

The (non-)finiteness of subordination correlates with basic word order: Evidence from Uralic

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ABSTRACT

This paper aims to answer why the Uralic languages use, or used until intensive contacts with Indo-European languages, only non-finite subordination. It argues against regarding the evolution of finite subordination language development, showing that languages with non-finite subordination and parataxis have the same expressive power as languages with finite subordination. It claims that non-finite subordination is a concomitant of SOV word order, and the growing proportion of finite subordination in the Uralic languages from east to west, and in the history of Hungarian is a consequence of the loosening of the SOV order and the emergence of SVO. The paper examines two hypotheses about the correlations between SOV and non-finite subordination, and SVO and finite subordination, the Final-Over-Final Condition of Biberauer, Holmberg & Roberts (2014, etc.), a formal principle constraining clausal architecture, and the Minimize Domains Principle of Hawkins (2004, etc.), a functional principle of processing efficiency. The two theories make largely overlapping correct predictions for the Uralic languages, which suggests that the Final-Over-Final Condition may be the syntacticization of the condition that ensures processing efficiency in SOV and SVO languages.

KEYWORDS

Uralic, non-finite subordination, OV-to-VO change, Final-Over-Final Condition (FOFC), Minimize Domains

1. INTRODUCTION

As shown by [Delbrück \(1900\)](#) and other Indo-Europeanists, Proto-Indo-European and the early Indo-European dialects (Sanskrit, Greek, and Latin of the first millennium BC) had no finite

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subordination. Whereas Delbrück regarded this a symptom of an undeveloped stage of language evolution, [Lehmann \(1980\)](#) argued that the lack of finite subordination is a property of the SOV language type, hence it is a natural concomitant of the SOV basic order of Early Indo-European. SOV languages, e.g. Turkish, tend to express subordinate propositions via non-finite subordination or parataxis. The emergence of finite subordination in Indo-European is parallel with the gradual shift to SVO syntax.¹

The Uralic languages provide an ideal terrain for the testing of the correlation between head-directionality and the (non-)finiteness of subordination hypothesized by [Lehmann \(1980\)](#). The Uralic languages form a cline from the strictly SOV Samoyedic and Ugric languages in Siberia to SVO Hungarian, Finnish, Estonian and Sámi in Central and Northern Europe, with flexible SOV-SVO languages inbetween. Hungarian, a language with written documents since the 12th century, displays stages of the drift from OV to VO over time. If [Lehmann's \(1980\)](#) generalization is valid, then the emergence and the spreading of finite subordination in the Uralic languages from east to west, and in subsequent versions of Hungarian is parallel with the emergence and spreading of VO syntax. Should the correlation between head-directionality and the (non-)finiteness of subordination be confirmed, a further question to answer is what it is motivated by.

The paper aims to tackle these problems in the following order: Section 2 presents subordination, represented by a rich system of non-finite constructions, in the Eastern Uralic languages (2.1) and in Old Hungarian (2.2). Section 3 raises – and discards – the possibility that a grammar without finite subordination is less powerful, cognitively less nuanced than a grammar with finite subordination, hence the emergence of finite subordination represents language development. Section 4 demonstrates that the shift from non-finite to finite subordination in Uralic correlates with the change of basic word order from SOV to SVO. Section 5 discusses the merits and problems of two explanations of this correlation: the Final-Over-Final Condition (FOFC) of [Biberauer, Holmberg & Roberts \(2008, 2009, 2014\)](#), a formal account (5.1), and the Minimal Domain Hypothesis of [Hawkins \(1994, 2004, 2009, 2013\)](#), an explanation based on perceptual economy (5.2). It is shown that the two theories make largely overlapping predictions about Uralic which suggests that the Final-Over-Final condition may represent a partial syntacticization of the Minimize Domain Principle.

2. URALIC LANGUAGES WITH NO FINITE SUBORDINATION

2.1. Subordination in the eastern Uralic languages

The shorter period of Indo-European influence a Uralic language has experienced, the more properties of Proto-Uralic it has preserved. The length and intensity of Indo-European (mostly Russian) influence is growing from East to West. The least affected, most conservative branches of the Uralic family, the Siberian Samoyedic and Ob-Ugric languages, still preserve the strict

¹Lehmann's position on the correlation between SOV and non-finite subordination has not been widely acknowledged; e.g., the question raised by [Walkden \(2020\)](#) is still whether early human languages in general lacked finite subordination. (Walkden's answer is negative, based on the fact that the proportion of finite subordinate clauses in parsed corpora of English, Icelandic, French, Portuguese, Irish, and Chinese does not increase over time.)



SOV order of Proto-Uralic (Jahnunen 1982). Up until recently, these languages have not had any finite subordination.

In the Samoyedic Tundra Nenets, for example, clausal complements (1a), clausal adjuncts (1b), and clausal modifiers (1c) are all represented by non-finite projections. Finite clauses have only recently emerged in the Russified language of the bilingual young generation (Nikolaeva 2014, 283).

- (1) a. [PRO *s'ita xet^oku-qma-m*] *wol^otamp'ida-s'^o*
 him tease-IMP.F.INF-ACC² dislike-PST.SG<3SG³
 ‘He didn’t like that they teased him.’
 (Tundra Nenets, Nikolaeva 2014, 290)
- b. [*n'abako-n'i xae-qm'a-xəd^o*] *xoneyə-w^oq*
 elder.sister-1SG⁴ go-PFV.AN-ABL go.to.sleep-REFL.1SG
 ‘When my elder sister left, I went to sleep.’
 (Tundra Nenets, Nikolaeva 2014, 287)
- c. [pro *xal'a-da-^o me-ta-r^o*] *yaxa-r^o*
 fish-V-CVB use-IMP.F.PTCP-2SG river-2SG
 ‘the river in which you fish’
 (Tundra Nenets, Nikolaeva 2014, 320)

Non-finite verbal projections include infinitival phrases (1a), participial phrases (1c), converbial phrases (1c) and action nominals (1b). Most types of non-finite projections can have an independent subject, which can also be represented by a dropped pronoun eliciting agreement on the non-finite verb (1c). When spelled out, the subject is marked as a possessor, and the agreement suffix is of the possessive paradigm. Both infinitival and participial phrases, and action nominalizations are marked for aspect.

Ob-Ugric (Khanty and Mansi) texts recorded before the middle of the 20th century show similar patterns of subordination (Gulya 1966; Kálmán 1976; Nikolaeva 1999; Filchenko 2007; Csepregi 1978, 2023; Csepregi & Gugán 2017), as illustrated by an infinitival complement clause in (2a), a past participial adjunct clause in (2b), and a present participial gap relative in (2c).

