural sequencing for representing events"(Goldin-Meadow et al, 2008: 9166).

3.4 Conclusion

In conclusion, it can first be said that even though it is difficult to actually prove that the first language exhibited an SOV word order, information about language change points us in the direction of SOV, resulting in the conclusion that this word order was even more predominate in earlier stages of language. Furthermore, deaf children who are not able to acquire a spoken or a sign language because of their profound hearing losses (and because their hearing parents are not familiar with a conventional sign language), create their own homesign systems to communicate, which exhibit a consistent OV order. When these home sign systems further develop into sign languages without any apparent external influence, they also display this SOV word order. In addition, experimental results indicate that SOV is a natural way of expressing events, also for speakers that have already acquired a language.

It could be said, however, that the result with respect to improvised gestural tasks in an experimental setting together with findings of newly emerging sign languages, are just the outcome of the manual modality adopted in both cases. In that sense, it could be argued that these results only reflect a property of sign language or nonverbal communication in general in which SOV word order is preferred, and that these results therefore cannot be transferred onto spoken languages. When taking typological data of sign languages into account, this hypothesis should be rejected however, because it does not seem to be the case that in sign languages in general an SOV word order is preferred (Schuit, Baker & Pfau, 2011:8).

The conclusion must therefore be that different groups of speakers,such as deaf children and participants with different native languages in experiments, independently of each other tend to use an SOV word order in a context in which a new language emerges. This observation suggest that an SOV word order seems to be a natural way to express transitive events in newly emerging languages (Senghas et al., 1997; Goldin-Meadow et al., 2008; Arbib, 2012; Meir et al., 2012). However, while SOV seems to be preferred in new languages, when we look at the typological data and language change, an SVO word order seems to be preferred as well. The next chapter therefore moves on

to discuss the change from SOV towards SVO that has often been observed in many languages. In the next chapter I will try to explain this change together with the observation that SOV is mostly adopted in newly emerging languages, by suggesting that an initial preference for SOV decreases, while preferences for SVO word orders increase over time.

4. Explaining the change into SVO

In Chapter 2, I argued that there are different reasons to suggest that both SOV and SVO word orders are more preferred than other word orders are. Whereas newly emerging languages mostly adopt an SOV word order, as is argued in the previous chapter, language change in more grammaticalized languages seems to be directed towards SVO, away from SOV. This change towards SVO is essentially the change from a verb-final word order towards a word order in which the verb is placed in the medial position. The crucial question then is why the preference for verb-final clauses in newly emerging languages is lost over a preference for verb-medial clauses when languages evolve. In this chapter I will try to explain this shift from SOV towards SVO by suggesting that preferences for word orders change over time, resulting in an increasing preference for SVO when languages evolve, while the SOV preference is more prominent in newly emerging languages. I will therefore claim that word order change is at least partially driven by functional preferences.

For the claim made above to be plausible, however, it should first be argued that the existence of functional preferences actually affect the way in which languages change. According to Kirby (2007) we only know for sure that an explanation for a certain change really works when we also consider what kind of mechanism links the explanation to the actual change. When speaking of specific forms that change over time, it seems quite intuitive that these forms may change due to mechanisms like phonetic reduction (Bybee, Pagliuca & Perkins, 1990); sounds can be described in a gradient way, in which one sound can slowly be replaced by another that is just slightly different. The problem with word order change is that, quoting Li (1977: 2), word order change seems to be "the most drastic and complex category of syntactic change". That is, word order seems to be a discrete fact in the sense that a constituent is either placed in one position or the other.

This discrete nature of word order can perhaps be weakened a bit by the fact that languages often allow more than one word order. Synchronic variation within languages can account for the gradualness of language change with respect to word order. The mechanism that I will propose as being the most important factor in word order change is therefore the variation of different word orders within a language (cf. Tily, 2010). In this light, I will use empirical evidence of language variation to support the claim that word orders change, because some word orders are used more and more frequently. The frequency of these word orders then could make it easier for these word orders to be reanalyzed as the basic word order when new generations learn their native language.

This chapter will consist of two parts. In the first part I will account for the apparent word order change in terms of the increasing SVO preference and the decreasing SOV preference. Then I will support the claim that these changing preferences actually have an influence on language change by using facts about languages that actually changed into SVO; the shift towards SVO in these languages

occurred in different stages and it seems plausible to suggest that the increasing functional preferences for SVO have played a role in at least some of these stages.

