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Systematic mismatches: Coordination and subordination at three levels of grammar[1]

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In this paper, I analyze two clause combining strategies in Ossetic that exhibit mixed properties between coordination and subordination. I argue that the 'mismatch approach' proposed by Culicover & Jackendoff (1997) and Yuasa & Sadock (2002) is best suited to account for their properties. However, in order to adequately describe the behavior of these constructions in terms of the mismatch approach, appealing to three levels of grammar is required instead of two levels (syntax and semantics) discussed in previous works. This provides a clear argument in favor of models of grammar such as Lexical Functional Grammar (LFG), where the syntactic level is split between constituent structure (c-structure) and functional structure (f-structure). The properties of semantic coordination and subordination that have been proposed in earlier work mostly belong to the level of f-structure, and not semantics proper. I argue that the only substantial semantic difference between coordination and adverbial subordination is that the former introduces discourse relations between speech acts, while the latter introduces asserted predicates that link two propositions within the same speech act. I provide definitions of coordination and subordination at all the three levels of grammar formalized in terms of the LFG framework, and discuss the tests that can be used for each of these levels.

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1. Introduction

It is well-known that the treatment of the distinction between subordination and coordination as a binary opposition does not cover all the constructions in natural languages. The properties that are considered to characterize a given construction as 'subordinating' or 'coordinating' do not always align as neatly as one would expect from familiar cases. For example, in languages where converbs[2] are used in contexts where coordinating constructions are used in European languages, converb constructions often display properties that appear to be 'in between' subordination and coordination, or shift to different edges of this scale depending on factors such as semantics of the connection between clauses and same-subjecthood (Haspelmath 1995, Kazenin & Testelec 2004). Even in European languages, there are constructions which challenge the traditional dichotomy. As has been demonstrated in Culicover & Jackendoff (1997), 'left-subordinating *and*' ($_{\text{LS}}$*and*) that has a conditional interpretation in such English sentences as *You drink another can of beer and I'm leaving* has mixed properties that place it 'in between' subordination and coordination. For example, while ordinary coordinating constructions can undergo right node raising, this is unacceptable for $_{\text{LS}}$*and* constructions:

(1) Big Louie finds out about that guy who stole some loot from the gang, and Big Louie puts out a contract on him. (conditional meaning implied)

(2) *Big Louie finds out about __, and Big Louie puts out a contract on, that guy who stole some loot from the gang.

(Culicover & Jackendoff 1997: 198–199)

At the same time, as Culicover & Jackendoff observe (pages 199–200), it is impossible to analyze *and* in this construction as a subordinating conjunction for a variety of reasons, such as the fact that clause-final subordinating conjunctions are not found in any other area of English grammar.

Similar discrepancies are observed in other constructions, not only in clauses but also in noun phrases. An example of a noun phrase construction that is hard to classify in terms of the binary opposition is the so-called comitative coordination in Russian (McNally 1993, Dalrymple, King & Hayrapetian 1998, Daniel 1998, Arkhipov 2009), Polish (Dyła 1988), Yiddish (Yuasa & Sadock 2002), and Modern Greek (Joseph & Philippaki-Warburton 1987: 61), among others. This construction is an NP that, from the syntactic point of view, consists of a noun with a PP adjunct headed by the preposition 'with', which assigns

[2] A converb is, according to Haspelmath (1995: 3), 'a nonfinite verb form whose main function is to mark adverbial subordination'. An example would be the English present participle in such sentences as ***Having*** *read the book, I went home*, or the specialized converb in Russian ***Pridja*** *domoj, ja lëg spat'* (come.CVB home I lied.down to.sleep) 'Having come home, I went to sleep'.

instrumental case to its complement. Consider the following example from Russian:[3]

(3) Ja videl Petju **s** Vasej.
I saw Petya.ACC with Vasya.INS
'I saw Petya and Vasya.'