- (2) a. *pánə* [pro_i *qułmət-táyə*] pro_i *nǝməqsə-t*
 and spend.night-INF think-PRS.3SG
 ‘And he thought that he would spend the night.’
 (Eastern Khanty, Csepregi 2023, ex. (44))

²Abbreviations: ABL: ablative, ACC: accusative, AN: action nominal, COND: conditional, CNG: connegative, CONJ: conjunction, CVB: converb, DAT: dative, DEL: delative, DET: determiner, DU: dual, FOFC: Final-Over-Final Condition, FUT: future, GEN: genitive, GER: gerund, ILL: illative, IMP: imperative, IMPF: imperfective, INCH: inchoative, INF: infinitive, INS: instrumental, LAT: lative, LOC: locative, NEG: negative, OUDB: Obi-Ugric Database, PASS: passive, PL: plural, POSS: possessive, POSSIB: possibility, pron: PRO/pro, PRS: present, PRF: particle, PST: past, PTCP: participle, SBJV: subjunctive, SG: singular, SG<3.PL: singular object, 3.plural subject

³SG<3.SG is an agreement morpheme complex or portmanteau morpheme on the verb indicating the number of the object and the person and number of the subject

⁴An agreement suffix attached to a noun crossreferences the possessor of the noun, in this case a dropped 1SG pronoun.



- b. *poxi* [pro_i *a:n il pa:jət-m-al u:rəŋna*] *a:ke-l-na nu:rməl-s-a*
 boy cup down drop-PST.PTCP-3SG because mother-3SG-LOC curse-PST-PASS.3SG
 ‘The boy was cursed by his mother because he dropped the cup.’
 (Northern Khanty, Nikolaeva 1999, 48)
- c. [_i *məŋət Surgut wəč-á tu-tə*] *pojezd_i qəčtə əntə jəwət.*
 us Surgut town-LAT take-PRS.PTCP train still NEG arrive.PST.3SG
 ‘The train that is taking us to Surgut hasn’t arrived yet.’
 (Eastern Khanty, Csepregi 2023, ex. (30))

Traditional Ob-Ugric texts seemingly also contain a type of complex sentence with a finite subordinate clause: the correlative construction. It appears to consist of a free relative, and a subsequent main clause that contains an overt or pro-dropped definite pronoun/proadverb anaphorically related to the relative pronoun/proadverb, e.g.:

- (3) a. [*kumlə tje uj tə:n pəl kart-au*] *ək^w tje kajtəl næu kopt-æn*
 how this bear sinew tighten-PASS.3SG same way you hands-2SG
lil-æn pær kart-əŋk^w-ət.
 feet-2SG shrivel-PASS.IMP-3PL
 ‘How this bear’s sinew is tightened, so shall your hands and feet be shriveled.’
 (Mansi, Munkácsi 1896; OUDB 1419)
- b. [*pu:t βərrənt-əttə tə:ə-ji məβ v:rit ʔi:t ot qu:t-ʔi*] *qəttə:ət*
 pot make-ing place-ABL how_much food remain-PRS.3SG tomorrow
mən-t-v tət:nə jo:t-v tu:-itə
 leave-ing-2SG time-at with-2SG take-IMP.PL.2SG
 ‘Whatever food is left in the cooking spot, take it with you at the time of your leaving tomorrow!’
 (Yugan Khanty, Paasonen 1901, OUDB 1313)

However, É. Kiss (2022) argues against the subordination analysis of this construction. First, the Ob-Ugric languages had no finite relative clauses introduced by a relative pronoun when these sentences were recorded; second, sometimes an *and*-type conjunction appears between the two clauses of the construction. Consequently, the pronoun in the initial clause must have been an indefinite pronoun, and the construction must have been interpreted as a coordinate structure. That is, e.g. (3b) originally meant ‘Some food is left in the cooking spot; take it with you at the time of your leaving tomorrow!’ (By now, Russian-type postnominal finite relative clauses, introduced by relative pronouns form-identical with the indefinite/interrogative pronouns, have appeared in Khanty (Dékány, Gugán & Tánzos 2020), so present-day speakers may interpret them as proper correlative constructions.)

2.2. Subordination in Early Old Hungarian

Hungarian is assumed to have split off the Ugric branch of the Uralic family about 2500 years ago, and it has evolved in an Indo-European environment for at least 1100 years. When the first



surviving Hungarian texts were created in the 12th–13th centuries, the basic word order of Hungarian had already shifted from OV to VO, but the grammar was still in the process of restructuring from head-final to head-initial (É. Kiss 2013, 2014). It still preserved the great variety of non-finite subordinate clauses that are found in the conservative Uralic sister languages at present (Dékány 2014), but non-finite subordination was already losing ground to finite subordination.

Old Hungarian texts (documents from the period 1192–1526) display an array of infinitive, gerund, converb, and participle constructions (Károly 1956; Dékány 2014; Bacskai-Atkari & Dékány 2014). Old Hungarian infinitive constructions include subject control (4a, b), object control (4c), dative control (4d) and ablative control (4e) constructions, as well as infinitives with an independent subject bearing dative case (5). Whether the subject of the infinitive is controlled or independent, the infinitive can agree with it – see (4b, c), (5). Default agreement, i.e., 3rd person agreement irrespective of the person and number of the subject, also exists (4e) (Dékány 2012). (The controlled subjects of non-finite clauses can elicit verbal agreement without any interpretive consequences. This blurs the *PRO-pro* distinction, hence – following Dékány (2014) – I avoid both of these labels and represent the empty subjects of non-finite verbs as *pron*.) Notice that the infinitive phrases cited in (4a–e) and (5) all have (S)OV word order; furthermore, the object of the infinitive in (4a) is caseless. These features, inherited from the Proto-Ugric period, survived longer in non-finite projections than in finite main clauses and in the newly emerging finite embedded clauses.