4.1 Increase of the SVO preference

Logically speaking, there are two ways to go from an SOV word order to an SVO word order. If one were asked to change a sequence of symbols 'S-O-V' into a sequence with the order 'S-V-O', one can either put the 'V' to the medial position while leaving the other constituents in their original positions or only move the 'O' to the final position. In terms of changing word order *preferences* (instead of changing word order), the increasing preference for SVO word orders can be explained using two analogous motivations:

(i)   the attraction of the verb towards the middle becomes more prominent;

(ii)   the attraction of the object towards the final position becomes more prominent;

In this section I will argue thatboth the attraction of the verb towards the middle and the attraction of the object towards the final position become more prominent over time. In this light I will first discuss why it seems plausible that the advantage of putting the verb in the medial position becomes stronger when languages evolve over time.

Langus & Nespor (2010), as discussed in Chapter 3, found a preference for SOV word order when participants of an improvised-communication task had to gesture simple sentences, while they also found a preference for SVO word order when participants had to communicate events that were more complex. With regard to the difference between complex and simple sentences as attested by Langus & Nespor, it can be said that the effect of word order on online memory costs only becomes more prominent when sentences become more complex. That means that only when languages become more complex and begin to develop more complex arguments like embedded clauses, arguments containing adjectives or objects embedded in prepositional phrases, the advantages of an SVO word order in terms of minimizing dependency lengths outweigh the advantages that an SOV word order has when languages are still in a rudimentary state. This then gives us an explanation of the fact that SOV is preferred in proto-languages and improvised communicational systems, whereas SVO seems to take over in fully grammaticalized languages.

As is already pointed out above, another possible reason why this asymmetry between newly-emerging and fully-fledged languages exists, could be that it is not only leftward movement of the verb, but also rightward movement of the object which constitutes the increasing SVO preference. That is, the shift into SVO in fully-fledged language can perhaps not only be motivated by an increasing preference to put the verb in the medial position, but also by an increasing preference to put the object in the final

position. The increase of this latter preference may be partially due to information structure: from the perspective of the information structure of sentences, it can be argued that objects relatively often represent new information in comparison to subjects; in general, there seems to exist a tendency for speakers to express given information before new information (Westergaard, 2010; Krifka, 2008).

Of course, information structure alone does not provide an explanation of why SVO would be preferred over SOV, since both word orders put the subject before the object. And, perhaps even more importantly, it does not explain why the tendency towards SVO is not observed in newly emerging languages. However, it is often claimed that information structure affects the forms that speakers use to convey a certain message: new information is usually expressed by relatively long and complex forms, because new information is less accessible (Ariel, 1999); the speaker simply has to provide more information about new referents, which are also more unpredictable from the perspective of the hearer. New referents can therefore also be considered as having a higher information density, which makes it - from the perspective of the UID principle discussed in Chapter 3 - more convenient to express them using longer expressions (Levy & Jaeger, 2007). Subjects are, in contrast, in many cases expressed by short expressions like pronouns, because they are highly accessible for various reasons (also see Chapter 3). It is widely held that highly accessible forms like pronouns often become only more reduced over time, become clitics or even turn into bound morphemes (Bybee et al., 1990; Croft, 1990; Hopper, 1991; Ariel, 1999).

Thus, in practice, when complex constituents emerge and sentences contain more complex arguments, one would expect the objects to become, on average, relatively more complex compared to subjects. In a corpus study, Westergaard (2010) indeed found evidence for this to be the case in both adult- and child-directed speech in Norwegian: she showed that subjects are relatively shorter because they are mostly expressed by pronouns, whereas objects were mostly expressed using full NPs or PPs. When it specifically comes to complex objects then, it can also be held that, because of their complexity, their low accessibility and their relative newness, these objects "leak" towards the clause-final position (cf. Cloutier, 2009). It is often argued that in general there seems to be a bias to put short forms before longer or more complex ones (Behaghel, 1932). Quirk, Greenbaum, Leech & Svartvik (1972) noted that this principle, which they themselves coin as the "Principle of End Weight" is indeed observed to be at work in English, because speakers tend to express longer forms later on in the sentence. This means that speakers first produce shorter and less complex forms, because these forms will take less time to process and are therefore ready to be uttered earlier on. This, then, will buy speakers and their hearers some time to process these phonologically, semantically and/or syntactically complex, new or "heavy" constituents (Arnold et al., 2000; Wasow, 2002)[3]. An additional advantage of putting the object in the final position

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[3] There has been some discussion about whether word order is primarily affected by complexity, length or newness and it also does not seem to be clear how to define these notions exactly in the first place. I will

is that these complex objects are more predictable for addressees, since the verb already provides some information about what the object is going to be like.