Despite the fact that the second conjunct behaves like the object of the preposition 'with', the external distribution of this construction is almost exactly the same as that of coordinating constructions. The most striking fact about it is that it triggers plural agreement when in subject position:

(4) Petja **s** Vasej opozdali / *opozdal na urok.
Petya.NOM with Vasya.INS were.late.PL was.late.SG to lesson
'Petya and Vasya were late for the lesson.'

Both of the above constructions, as well as many other constructions in different languages of the world, represent a challenge to the traditional dichotomy of coordination vs. subordination.

Several theoretical solutions to this problem have been proposed in the literature over the last few decades. Most of these analyses have been developed on the material of one language, or at most a small group of typologically similar languages. As a result of this, trying to apply these analyses to languages belonging to different structural types is often fraught with difficulty. In my view, the most succesful analysis to date is the analysis in terms of a mismatch between syntax and semantics, first proposed in Culicover & Jackendoff (1997) for the English LS*and* construction and later expanded to cover data of Japanese, Yiddish and West Greenlandic in Yuasa & Sadock (2002). The English construction is analyzed as syntactically coordinating but semantically subordinating; the constructions discussed in Yuasa & Sadock (2002) are, inversely, analyzed as syntactically subordinating, but semantically coordinating. The former type of

[3] Russian examples and titles are transliterated according to their orthographic form, following the standard conventions. Interlinear glosses of Ossetic examples follow the Leipzig Glossing Rules (http://www.eva.mpg.de/lingua/resources/glossing-rules.php), except for the following additional abbreviations: ADD = additive particle ('also', 'and'); ATTR = attributive; CNTRF = counterfactual; COMPAR = comparative; HAB = habitual; IMP = imperative; IN = inessive-illative; PCVB = participle-converb; PV = preverb; SUPER= superessive-superlative (case). The dot (.) is used for separating several meanings expressed cumulatively, or for expressing a single unsegmentable element in the original language that does not have a single-word equivalent in the metalanguage; square brackets are used for grammatical meanings not overtly encoded by any morpheme; angle brackets signify that the enclosed material is evaluated when it occupies each of the positions separately, but not two or more at the same time. I use a simpler system for Russian, not indicating morpheme boundaries and only glossing grammatical features when they are relevant for the discussion at hand.

construction has been named by Yuasa & Sadock PSEUDOCOORDINATION,[4] and the latter PSEUDOCOORDINATION. In this paper, I will use 'pseudocoordination' as a cover term for all constructions involving a normally coordinating conjunction being used in a 'subordination-like' context.

What is appealing about the approach in Yuasa & Sadock (2002) is that it allows one to make strong predictions concerning the behavior of coordination and subordination in languages of the world. One of these predictions is that the surface properties of coordination and subordination that these authors consider 'semantic' must be fully conditioned by the meaning of the construction. For example, complement clauses and causal clauses should always display 'semantically subordinating' behavior, such as disallowing right node raising or across-the-board extraction. However, this prediction is challenged by the properties of two pseudocoordinating constructions in Ossetic, an Iranian language spoken in the Caucasus. These constructions utilize the normally coordinating conjunction *ɜmɜ* 'and', but one of them is used for causal clauses, while the other is used for complement clauses of several verbs such as 'to think'[5] and 'to want':

(5) mɜ= χi ba-wrom-ən nal ba-fɜrɜšt-on **wəm-ɜn ɜmɜ**
my self.GEN PV-stop-INF no.more PV-be.able-PST.1SG that-DAT and
[=jɜm ɜgɜr təng mɜštə wəd-tɜn]
he.ALL too.much very angry be-PST.1SG
'I could no longer restrain myself **because** I was too angry with him.'
(Kulaev 1959: 51)

(6) ɜž ɜnqɜl dɜn **ɜmɜ** [də žawər-ə a-šajtː-aj]
I (think) be.PRS.1SG and thou Zaur-GEN PV-cheat-PST.2SG
'I think **that** you've cheated Zaur.'