- (4) a. *pro*_i *ne fordo'l-'l-on m̃g* [pron_i *o k̃ntos-o fel-uèn-ni*
not turn-SBJV-3SG back he gown-3SG on-put-INF
'he should not turn back to put on his gown'
(Old Hungarian, Münchener Codex 30r)⁵
- b. *ne akar-ia-toc pro*_i [pron_i *ez-t ten-ne-tec*]
NEG want-SBJV-2PL this-ACC do-INF-2PL
'You shouldn't want to do this'
(Bécsi Codex 1)
- c. *èn èrèzt-ett-èlec tütök-et_i* [pron_i *arat-no-tok_i*]
I send-PST-1SG you.PL-ACC harvest-INF-2PL
'I sent you to harvest'
(Münchener C. 88r)
- d. *Es mico parāncol-t uol-na az gòlèkezèt-n_i* [pron_i *le-ül-ni az zena-n*]
and when order-PFV.3SG be-COND the crowd-DAT down-sit-INF the grass-on
'And when he ordered the crowd to sit down on the hay'
(Münchener C. 21r)
- e. *ffold-on sohha ne las-s-onc te tül-ed_i* [pron_i *fia-t zül-ni-e*]
earth-on never not see-SBJV-1PL you ABL-2SG son-ACC bear-INF-3SG
'We shall never see on Earth [of] you to bear a son'
(Guary C. 103)

⁵The letter *r* stands for *recto* 'right side', *v* stands for *verso* 'back side'.



- (5) *Hewsag* [*nek-thek wylaagh elewth fel kel-ne-thek*]
 vanity DAT-2PL light before up rise-INF-2PL
 'It is vanity for you to get up before daylight.'
 (Festetics C. 85)

Old Hungarian also uses gerund-like non-finite clauses derived by the suffix *-t* (6a) and the suffix *-ás/és* (6b). The subject of the gerund is a caseless or dative-marked, overt or pro-dropped possessor, eliciting possessive agreement on the gerund. The word order is in most cases SOV.

- (6) a. *pro_i vetkez-t-em* [*pron_i zent lelek-nek het ayandek-at nem*
 sin-PST-1SG holy spirit-DAT seven gift-ACC not
kevan-t-ō-ba]
 wish-GER-1SG-in
 'I sinned in not wishing the seven gifts of the Holy Spirit'
 (Virginia C. 6v)
- b. *pro_i béé fon-aa az ő hay-a-t, Svweg-nek alay-a,*
 PRT plait-PST.3SG the she hair-3SG-ACC cap-DAT under-3SG
 [*az pron_i ot-eth meg ner-ées-re*]
 the he-ACC PRT win-GER-to
 'she plaited her hair under the cap, for winning him'
 (Székelyudvarhelyi C. 47v)

Old Hungarian abounds in converb clauses – derived by *-atta/ette*, or *-ván-vén*. Converb clauses can have a controlled *pron* or an independent overt subject, and *-atta/ette* converbs agree with their subjects. Notice the caseless object, a relic from Proto-Ugric, in (7b).

- (7) a. *es pro_i lat-a-c azok-at_j [pron_{i/j} elmen-ett-ec]*
 and see-PST-3PL those-ACC leave-CVB-3PL
 'and they saw those leaving'
 (Müncheni C. 41v)
- b. [*ky pron_i hal-uan*] *zent fferenc_i valy-a uala ew-tett nagy tiztesseg-ben*
 what hear-CVB Saint Francis have-3SG be-PST he-ACC great honor-in
 'which having heard, Saint Francis had him in great honor'
 (Jókai C. 12)

Old Hungarian uses a variety of participle clauses, among them prenominal gap relatives. The gap, coindexed with the nominal modified by the relative clause, can be the subject (8), the object (9), or a possessor (10). In (8), the object is still caseless. As (9) illustrates, the participle can agree with its subject.

Subject gap:

- (8) *wr-am ysten Menyey kyraly* [*—_i mynden the-het-ew*] *atya ysten_i*
 lord-1SG god celestial king everything do-POSSIB-PRS.PTCP father god
 'My Lord, celestial king, God the Father, who can do everything'
 (Apor C. 134)



Object gap:

- (9) *Es uegéd az [pron _{-i} nek-ød zorz-ott-em] Corona-t_i*
 and take the DAT-2SG obtain-PST.PTCP-1SG crown-ACC
 ‘and take the crown which I obtained for you’
 (Kazinczy C. 1526)

Possessive gap:

- (10) *& ot vala egy [_{-i} kez-e meg aź-ot] ember_i*
 & there was a hand-3SG PRT wilt-PST.PTCP man
 ‘and there was a man whose hand had wilted’
 (Müncheni C. 38r)

In sum: The Uralic languages of Siberia, the languages least exposed to Indo-European influence in the Uralic family, preserving the SOV basic order of the proto-language, have had no finite subordination until recently; however, they have a rich system of non-finite subordination. Their non-finite clause types also display properties associated with finite subordination in Indo-European, e.g., they can have aspect-marking, an independent subject, and subject-verb agreement. The non-finite clause types of the present-day Siberian Uralic languages are also present in Old Hungarian, a language far away from them both in space and in time. The basic word order of Old Hungarian grammar is already (S)VO, but Old Hungarian syntax is still undergoing restructuring from head-final to head-initial. Non-finite constructions are more conservative than finite clauses; they are mostly SOV and preserve such relics of the Ugric proto-language as caseless objects. Their abundant use in Early Old Hungarian must be slowly attriting heritage from the proto-language.

3. DOES FINITE SUBORDINATION REPRESENT A HIGHER STAGE OF LANGUAGE DEVELOPMENT THAN NON-FINITE SUBORDINATION?

It has been a long-standing assumption that non-finite subordination is typical of an archaic, less complex state of human language, associated with preliterate societies. This view is becoming less and less accepted, but still exists (cf. [Delbrück 1900](#); [Givón 1979](#); [Deutscher 2001](#); [Karlsson 2009](#); for an overview, see [Walkden 2018](#)). Therefore, it seems worthwhile to examine whether the Uralic languages with no finite subordination have the same expressive power as languages that also have finite subordination.

As shown by [Givón \(1980\)](#), and most recently by [Lohninger & Wurmbrand \(2020\)](#), different types of matrix predicates impose different restrictions on the time and the agent of their propositional complement, and these semantic requirements are satisfied by syntactic structures representing different degrees of independence, transparency, integration and complexity.

[Lohninger & Wurmbrand \(2020\)](#) distinguish three main types of predicates with a propositional complement. Modal, aspectual and causative verbs such as *will*, *begin* and *try* require the coincidence of the matrix and embedded times, and the identity of the embedded agent with a matrix argument. These predicates (sometimes represented by a mere suffix merged with the verb of their complement) need a *Tenseless* complement, including a theta domain (a VP) in the



least. Verbs such as *want*, *need*, *demand*, select a so-called *Irrealis* complement. It has dependent tense (usually future), determined relative to the matrix time; it can have its own aspect; and it may have either an independent subject, or a subject bound by a matrix argument. Therefore, the complement clause of these verbs includes not only a theta-domain (VP) but also an inflectional, T(ense), A(spect), M(ood) domain. In English, it tends to be realized as a finite subjunctive clause or as an infinitive. Verbs of communication and cognition such as *say*, *know*, *believe*, selecting a so-called *Attitude* complement, take a proposition whose time and agent are independent of those of the matrix predicate, and which can have its own (interrogative, etc.) operators. Such complements are realized as finite CP projections including a thematic domain, a tense/mood/aspect (TAM) domain, and an operator domain.