So when this argument for the SVO preference based on information structure is combined with the idea that languages become more complex over time, this gives us an additional explanation of the shift into SVO which is only observed in grammaticalized languages. We can conclude then, that both the attraction of the verb towards the middle and the attraction of the object towards the final position become stronger when languages develop over time.

4.2 Decrease of the SOV preference

An explanation for the fact that it is mostly SOV that is adopted specifically in newly emerging languages can be found in the existence of a stable lexicon. When there are no complex constituents available yet in a language, the verb seems to be the least accessible of all constituents in a clause, as is argued in the Chapter 2. In that chapter it was also argued that the relatively low accessibility of verbs compared to expressions referring to the subject and the object, becomes only more prominent when speakers do not have access to a stable lexicon, as is shown by Langus & Nespor (2010) and Marno et al. (2011).

With respect to these findings, it is an interesting fact that creoles - languages that are created by children growing up in an environment of pidgin speakers - usually exhibit an SVO word order (Bickerton, 1984). Considering the wide variation of word orders that are used in pidgins, it seems even more striking that creoles quite consistently exhibit an SVO word order (Michaelis, Maurer, Haspelmath & Huber, 2013). This fact may show the same effect of an existing lexicon as the experiments mentioned in Chapter 2. Whereas pidgins are usually considered as communication systems that do not exhibit much grammatical structure, pidgin speakers do provide lexical input to their language learning infants. When pidgins develop into creoles and more grammatical structures emerge, creole speaking children drop the word order used by their parents and begin to use SVO word orders instead. Crucially, home signing children that have to invent their own lexicon show a preference for SOV just as the participants in the improvised gestural experiments do (cf. Goldin-Meadow et al., 2008).

When there is no stable lexicon, both speakers and hearers do not have access to it, which means that it is also more convenient for the addressee if the speaker puts the verb in the last position: this will not only buy the speaker some time to think of an adequate gesture, but it will also give the hearer some more information about what the verb may be like.

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ignore these discussions, however, because these notions seem to be highly correlated to the extent that they even seem to be interchangeable in most cases (Tily, 2010).

In short, the emergence of complexity on the one hand and the emergence of a stable lexicon on the other may provide an explanation for the increase of the SVO preference and the decrease of the SOV preference respectively.

4.3 The change into SVO in different stages

Even if it is true that the change into SVO is driven by the increasing push towards SVO and the decreasing pull of SOV as is mentioned above, this does not immediately provide an explanation of how the changes took place exactly and how the proposed preferences affect word order change. In other words, accounts that rely on general preferences when explaining word order change only provide a motivation of the change, but they have little to say about the specific circumstances that allow these changes to take place at all.

A popular way to account for this latter problem is to suggest that language change is a result of reanalysis triggered by language acquisition. In this way, languages change, because children who are learning their mother tongue sometimes do not find enough evidence in the data they have been provided to come to the same conclusions about their native language as their parents did. However, language change solely triggered by reanalysis in language acquisition cannot explain why language change exhibits a certain directionality. Therefore, as Kiparsky (1996) points out:

> A genuine explanation of a specific instance of change, then, must spell out two things: the factors that induced learners to prefer the innovating structure, and the factors that made that innovating structure attainable at a certain point on the basis of the data to which learners were exposed.