When the mismatch approach to coordination and subordination is systematically applied to these constructions, it turns out that the properties of the kind that are considered to be 'semantic' in Culicover & Jackendoff (1997) and Yuasa & Sadock (2002) are not directly related to the meanings of these constructions, and that, therefore, three and not two separate definitions of coordination and

[4] The constructions discussed here under the label of 'pseudocoordination' are quite different from such English constructions as *John will try and eat a crayfish*, which are also called by this name in the literature. It has been demonstrated in de Vos (2005) that such English constructions can be described as coordination of two V heads; yet none of the constructions discussed in this paper can be analyzed as head coordination. This difference is explicitly acknowledged in de Vos (2005: 201–202), where the author states that the status of constructions like English LS*and* is unclear.

[5] *ɜnqɜl wɜvən* is a complex verb which consists of the nominal part *ɜnqɜl* and the light verb *wɜvən* 'to be'. When used independently, the noun *ɜnqɜl* means 'hope', thus the meaning of the complex verb cannot be compositionally derived from the meanings of its parts. I will therefore gloss the word *ɜnqɜl* as '(think)' when it takes part in a complex verb; the same convention applies to other similar cases.

subordination are required in order to account for all of their surface properties. I argue that the data of Ossetic can only be adequately explained if one adopts a view of grammar as consisting of at least three separate levels: constituent structure, functional or relational structure, and semantic structure. Such a view of grammar is maintained in the framework of Lexical Functional Grammar (LFG, Bresnan 2001, Dalrymple 2001), where constituent structure is called c-structure, and functional structure f-structure. The prior notion 'semantic' coordination/subordination must accordingly be split between the levels of f-structure and semantics proper. The formalism of LFG allows one to provide explicit definitions of c-, f-, and s-coordination and subordination, valid at each of the three respective levels of language structure.

The paper is organized in the following way. In Section 2, I provide an overview of the most prominent approaches to coordination and subordination that have been proposed in the literature, and of their strong and weak sides. In Section 3, I provide an overview of the Ossetic language and its main syntactic traits. In Section 4, I apply several tests for coordination and subordination to the Ossetic pseudocoordinating constructions. In Section 5, I demonstrate that the two-level approach of Culicover & Jackendoff (1997) and Yuasa & Sadock (2002) cannot explain the behavior of the Ossetic constructions. I describe my solution to this problem, which consists of defining the notions 'coordination' and 'subordination' at three levels instead of two. In Section 7, I formalize the three-level approach to clause linking in terms of LFG, and I explain how different tests on coordination and subordination that I have used in this paper apply to different levels of grammar.

2. Approaches to coordination and subordination

2.1 *Single-level approaches*

Typologists usually approach the discrepancy problem in one of two ways. One is to simply ignore the syntactic differences, using functional criteria as a means of defining 'subordination' and 'coordination' cross-linguistically. A prominent example of this approach is Cristofaro (2003). In her approach, the author draws on the idea that subordination can be defined as involving pragmatic presupposition. However, it has been convincingly shown in numerous works that pragmatic presupposition and assertion do not always straightforwardly correlate with the syntactic properties of the constructions (see e.g. Green 1976, Lakoff 1984, Takahashi 2008, where it is demonstrated that subordinate clauses can be assertive). Therefore, functional approaches to coordination and subordination simply shift the focus away from syntax towards pragmatics, which only serves to confuse the general picture: the syntactic notions 'subordination' and 'coordination' must be clearly separated from pragmatic concepts such as 'presupposition' and 'assertion'. Another way of approaching the problem typologically is to postulate a continuum of clause integration, from juxtaposition to clause

union. This is the approach taken in Lehmann (1988), where clause linking is described as the interaction of several continua representing degrees of integration of the clauses. Even though the idea of a continuum is descriptively adequate, it does not do much in the way of prediction: any language can in principle possess an arbitrary set of syntactic traits that locate it at a certain point in each of the scales.