The selectional requirements of the different types of matrix predicates can also be satisfied in the Uralic languages with no finite complementation. Complements of aspectual, causative, and modal predicates, the *Tenseless* class, tend to be realized as infinitives with a controlled subject – see the Eastern Khanty examples in (11).

- (11) a. pro_i *ənəl nōw owti-ja quŋət panə* [PRO_i *t'i nōw ăwət-ta*]
 big branch top-LAT climb.PST.3SG and this branch cut-INF
wär-təy.
 begin-PST.SG<3SG
 'He climbed on a big branch and began to cut it.'
 (Eastern Khanty, Csepregi & Gugán 2017, ex. (7))
- b. *aŋki ma t'et'ope-m_i* [PRO_i *järnas jänt-tayə*] *part-əl*
 mother I aunt-1SG dress sew-INF order-PRS.3SG
 'Mother makes my aunt sew a dress for her.'
 (Eastern Khanty, Csepregi & Gugán 2017, ex. (9))

Certain aspectual and causative matrix predicates of the *Tenseless* complementation class are suffixes incorporating the embedded verb:

- (12) *juγ män-ä way kit-əkət-əs*
 (s)he I-LAT money send-INCH-PST.3SG
 '(S)he started sending me money.'
 (Vasyugan Khanty, Filchenko 2007, 447)

Clausal complements with dependent tense, and with either a PRO subject bound by a matrix argument (13a) or an overt, potentially independent subject (13b) are represented by a variety of infinitive and participle clause types. The overt subject of the participle clause tends to be formulated as a possessor, eliciting possessive agreement on the non-finite verb.

- (13) a. pro_i [PRO_i *răp-i qătəytə-təyə*] *jəmät pət-t-əm*
 hill-ABL slide-INF very.much fear-PRS-1SG
 'I fear sledding downhill very much.'
 (Eastern Khanty, Csepregi 2023, ex. (43))



- b. pro [tem säšəy ʎəppi-jä nüŋ ʎəŋ-t-ä] antə wu-ʎ-e
 this trap interior-LAT you enter-PRS.PTCP.2SG NEG see-PRS-SG<2SG
 ‘You don’t see that you are stepping into this trap.’
 (Eastern Khanty, Csepregi 2023, ex. (54))

The Khanty equivalents of *want*, *may*, and *can* are nominals in existential sentences, and their complement is a participle phrase with the subject appearing as the possessor:

- (14) a. ma qāntək kōʎ ōnəʎtə-tə kič-əm wāʎʎ.
 I Khanty language learn-PRS.PTCP wish-1SG is
 ‘I have a wish to learn the Khanty language.’
 Lit.: ‘My Khanty language learning wish exists.’
- b. jām-a jī-ti kem-em ǎntum.
 good-LAT get-PRS.PTCP ability-1SG not.is
 ‘I cannot get better.’ Lit.: ‘My getting-better ability does not exist.’
 (Eaastern Khanty, Csepregi 2012)

Participle clauses can have their own aspect. There are also mood suffixes that can combine with non-finite verbs. In the extinct Southern Khanty dialect, conditional clauses are non-finite projections containing a conditional participle (Csepregi 2019, 75–78) – see (15a, b). Past conditional is expressed by a particle attached to the past participle.

- (15) a. [Pira keret-ta nāməs-aŋ-en,] pira mən-a.
 back turn-INF think-COND.PTCP.2SG back go-IMP.2SG
 ‘If you want to turn back, turn back!’
- b. [man atit mən-m-em-n ataŋ]
 I alone go-PST.PTCP.1SG-LOC COND
 ‘If I had gone alone,’
 (Southern Khanty, Csepregi 2019, 78)

All non-finite clause types can be negated, even though the means of negation may differ from those used in finite clauses:

- (16) a. [ʎukoxəna n’i-wənta yil’e-wənta] n’əneč’oh
 here NEG-FUT.PTCP live-FUT.PTCP person
 ‘the man who will not live here’
 (Tundra Nenets, Nikolaeva 2014, 302)
- b. panə opəli-ʎ [əntə jis-təyə] jəy.
 and sister-3SG NEG cry-INF become.PST.3SG
 ‘Then his/her sister stopped crying’ (lit.: started not to cry).’
 (Eastern Khanty, Csepregi & Gugán 2017, ex. (5))



The possibility of non-finite questions, by contrast, is mostly non-existent or is very limited. In Tundra Nenets, for example, it is restricted to action nominals:

- (17) [Wera-h s'ax° ηano-m s'erta-qma-m] mane-ca-r°?
 Wera-GEN when boat-ACC do-PFV.AN-ACC see-INT-SG<2SG
 'Did you see when Wera made the boat?'
 (Tundra Nenets, Nikolaeva 2014, 306)

Whereas propositional complements having a thematic domain and an inflectional domain with an independent subject can be represented as non-finite verbal projections, reported questions and other types of propositional *Attitude* complements with independent tense and modality require a maximal clausal projection including a C domain. As shown by Szeverényi & Sipőcz (2019), and the grammars of Northern Khanty (Nikolaeva 1999), Eastern Khanty (Filchenko 2007), and Tundra Nenets (Nikolaeva 2014), the conservative Uralic languages use parataxis in such cases, i.e., they formulate the propositional complement as an independent finite sentence, and integrate it with the sentence containing the selecting predicate only prosodically and semantically. Observe a Nganasan example involving the reporting of a command (18a), and a Mansi example involving the reporting of a question (18b). The deictic elements of the reported utterance show no indexical shift in either case (i.e., the 2nd person subjects of the reported clauses are not shifted to 3rd person, as happens in the English translations).