Of course, there is no such thing as 'a certain point', because - quoting Gell-Mann & Ruhlen (2011: 17299) - "it should be obvious that a language cannot change its basic word order overnight". Instead, there is often a period in which more than one word order is used in between periods of relatively rigid word order. Word order change is then all about frequency of use: the word order that is used the most in this period of relative 'free' word order slowly becomes the new basic word order of a language, simply because it is reanalyzed as such when the former word order is used less and less frequently (Gell-Mann & Ruhlen, 2011; Pintzuk 1999; Neeleman & Weerman, 1999).[4]

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[4]The claim that learners at a certain stage simply miss the evidence for OV is, of course, an oversimplification, since learners seem to be, at least in many cases, perfectly able to recognize forms or orders that are highly infrequent (cf. Santorini, 1989). However, this remark does not seem to be that relevant in the line of thought laid out in this paper, because it suffices to say that SVO word order takes over in terms of frequency. That is, the word order distribution that needs to be explained is based on statistical dominance, so it seems less relevant whether this SVO word order is in fact the basic word order as well.

In this sense, language change occurs in several stages and the crucial question is how languages come from one stage to the other. I will argue that functional preferences may have an influence on word order change in two ways. First I will argue that when a language is in a relative rigid word order stage, functional preferences are responsible for the existence or emergence of deviances from the dominant word order. Although these deviances may be very infrequent and restricted to specific contexts, they may constitute the beginning of the VO/OV variation that may become stronger over time. The second way in which general preferences influence word order change then, is that these preferences drive a language from a rigid word order stage into a stage in which more than one word order is used more widely. In the next section I will therefore suggest that general preferences, among other factors, have an important influence on the frequency of use of different word orders within one language.

4.4 The rise of SVO structures

For SVO structures to become more widely used, they have to be available in a language in the first place for speakers to develop a bias towards these structures. According to Hawkins (1990), many languages have transformational rules by which the basic order of subject, object and verb is changed into a word order that is more convenient in terms of processing costs. As Chang (2009) points out, these rules can best be described as optional performance biases, which suggests that these biases are not normal syntactic rules that are part of the grammar itself, but rather weak processing constraints. An example of such a rule is heavy NP-shift, which is allowed in many languages. In the Germanic languages for example, heavy NP-shift results in heavy NPs being moved to the clause-final position, even if the basic word order of some of these languages still is SOV, like in Dutch or German.

These rules can perhaps account for the rise of VO structures, but only in some languages; whereas heavy NP shift in most languages like English is directed towards the right, heavy NPs tend to move to the left in some SOV languages like Japanese (Chang, 2009). Heavy or complex objects then, never move to the clause-final position in Japanese and therefore no VO structures arise because of this heavy NP shift rule.

At first sight, this seems to undermine the claim that word order is affected by the heaviness of constituents in the sense that there exists a general preference for "short-before-long" utterances (cf. Behaghel, 1932). When looking at Japanese more closely, however, it seems relevant that in Japanese relative clauses appear before the head noun - unlike most languages in which the order of noun and relative clause is exactly the opposite. Moving an object that contains a relative clause to the sentence-final position then, results in a rather long dependency between verb and head noun, which is dispreferred from a perspective of dependency length minimization. In SOV languages with Rel-N word order there thus does not seem to be a preference to put the

verb in the medial position, because this would make the distance between verb and head noun of the object undesirably long (Hawkins, 1994; Ferrer-i-Cancho, 2014). In this light, it is an interesting fact that there are no languages at all that have a Rel-N word order and that also exhibit an SVO word order (Dryer, 2013a; Dryer, 2013b).

However, it is not only heavy NPs that play a role in the existence of VO structures in OV languages. Bauer (2009) argues that the first VO sequences in Latin appeared in the main clause and consisted of a verb followed by a (lengthy) PP. In light of the difference between N-Rel and Rel-N languages, it is perhaps worth mentioning that the ordering within the verb phrase in Latin became head-first after the change from head-last to head-first had taken place in other phrases like PP's and NP's. So an important factor that determines whether heavy objects "leak" towards the clause-final position is the order in which different constituents, like relative clauses in relation to their head nouns, are placed.

Moreover, Cloutier (2013) argues that one of the reasons that English eventually turned into SVO was that heavy objects were extraposed after the verb, which had a major influence on the frequency of VO sentences. On the other hand, Cloutier also argues that the change into SVO did *not* occur in Dutch, because in Dutch a different tactic was used to avoid heavy elements being placed in front of the verb: Dutch preferred splitting the complex objects which gave rise to structures in which the head preceded the verb and the rest of the constituent followed it (Cloutier, 2013: 182).