A different approach is proposed in Olson (1981), Foley & Van Valin (1984) and Van Valin & LaPolla (1997). Within this approach, a third, intermediate type of clause combining 'in between' coordination and subordination is introduced, which is called 'cosubordination'. In a subordinating construction, one of the clauses is both dependent on the main clause and embedded (i.e. it is a syntactic argument or modifier of the main clause); in a coordinating construction, neither clause is dependent on nor embedded in the other. In contrast, in cosubordinating constructions one of the clauses is assumed to be dependent on but not embedded in the other.[6]

The problem with this approach is that there is no cross-linguistically stable 'third type' of clause combining that can be defined as such via a fixed set of syntactic criteria (Bickel 2010). The term 'cosubordination' thus becomes a label for any kind of construction that does not conform to the traditional definitions of coordination and subordination, devoid of any exact cross-linguistic meaning.

In mainstream generative grammar, the most widely accepted analysis of coordinating constructions is related to postulating an asymmetrical structure for them, with the conjuncts occupying complement and specifier positions of a coordinate phrase (CoP). This analysis is due to the phenomena of so-called 'unbalanced coordination', single conjunct agreement and related issues, which are somewhat similar to the phenomena that are dealt with in the present paper, in the sense that they also involve asymmetry between elements connected by coordinating conjunctions. The most prominent works developing an asymmetrical analysis of coordination are Thiersch (1985), Munn (1987, 1993), Aoun, Benmamoun & Sportiche (1994), Kayne (1994), Johannessen (1998). However, this line of research deals with certain asymmetrical traits of canonical coordinating constructions, and not those of constructions that display mixed properties when compared to canonical coordination and subordination in the same language. In her analysis of pseudocoordinating constructions in Norwegian and other Scandinavian languages, which are very similar to English $_{\text{LS}}$*and* constructions mentioned above, Johannessen (1998: 51) comes to the conclusion that these constructions are actually subordinating, and not coordinating at all. Thus,

[6] The analysis of cosubordinate clauses as [+dependent, −embedded] is not always formulated as explicitly as it is formulated here (e.g., in Van Valin (2005: 187): 'These constructions are therefore a kind of dependent coordination'), but this interpretation of the notion is *de facto* accepted by most typologists and descriptive linguists who utilize the term 'cosubordination', see Haspelmath (1995), Epps (2008).

constructions involving mismatches of various kinds are outside the scope of what is understood as unbalanced coordination in the literature.

2.2 *The multi-level approach*

The two approaches briefly surveyed above share a common property: they attempt to define the 'type of linkage' as a point on a one-dimensional scale. The difference between them is that in the cosubordination approach, this scale is discrete, but has three divisions instead of the traditional two; according to the continuum approach, there are no fixed divisions, but a potentially infinite (or at least not explicitly limited) number of potential intermediate types. Even though Lehmann's (1988) version of the continuum approach utilizes several distinct scales, they are all analyzed as formal manifestations of a single scale between parataxis (clause juxtaposition) and subordination. The multi-level approach takes a different route: the division between coordination and subordination remains binary, but different definitions of these concepts apply at different levels of language structure.

The most prominent examples of this approach are Culicover & Jackendoff (1997) and Yuasa & Sadock (2002). Culicover & Jackendoff analyze $_{\text{LS}}$*and* in English as being syntactically coordinating, but semantically subordinating. This is because, while the surface properties of this construction are clearly coordinating (e.g. the order of the clauses cannot be changed, the conjunction must stand between the two clauses), certain other properties, such as the impossibility of gapping, point towards subordination. In Culicover & Jackendoff's approach to grammar, properties like the latter are considered to be dependent on the semantic structure of the construction and therefore they analyze these constructions as semantically subordinating. At the same time, to consider this construction as syntactically subordinating would be unwelcome for the general analysis of English syntax, as one would have to accept that the 'subordinating' conjunction and is clause-final, and that the subordinate clause is always preposed to the main clause. Both facts are at odds with what is known about canonical subordinating constructions in English.