- (18) a. D'ad'üru munu-ntu: [S'eri-ηiri?]
 D'ad'üru say-PRS.3SG bring-IMP.PL2
 'D'ad'üru tells them that they should bring him in.'
 Lit.: 'D'ad'üru says: Bring_{PL} [him] in.'
 (Nganasan, Szeverényi & Sipőcz 2019, 132)
- b. Āše-n kitiyl-awe: [Piŋk^we, manəriy lúńś-eyn?]
 father-LOC ask-PASS.3SG little.boy why cry-2SG
 'The father asked the little boy why he was crying.'
 Lit.: 'It was asked by the father: Little boy, why are you crying?'
 (Mansi, Szeverényi & Sipőcz 2019, 136)

The semantic relation between two clauses juxtaposed paratactically can be marked by discourse particles. Conditional clauses, for example, are paratactic sentences containing a discourse particle with no fixed structural position in several conservative Uralic languages:

- (19) [Xoj ə:məs-ti taxaj-əl e:lti je:fa ki puŋla n'oxlǝ-l]
 someone sit-PRS.PTCP place-3SG from little perhaps side.to move-PRS.3SG
 moxti ka:s'ǎl-ǎl-aj-ən.
 immediately notice-PRS-PASS-2SG
 'If someone moves a bit from his sitting place to the side, you are immediately noticed.'
 (Synja Khanty, Steinitz 1975, 1/106)

These observations suggest that languages with no finite subordination can express the same variation in the complexity and (in)dependence of propositional complements as languages



having both finite and non-finite subordinate structures at their disposal. The fact that they do not embed *Attitude* type propositional complements by morphosyntactic means does not limit their expressive power. There is no reason to assume that the syntacticization of finite subordination, involving the grammaticalization of a finite complementizer, is language development resulting in a more advanced language with a higher expressive potential.

4. THE CHANGE FROM NON-FINITE TO FINITE SUBORDINATION IS A CONCOMITANT OF THE CHANGE FROM SOV TO SVO

Lehmann (1980) assumes that the emergence of finite subordination is a consequence of the beginning of a change from SOV to SVO word order. The Uralic languages confirm this claim. If the co-emergence of SVO and finite subordination were attested in a single language, we might assume it to be a coincidence. However, the correlation of the two phenomena runs through the range of Uralic languages, from the strictly SOV Samoyedic and Ob-Ugric languages with no finite subordination, via the Permic languages with mixed OV-VO word order and a complete system of finite subordination alongside prevalent non-finite subordination, to Modern Hungarian and Finnish with dominant VO word order and dominant finite subordination.

In the conservative Uralic languages of Siberia, the first signs of the loosening of SOV syntax are showing up at present, in the usage of the young, bilingual generations. In Khanty, for example, SVX sentences have appeared where the postverbal constituent is not a mere afterthought but a stressed complement – see the postverbal goal in (20a) and the postverbal object clause (alongside a temporal adjunct) in (20b). Interestingly, the postverbal infinitival object clause contains a complementizer borrowed from Russian.

- (20) a. *İpa lat-nə os vertōlot jōwət-ł tem pälək łār-a.*
 other time-LOC also helicopter come-PRS.3SG this side lake-LAT
 ‘At other times a helicopter comes to this side of the lake.’
 (Eastern Khanty, Asztalos, Gugán, & Mus 2017, 43)
- b. *əsey őt-uw-nə pirt-ojmən, ĩenə jə-t-əl ilpinə,*
 old thing-1PL-LOC advise-PASS.PST.1DU PRT die-PRS.PTCP-3SG before
štoby tem məγ-a jü-tayə.
 that this land-LAT come-INF
 ‘We two were advised to come to this land by our old man before he died.’
 (Eastern Khanty, Asztalos, Gugán, & Mus 2017, 43)

The loosening of head-finality is not restricted to the VP. Csepregi (2019) reports the sporadic occurrence of Auxiliary – VP order, i.e., a head-initial TP, in Southern Khanty, associated with the modals *nato* ‘need’ and *mošno* ‘may, can’, borrowed from Russian. For example:

- (21) a. *Nato pusa rəwət-ta tam itaj.*
 needs beer brew-INF DET evening
 ‘It is necessary to brew bear tonight.’
 (Southern Khanty, Csepregi 2019, 43)



- b. *I-χajad-etən* *ńe* *mošno* *it* *tăχəmə-ta*.
 one-some-2DU not can PRT win-INF
 ‘Neither one of you can win.’
 (Southern Khanty, Csepregi 2019, 44)

Whereas strictly SOV Khanty texts recorded before the middle of the 20th century only contain non-finite subordination and parataxis, at present we can also find postverbal finite complement clauses introduced by a Russian complementizer sporadically. Postnominal finite relative clauses introduced by a relative pronoun have also appeared (Dékány, Gugán & Táncoz 2020) – as follows from Lehmann’s hypothesis. The clause-initial position of the complementizer and the relative pronoun is evidence of a head-initial CP projection.

- (22) a. *Iki-nə* *tuyumtə-s-i*, [*sto* *nöyi* *qoyərtə-wəl*].
 old_man-LOC figure-PST-PASS.3SG that meat boil-PRS.3SG
 ‘It was figured by the old man that meat is boiling.’
 (Vasyugan Khanty, Filchenko 2007, 516)
- b. *Mä* *kolente-l-əm* *merəm*, [*muɣuj* *jateswe-wəl* *aŋk-im*]
 I listen-PRS-1SG only which tell-PRS.3SG mother-1SG
 ‘I only listen to what my mother tells.’
 (Vasyugan Khanty, Filchenko 2007, 497)

The Permic languages west of the Ural mountains have variable OV-VO word order, with less VO in areas with mixed Uralic (Mari, Besserman) and Turkic (Tatar, Chuvash) populations (Vilkuna 1998). The word order of present-day Udmurt has been studied in detail by Asztalos in her 2018 dissertation. She found that the proportion of VO sentences is 27.5% in newspapers and 34% in informal blogs (Asztalos 2018, 188). The use of VO order in a fill-in task she carried out was only 6%, but the acceptance of VO constructions in a grammaticality judgement task was 48% (Asztalos 2018, 192). The younger generation (those born after 1970) are more permissive with respect to the VO order than the elderly. Whereas only 14% of the older generation judged VO sentences fully grammatical in an evaluation task, 61.5% of the younger generation found them correct (Asztalos 2018, 82). These numbers are evidence of an ongoing shift from OV to VO.

Asztalos (2018, 181) also compared the acceptance of a prenominal participial relative clause (23a) and its postnominal finite counterpart introduced by a relative pronoun (23b).