Whereas heavy NP shift and related rightward "leakages" of the object thus make SVO structures available in some languages, these rules do not provide such structures in others. Functional preferences therefore seem to be of influence in the existence of additional orderings of constituents in some languages, even when these languages exhibit a relatively rigid word order. General preferences may also be the motor behind the increase in the use of these additional word orders. That is, in many languages that nowadays exhibit an SVO word order, both a VO and an OV word order were used to an equal extent in earlier stages. The newness and heaviness of objects (or a combination of both) has been used to account for the word order variation in these languages (cf. Westergaard, 2010). For example, Hroársdóttir (2004) argues for Icelandic that in the period in which both OV and VO orders were used, VO word order was used more and more in cases where objects were new and/or complex. Similar arguments can be formulated for English (Pintzuk, 2005; Roberts, 1997), the Romance languages that descended from Latin (Bauer, 2009) and Norwegian (Sundquist, 2006).

A substantial amount of research has been conducted to find out how the change into SVO took place in English. In Old English, both structures in which the verb was placed before the object as well as structures with an object-verb word order seemed to be used[5]. This OV/VO variation is held to be influenced by several factors. Firstly, the

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[5] Because Old English appears to have had a verb-second (V2) rule (verbs were placed in the second position of the main clause) that was not applied in all main clauses, a part of this variation is a result of this V2-effect (Weerman, 1993; Haeberli, 2002). Suggesting that the change into SVO can be attributed to this kind of variation seems a bit of a weak claim, since Dutch exhibits such a V2-effect as well and

occurrence of the verb before the object is argued to be influenced by information structure: Tily (2010) found that pronouns were mostly placed preverbally in Old English, a finding that also appeared to be significant when the relative short length of pronouns was corrected for. This latter finding may be due to information structure, since pronouns often express given information. Furthermore, Pintzuk & Taylor (2006) showed that longer objects more often occurred in postverbal position, which was also confirmed by Tily (2010). It can also be noted that the position of relative object-clauses depended on the structural heaviness of the object: when these objects were more complex, they appeared after the verb, and when they were not, they appeared to the left of the verb (Cloutier, 2013). Then, as this SVO structure became more commonly used over time, it was also adopted more and more in cases that did not involve a complex, heavy or new object.

Moreover, Sundquist (2006) argues that the distribution of OV and VO word orders was mainly influenced by information structure in Early Norwegian, in the sense that objects expressing old information mostly preceded verbs and objects expressing new information were placed after the verb. That is, pronouns being short and representing given information mainly occurred in front of the verb. The frequency of SVO sentences increased as new objects were often placed after the verb. Eventually, this VO structure also became available for given objects that started occurring in this position after the verb.

As for the Romance languages, which almost uniformly exhibited a mixed VO-OV word order in earlier stages, the placement of the object in relation to the verb was mainly influenced by the length of the object. For example, in Latin an OV word order was preferred when objects were simple direct objects, whereas a VO order was used more when objects were longer and included for example of a PP (Bauer, 2009). In the languages that descended from Latin, the VO word order became even more dominant and eventually took over as the basic word order in most of the Romance languages.

Although these examples of actual language change are only illustrative, they do provide further support for the claim that the frequency with which different constructions are used in different languages is at least partially affected by functional preferences. The hypothesis that the attraction of the verb towards the middle and/or the object towards the final position is influenced by information structure, complexity or length of constituents seems to be confirmed. It thus seems to be the case that the change into SVO is to some extent driven by these preferences in the languages discussed above, since the large amounts of VO structures seem to be a result of synchronic speaker preferences that arise due to information structure, complexity or heaviness.

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has been a stable SOV language for years. Crucially however, the VO-OV variation in English was also attested in subordinate clauses and is therefore at least partially independent of the existence of this V2-effect.

Of course, this latter claim, as Tily puts it (2010: 11) "opens up a Pandora's box of questions: why do languages allow inefficient linguistic forms at all, and indeed why have they not all converged on a single solution?" One way to answer this question is by saying that there simply does not exist a single solution. As I have already pointed out in the previous chapters and in the beginning of this chapter, which word order is optimal and which are considered suboptimal, depends on, for example, how complex the language is. However, not only the stage that a language is in now, but also the stages that a language have been in before, are of importance. The change into SVO must therefore be seen as part of a broader historical process, in which many languages simply preserved their SOV origins. In general, it does not seem illegitimate to suggest that, even if certain forms are relatively marked or complex, they could remain stable in a language for many years.