A similar analysis is presented in Yuasa & Sadock (2002) in the framework of Autolexical Grammar. Yuasa & Sadock extend the notion of a mismatch between syntax and semantics, describing several constructions that they consider syntactically subordinating, but semantically coordinating. On the basis of data from Japanese (*-te* coordination), Yiddish (comitative coordination), and West Greenlandic (asymmetric coordination), they propose a distinction between those tests on coordination and subordination that apply at the semantic level, and those that apply at the syntactic level. They name the type of mismatch that they investigate 'pseudosubordination', while the mismatch in Culicover & Jackendoff (1997) is called 'pseudocoordination'.

The mismatch approach to coordination and subordination generally works well as an explanation of why relevant constructions in languages of the world do not

always have properties that neatly correspond to the traditional understanding of these clause linkage types. The mismatch approach makes two strong predictions:

- Features of coordination and subordination cluster into cross-linguistically stable classes. There may be conflict between features of different classes, but no conflict within the same class.
- On the basis of the meaning of a construction, one may predict its 'semantic' properties (for example, the operation of the Coordinate Structure Constraint, e.g. Ross 1967, constraints on anaphoric binding, the possibility of Right Node Raising, etc.).

Neither of these predictions has been systematically investigated across languages, but while the former appears to have no known exceptions, the latter is falsified by the data from Ossetic, as I will demonstrate below.

3. Ossetic: General information

Ossetic is an Iranian language spoken by about half a million people, mostly in the Republic of North Ossetia–Alania, part of Russia, located in the North Caucasus, and in the region of South Ossetia, located at the other side of the Caucasus range. Ossetic has two major dialects, Iron and Digor. Iron is the largest dialect and is the basis of the standard Ossetic language. The term 'Ossetic' in this paper will only refer to the Iron dialect. The transcription of Ossetic examples mostly follows Dzaxova (2009), with the following exceptions: /ə/ is used instead of Dzaxova's /ɘ/,[7] and single letters are used instead of digraphs for affricates (/c/ for /t^{s}/, /č/ for /t^{š}/, /ǯ/ for /d^{ž}/). /ɜ/ is an open-mid central vowel; both /ɜ/ and /ə/ are 'weak vowels' in that they have significantly shorter duration than the others. Geminate stops are written by two letters if they belong to two adjacent explicitly marked morphemes (e.g. *səd-tɜn* (go-PST.1SG), phonologically /sətːɜn/), and with the gemination sign otherwise (e.g. *dɜtː-ən* (give-INF) 'to give').

Most sourced examples of Ossetic sentences that do not come from published research are taken from the Ossetic National Corpus (ONC, about 10 million tokens), available online at http://corpus.ossetic-studies.org/en. Names of sources from the Ossetic National Corpus are transcribed following the conventions in Abaev (1958). Unsourced examples are from my fieldwork conducted in 2010–2013.

Ossetic possesses an agglutinative noun morphology (with two numbers and nine cases) and a fusional verbal morphology: most verb forms are synthetic, and person, number, tense and mood are, for the most part, marked cumulatively in the verb's ending. Stem alternations in verbal inflection are mostly allomorphic; only in a handful of cases does the contrast between the past and the

[7] The reason is that the formant frequencies provided in Dzaxova (2009) correspond both to /ə/ and /ɘ/, yet the Ossetic phoneme that this sign stands for is a classic 'central vowel' in its phonological behavior, e.g. it can be dropped in certain phonetic contexts.

non-past stems serve to differentiate different grammatical forms. A central and typologically unusual feature of the Ossetic verbal system is Slavic-style marking of perfective aspect via verbal prefixes with originally spatial meanings (see Tomelleri 2009 for more information).

While clause-internal word order of Ossetic is generally free, there is a strongly grammaticalized preverbal position, where most focused constituents (including *wh*-phrases) and negative pronouns are obligatorily positioned (Erschler 2012). Consider the following question–answer pair, where the interrogative is obligatorily preverbal, while new information given in the answer may be either preverbal or postverbal, but not sentence-initial (bold typeface in the following examples marks focus):

(7) A: ⟨∗**či**⟩ zul ⟨**či**⟩ ba-lχɜtː-a ⟨***či**⟩?
who bread PV-buy-PST.3SG
'**Who** bought bread?'