- (23) a. *ań* *uś-em* *łimi* *šuna-z*.
 all fall-PSR.PTCP snow melt-PST.3SG
 ‘All the snow that had fallen melted.’
- b. *Vań* *łimi*, *kudiz* *uś-i-z*, *šuna-z*.
 all snow that fall-PST-3SG melt-PST.3SG
 ‘All the snow that had fallen melted.’
 (Asztalos 2018, 177)



- (26) a. [*O kedig è gondol-uan*] *yme vr-nac angal-a ièlen-e-c nèk-i*
 he CONJ this think-CVB lo lord-DAT angel-3SG appear-PST-3SG DAT-3SG
alm-a-ban
 sleep-3SG-in
 'But while he thought on this, behold, the angel of the Lord appeared unto him in a dream'
 (Müncheni C. 18r, Matthew 1:20)
- b. [*Mykoron kedeg ezt gondol-na*], *yme vr yften-nek anġal-a*
 when CONJ this-ACC think-COND.3SG lo lord god-DAT angel-POSS
alm-a-ban nek-y yelen-e-k
 sleep-3SG-in dat-3SG appear-PST-3SG
 (Jordánszky C. 357)

The decreasing proportion of prenominal participial relative clauses is shown by the increasing number of the relative pronouns *ki* 'who', 'what', *mi* 'what' and *mely* 'which', introducing finite post-nominal relative clauses.

- (27) *The number of the relative pronouns meaning 'who', 'what', 'which' in St. Matthew:*
 Müncheni Codex (a. 1416): 225
 Jordánszky Codex (a. 1516): 314
 Károli Bible (1590): 330

Observe the subsequent translations of Mark 3:1:

- (28) a. & *ot vala egy [_i kez-e meg azó-t] ember_i*
 & there be-PST.3SG a hand-3SG PRT wilt-PST.PTCP man
 'and there was a man whose hand had wilted'
 (Müncheni C. 38r)
- b. *es vala ot egy ember, [ky-nek hew kez-e meg az-ot val-a]*
 and was there a man who-DAT he hand-3SG PRT wilt-PFV.3SG be-PST
 (Jordánszky C. 460)

The finite constructions replacing the OV non-finite clauses tend to show VO word order, as is illustrated by two translations Matthew 24:18, from 1416 and from 1541, respectively:

- (29) a. *ne fordol'-l'-on m̄g [pron o kontos-o fel-uèn-ni]*
 not turn-SBJV-3SG back he gown-3SG on-put-INF
 'he shall not turn back to put on his gown'
 (Müncheni C. 30ra)
- b. *hātra ne ter-i-en [hoġ pron fel-ve-g-e az ũ ółtozet-i-t]*
 back not turn-SBJV-3SG that on-put-SBJV-3SG the he clothes-3PL-ACC
 'he shall not turn back so that he can put on his clothes'
 (Sylvester I 38r)



In the case of Attitude predicates, among them verbs of communication, parataxis gave way to finite complement clauses introduced by a complementizer grammaticalized from a relative pronoun (É. Kiss 2023).

- (30) a. *Es te vgy felel-y : Adkoztatt-ak kewzybe melto vagy*
 and you so answer-IMP.2SG cursed-PL among worthy be.2SG
zamlal-tatt-n-od
 count-PASS-INF-2SG

‘And answer so: You are worthy of being counted among the cursed.’

(Jókai C. 1370: 33)

- b. *en akkoron vgy feleleek, hogy nem sokasok az romayak-nak*
 I then so answered as not habit-POSS the Romans-DAT
vala_meely ember-t halar-ra ad-ny.
 some man-ACC death-to give-INF

‘Whom I so answered then as/that the Romans are not in the habit of handing people over to death.’

(Jordánszky C. 789)

In sum: the emergence and spreading of finite subordination in the Uralic languages from east to west, and in versions of Hungarian from Early Old Hungarian to Middle Hungarian follows the emergence and spreading of (S)VO word order with some delay. The correlation between the drift from SOV to SVO and the evolution from non-finite to finite subordination attested in Uralic is similar to that reconstructed for Early Indo-European by Lehmann (1980). The correlation of basic word order and the (non-)finiteness of subordination is also confirmed by typological generalizations, recorded, e.g., on Map 94 as compared to 81, or Map 96 of the World Atlas of Language Structures (Dryer & Haspelmath 2013).

The interrelationship between non-finite subordination and SOV order, and between dominantly finite subordination and SVO invites an explanation. Two accounts have been proposed recently, the merits and problems of which will be discussed in sections 5.1 & 5.2.

5. EXPLANATIONS

5.1. A formal explanation of the correlation

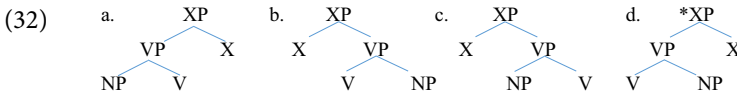
The correlation between SOV word order and non-finite subordination can be derived from a formal principle universally constraining the architecture of syntactic structures: the Final-Over-Final Condition (Holmberg 2000; Biberauer, Holmberg & Roberts 2008, 2009, 2014; Biberauer & Sheehan 2013; Sheehan et al. 2017). In its original formulation (Holmberg 2000, 124), the Final-Over-Final Condition was a general restriction on directionality in hierarchical syntactic structures, whereas its more recent version restricts directionality within an extended projection:



(31) *Final-Over-Final Condition (FOFC)*

A head-final phrase αP cannot dominate a head-initial phrase βP where α and β are heads in the same extended projection. (Biberauer, Holmberg & Roberts 2014, 171)

FOFC predicts structures (32a-c) to be possible, and structure (32d) to be impossible, provided XP is an extended projection of the VP.



If the basic OV word order changes to a head-initial VO order, the Final-Over-Final Condition predicts a shift to head-initial projections on the levels of Tense Phrase and Complementizer Phrase, too, i.e., it predicts a pre-VP auxiliary and a clause-initial complementizer (assuming TP and CP are extended projections of the VP).

In a head-final agglutinating language, where the subordinator of non-finite clauses is a clause-final suffix with the verb incorporated into it, the directionality of the clausal projection can be shifted by the introduction of a clause-initial complementizer. This is what is happening in the conservative Uralic languages at present – see (22a, b), and (23b), and this is what happened in Old Hungarian – as was illustrated in (26b), (28b), and (29b). Udmurt and Khanty have borrowed the Russian clause-initial complementizers *što* and *štoby*, whereas Old Hungarian developed a native complementizer (*hogy*) from a relative pronoun. In relative clauses, these languages have all employed relative pronouns cognate with their indeterminate/interrogative pronouns.