Also, as is shown for Dutch or Japanese above, it seems likely that language specific properties have a say in word order change as well. It may depend on the specific structures available in a language what actually is the optimal way of expressing ourselves from a perspective of processing costs. A general cross-linguistic preference does not have to be as general as it may seem. General preferences are, therefore, not the only parameter that seems to be important in word order change, but it seems to be the case that they do contribute to the general shift towards SVO.

4.5 Conclusion

In this chapter I have tried to give an explanation for the unidirectional change into SVO, by suggesting that the motor behind this change is an increasing preference for SVO structures when languages develop over time. In other words, the preference for SVO word orders in more grammaticalized languages outweigh the preference for an SOV word order, because the preference for SVO sentences becomes more prominent when sentences become more complex. At the same time, the emergence of a conventionalized lexicon results in a decrease of the SOV preference. I have also argued that the preference to put the verb in the medial position and the object in the last in more fully-fledged languages, could be of influence in different stages during the change into SVO. That is, extraposing "heavy" objects results in the existence of a VO word order in a language in which mainly OV word orders are used. Then, when both OV and VO word orders are allowed, the frequency in which both orders are used depends at least partially on functional preferences. This results in a relatively large quantity of VO sentences compared to OV sentences, which makes the evidence for SOV as the basic word order more opaque for infants learning their mother tongue.

5. Discussion

The distribution of word orders that are used around the globe is highly skewed: SOV and SVO word orders make up around 80% of all basic word orders adopted among languages. Questions have often been raised on why that would be the case. The answer I provided to such a question was twofold: in the second chapter of this paper I have first argued that (i) it seems plausible that most languages can be traced back to an earlier SOV proto state; and throughout the previous chapters I showed that (ii) a considerable amount of these SOV languages and other languages have changed later on into SVO languages.

Both observations ask for an explanation - especially because, at first sight, contradictory claims about general word order preferences might be deduced from these observations. That is, the first observation seems to suggest that it is SOV word order and not SVO that is mostly preferred, whereas the second claim seems to suggest the exact opposite.

In Chapter 3 I claimed, however, that this contradiction is not real one, because both SOV and SVO can be regarded as generally preferred, but from different perspectives and under different circumstances. Whereas the advantage of an SOV word order for both hearer and speaker lies in the fact that the relatively inaccessible verb is placed last, in SVO word orders syntactic dependency lengths are minimized. Also, SVO word orders might be less prone to communication errors, since the subject and object are placed on different sides of the verb and the object is maximally predictable.

In Chapter 4 I argued that while SOV word order is mainly preferred in newly emerging languages, SVO seems to be more advantageous when languages develop over time. In this sense, the observed unidirectional change into SVO is explained as being at least partially driven by functional preferences. With respect to processing costs, SVO seems to be a more efficient word order when it comes to processing syntactic dependencies that only become longer in fully-fledged languages. Also, placing the verb in the medial position has the advantage that processing complex objects, which only arise when languages develop over time, can be postponed. In this chapter I also showed that the bias for SOV word orders decreases when languages develop, because the advantage of an SOV word order lies at least partially in the fact that the verb is the least accessible constituent - especially when no stable lexicon is available. This advantage thus seems to be weakened when languages develop a conventionalized lexicon.

From a broader perspective, the above implies that the grammars of natural languages have been shaped to a considerable degree by external functional considerations. With this paper, I hopefully showed that different optimizing forces have left their mark on grammars - both in the way languages change as in the way new languages emerge. With respect to language change, the above mentioned preference for VO structures is of course not the only factor involved; I will not deny that factors like language contact have say in language change as well. Moreover, the extent to

which SVO sentences actually are advantageous in a language from a functional perspective varies with the language itself: what actually is the most convenient in a language depends on language-specific properties as is discussed in Chapter 4.

To quote Kiparsky (1996: 16) once again, when it comes to word order change as driven by functional preferences, "there is not a single dimension of optimization but numerous conflicting ones". What the most optimal structure is in a language may vary with the specific language itself, but it may also vary over time. Or, as Ferrer-i-Cancho puts it, determining what the 'optimal' word order is, seems to be a "multi-constraint engineering problem", which is why "there is no single winner in the world-wide statistics for O, S and V" (2014: 67).

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