The Final-Over-Final Condition predicts that the directionality shift from head-final to head-initial proceeds top down. This is not what we have seen in Uralic; the emergence of VO structures appears to precede the emergence of head-initial complementizers. The shift of word order in the matrix VP is indeed a precondition of the use of a clause-initial complementizer in the complement clause – however, this only follows from the unrestricted version of FOFC, as the matrix VP is not an extended projection of the complement clause. In Udmurt, which has both head-final and head-initial complementizers, the change must have proceeded as shown in (33).



The unrestricted version of FOFC excludes structure $[_{VP} [_{CP} C TP] V]$ as an intermediate step of the directionality shift, and this prediction is borne out. An object clause with a clause-final complementizer can appear either pre- or postverbally, but an object clause with an initial complementizer is always postverbal. Compare the possible and impossible variants of the examples cited in (24):

- (34) a. *Mon [ton bertod **šuy**sa] malpa-ško.*
 I you come_home that think
 ‘I think that you will come home.’
 b. *Mon malpaško [ton bertod **šuy**sa].*



- (35) a. *Mon malpaško [što ton bertod].*
 I think that you come_home
 'I think that you will come home.'
- b. **Mon [što ton bertod] malpa-ško.*
 (Udmurt, Tánczos 2013)

The Final-Over-Final Condition is less successful in accounting for directionality in the extended projection of the noun. The Hungarian noun phrase has been head-final, but, uniquely among the Uralic languages, it has developed a head-initial DP level. The Kase phrase (KP) and the PP dominating the DP, however, have remained head-final:

- (36) a. [_{KP} [_{DP} *a* [_{NP} *Péter-rel* *való* *találkozás*]] *-ról*]
 the Peter-with being meeting -DEL
 'about the meeting with Peter'
- b. [_{PP} [_{DP} *a* [_{NP} *Péter-rel* *való* *találkozás*]] *miatt*]
 the Peter-with being meeting because-of
 'because of the meeting with Peter'

These constructions involve a 'final-over-initial' layer, violating the FOFC.

5.2. A perceptual account of the correlation (Minimize Domains)

An alternative theory by Hawkins (1994, 2004, 2013, etc.) offers an explanation of the correlation between SOV and non-finite subordination, and SVO and finite subordination in terms of processing economy. Hawkins's key generalizations are the Minimize Domains Principle and the Performance-Grammar Correspondence Hypothesis.

- (37) *Minimize Domains* (Hawkins 2004)
 The human processor prefers to minimize the connected sequences of linguistic forms and their conventionally associated syntactic and semantic properties in which relations of combination and/or dependency are processed. The degree of this preference is proportional to the number of relations whose domains can be minimized in competing sequences or structures, and to the extent of the minimization difference in each domain.
- (38) *Performance-Grammar Correspondence Hypothesis* (Hawkins 1994, 2004)
 Grammars have conventionalized syntactic structures in proportion to their degree of preference in performance, as evidenced by patterns of selection in corpora and by ease of processing in psycholinguistic experiments.

A VP consisting of a verb and a complement clause can be constructed if we have parsed the verb selecting the VP, and the subordinator identifying the clausal complement. In the case of a finite complement clause, the head identifying the complement clause is the complementizer; in the case of non-finite clauses, it is the non-finite suffix on the verb. In the most optimal



construction, the verb and the subordinator on the basis of which the transitive VP can be constructed are adjacent.

In SOV languages, the matrix verb and the subordinator of the complement clause are closest to each other if the subordinator is in final position in the complement clause, which is satisfied if the subordinator is an infinitival, participial or gerundial suffix:

- (39) a. *pro* [Kət wətəj-at jik-ta] t'əpart-aj.
 two reindeer-INS harness-INF order-PASS.PST.3SG
 'He was ordered to harness two reindeer.'
 (Southern Khanty, Csepregi 2019, 42)
- b. *Ma* [aj χuj art-em-nə jəŋχ-əm] ənt uj-em.
 I little man time-1SG-LOC go-PST.PTCP NEG know-PST.1SG
 'I didn't know whether I had been there in my boyhood.'
 (Southern Khanty, Csepregi 2019, 45)

If the complement clause were a finite clause with a clause-initial complementizer, the string to be kept in mind until the VP is constructed would be significantly longer.

The use of non-finite complement clauses is not the only economical way of subordination in SOV languages. Some languages have developed finite complement clauses with a clause-final complementizer – see the Udmurt (34a). Uralic languages with a flexible OV word order may also use complementizer-initial finite complement clauses, and attain the adjacency of the matrix verb and the complementizer by the extraposition of the embedded clause into postverbal position – see the “Russified” Udmurt pattern in (35a).

A finite clausal complement introduced by a complementizer is optimal in SVO languages like modern Hungarian. In Old Hungarian, the dominant word order of matrix clauses was already VO, hence non-finite complement clauses such as (40a) from a 1516 Bible translation did not represent the most economical way of subordination any more. No wonder they were gradually replaced by finite clauses introduced by a complementizer, as shown by the 1561 translation of the same sentence in (40b).

- (40) a. *Az papy feyedelem kedegh, Ananyas... hagy-aa az kőrwł*
 the priest prince CONJ Ananyas let-PST.3SG the around
all-o-k-nak [az hŵ zay-a-t arcz-wł ver-ny].
 stand-PRS.PTCP-PL-DAT the he mouth-3SG-ACC face-LOC slap-INF
 'And the high priest Ananias commanded them that stood by him to smite him on the mouth.'
 (Old Hungarian, Jordánszky C. 783)
- b. *A Papi feiedelem kedig paranczol-a a' mellet-e ál-ó-k-nac,*
 the priest prince CONJ order-PST.3SG the near-3SG stand-PRS.PTCP-PL-DAT
[hogy meg űt-né-c a' száí-á-t].
 that PRT slap-COND-3PL the mouth-3SG-ACC
 'And the high priest commanded them that stood by him to smite him on the mouth.' (Middle Hungarian, Heltai R1r)



The matrix verb selecting the propositional complement and the subordinating morpheme are separated by 7 words in (40a) but only 3 words in (40b), which explains the shift from pattern (40a) to pattern (40b).

In the case of relative clauses, the modified noun phrase is constructed if the noun phrase and its clausal modifier have been identified. The identifier of the noun phrase is the noun, and the identifier of the relative clause is the subordinator, i.e., the participial suffix in prehead relatives, and the relative pronoun in postnominal finite relative clauses. Since a noun phrase rarely has constituents separating the relative clause from the nominal head, prenominal non-finite relatives and postnominal finite relatives can be equally optimal, as the subordinator and the noun needed to construct the modified noun phrase are close, or adjacent, in both cases. Nevertheless, with the rise of finite subordination, we attest the spreading of finite relative clauses, as was illustrated by (28a, b), and is also shown by the subsequent translations (from 1416 and from 1590) of the Biblical sentence in (41a, b).

- (41) a. *Èlè-ic-bè kèl-ec o-nèk-ic mōnal [kolk-è-y èragad-ot] nosten mèdue*
 front-3PL-ILL rise-1SG they-DAT-3PL like whelp-3SG-PL rob-PST.PTCP female bear
 'I will meet them like a female bear bereaved of her whelps.'
 (Old Hungarian, Bécsi C. 199)
- b. *Ele-ik-be fut-oc mint az Medue [melly-nec kõlyk-é-t el vő-tt-éc]*
 front-3PL-ILL run-1SG like the bear which-DAT whelp-3SG-ACC off take-PST-3PL
 'I will meet them like a bear that is bereaved of her whelp.'
 (Middle Hungarian, Károli II/1. 182va)

The reason for the spreading of finite relative clauses could be a preference for uniform directionality. This preference has been recognized by typologists, e.g. Greenberg (1963) and Dryer (1992). Hawkins (1982) derives it from our striving for economy: grammars with more cross-categorical generalizations are preferred over those with fewer ones because they are simpler.

Whereas the Final-Over-Final Condition distinguishes between initial-over-final (32c) and final-over-initial (32d) constructions, allowing the former and ruling out the latter, Hawkins's theory only distinguishes between harmonic, i.e., (initial-over-initial, and final-over-final) constructions and disharmonic ones (initial-over-final, and final-over-initial). Hawkins (2013) argues that both types of disharmonic clause structures occur in the languages of the world; both are significantly less common than harmonic clause structures, but they do not significantly differ from each other as regards their distributions. The Udmurt facts presented in (34)–(35) support the Final-Over-Final Condition in this respect: the initial-over-final structure in (34b) is accepted, whereas the final-over-initial structure in (35b) is rejected. In a perceptual framework, the ungrammaticality of the final-over-initial structure may follow from the processing difficulty of self-similar center embedding. (Non-finite center-embedding is general in Uralic, however, the subject of a non-finite clause is in the genitive, and its predicate bears a non-finite suffix, hence the parsing of non-finite center-embedding is less likely to lead to a garden-path situation, i.e., a false parse to be revised.)

In sum: both the Final-Over-Final Condition and the Minimize Domains Principle establish a relation between the shift from non-finite to finite subordination and the change of basic word order from SOV to SVO, and both theories correctly predict the core phenomena attested in



Uralic. Walkden (2009), and both Hawkins (2013) and Sheehan (2013) have raised the possibility that the two theories represent two sides of the same coin; the Final-Over-Final Condition may be the syntacticization of Minimize Domains, in accordance with the Performance-Grammar Correspondence Hypothesis. The fact that the predictions of the two theories largely overlap in the area discussed in this paper supports this assumption.

6. CONCLUSION

This paper has sought an explanation of why the Uralic languages do not use, or did not use until intensive contacts with Indo-European languages, finite subordination; why they employ various kinds of non-finite subordinate clause types and parataxis instead. According to a long-standing assumption, non-finite subordination represents a less developed, culturally less advanced stage of human language, associated with pre-literate societies. Generative linguistic theory rejects this view because it contradicts its basic tenet that all human languages are manifestations of the same, biologically determined linguistic capacity. This paper has argued against regarding languages with non-finite subordination and parataxis as less developed than languages with finite subordination on the basis of empirical evidence. It has shown that the system of subordination in the conservative Uralic languages has the same expressive power as subordination in the well-known Indo-European languages. Propositional complements can instantiate the same cline of (in)dependence, complexity, integration and transparency as their Indo-European counterparts, from non-finite clauses with a separate thematic (vP) domain, via non-finite clauses with a separate inflectional domain and an independent subject, to paratactic complement clauses with a separate operator (CP) domain, as determined by the semantic requirements of the matrix predicate. The only substantial difference between subordination in the conservative Uralic languages and subordination in English-type Indo-European languages is that in the conservative Uralic languages, the subordinate status of a propositional complement with an operator domain is not encoded by conventionalized grammatical means; it can only be expressed prosodically.

The paper has argued that the use of non-finite subordination and parataxis in the conservative Uralic languages is a concomitant of their head-final syntax, and the emergence of finite subordination in them is a consequence of their drift from SOV to SVO. The gradually growing proportion of finite subordination in the Uralic languages from East to West correlates with the proportion of their head-initial word order patterns. Historical data of Hungarian, which shifted from SOV to SVO in the 10–12th centuries, also suggest that non-finite subordination is a concomitant of SOV basic word order, and the emergence of finite subordination is a consequence of the loosening of the SOV order and the emergence of SVO.

The paper has examined two explanations of the correlations between SOV and non-finite subordination, and SVO and finite subordination. The Final-Over-Final Condition of Biberauer, Holmberg & Roberts (2014, etc.), a formal principle constraining clausal architecture, does not allow a head-initial structure to be dominated by a head-final one – at least within the same extended projection. Hence, the emergence of a head-initial vP coincides with a shift to a head-initial order on the higher levels of sentence structure, as well, including the replacement of head-final subordinators (i.e., non-finite suffixes) by head-initial complementizers.

The explanation of Hawkins (2004, etc.) is based on processing economy. His Minimize Domains Principle predicts that the human processor prefers to minimize the connected sequences of linguistic



forms in which relations of combination and/or dependency are processed – so as to reduce demands on working memory. The shorter the string on the basis of which a phrasal node and its immediate constituents can be constructed, the more optimal the structure. According to the Performance-Grammar Correspondence Hypothesis of Hawkins (1994, 2004), a grammar conventionalizes syntactic structures in proportion to their degree of preference in performance. It follows that languages drift towards subordination patterns where the selecting predicate and the subordinator of the embedded clause are as close as possible. SOV sentences prefer a head-final object clause, whereas in the case of SVO word order, the optimal object clause begins with a complementizer. The theory of Hawkins also makes predictions about the relation of the noun phrase and its clausal modifier.

The predictions of the Final-Over-Final Condition and the Minimize Domains Principle mostly coincide, and are largely satisfied in the Uralic languages, which suggests that the Final-Over-Final Condition may be the syntacticization of the condition that ensures processing efficiency in SOV and SVO languages.

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