B: ⟨?**alan**⟩ zul ⟨**alan**⟩ ba-lχɜtː-a ⟨**alan**⟩
Alan bread PV-buy-PST.3SG
'**Alan** bought bread.'

Generally, non-interrogative focus can be found both pre- and postverbally, while interrogatives and the majority of subordinators are obligatorily preverbal, save for a few special cases described in Erschler (2012). The differences between preverbal and postverbal focus are not entirely clear, but they may be comparable to a similar contrast found in Hungarian (É. Kiss 1998). *Wh*-placement in Ossetic is strictly local, apart from certain non-finite subordinate clauses, where the *wh*-word may be found in the preverbal position in the matrix clause. In general, there are very few syntactic constructions in Ossetic that involve non-local displacement of material.

The unmarked word order is SOV, but other word orders (such as SVO and VSO) are quite widespread. Ossetic possesses an extensive set of second-position pronominal enclitics, which exist for all cases except nominative, equative and comitative, and for all person–number pairs. They are always positioned after the first word or, if the sentence starts with an NP, after the first NP (Abaev 1949: 533–535). NP-internal word order is very rigid: NPs cannot be broken up by any external material, not even by the enclitic pronouns. Like most of the other Iranian languages (Bossong 1985), Ossetic possesses differential object marking (Kulaev 1961). Direct objects receive either nominative or genitive marking, depending on various factors, primarily animacy. Direct objects expressed by personal and demonstrative pronouns, including enclitics, are always expressed by the genitive.[8]

In most Ossetic subordinate clauses, the subordinator is located in the preverbal position of the dependent clause and is usually accompanied by a demonstrative

[8] Technically, demonstratives do not distinguish between nominative and genitive forms. However, for consistency with the general rules of Ossetic object marking, I gloss these pronouns as genitive in direct object position. For detailed motivation of this decision see Belyaev (2014b).

pronoun or adverb in the main clause that marks the position of the subordinate clause (which I will from now on call a 'correlate')[9,10]:

(8) [didinǯ-ət͡s **sə** **čəžg-ɜn** ba-lɜvar kotː-aj] fetː-on
flower-PL what girl-DAT PV-present do-PST.2SG see.PFV-PST.1SG
wəj fəd-ə
that[GEN] father-GEN
'I saw the father of **the girl who** you gave flowers to.'
(lit. 'To **what girl** you gave flowers, I saw **her**.')

(9) [dɜ= nəχaš =dən **k^{w}ə** a-jq^{w}əšt-on] **wɜd** ba-sin kotː-on
thy speech thee.DAT when PV-hear-PST.1SG then PV-joy do-PST.1SG
'I became happy **when** I heard your voice.'
(lit. '**When** I heard your voice, **then** I became happy.')
(Guriev 2004: 266–267)

(10) ɜχšəžgon =mən wəd-i, [sjezd-ə =šɜ **kɜj**
pleasant me.DAT be-PST.3SG conference-IN they.GEN COMP
ba-žmɜšt-aj], **wəj**.
PV-mix-PST.2SG that.DEM
'I was happy **that** you had agitated them at the conference.'
(lit. '(It) was pleasant to me, **that** you had agitated them at the conference, **that**.')
(ONC: Bestawty Georgi, *Wacmystæ*, vol. 3, 2004)

Most preverbal subordinators in Ossetic are also interrogatives. The only exceptions are *k^{w}ə* 'when', which, however, used to be an interrogative at earlier stages of the language (Abaev 1958: 604–605), and *kɜj*, used in complement and causal clauses, which was probably also originally an interrogative, but whose origin is unclear (it is homonymous with the genitive of *či* 'who').

Preverbal subordinators are used for restrictive relative clauses, most complement clauses (especially factives), and most adverbial clauses (time, manner, location, cause, condition, concession).

A minority of the subordinators are not preverbal but 'floating' (the descriptive term has been introduced in Erschler 2012). They are often clause-initial, but can also be preceded by one or more constituents, which can be analyzed as being fronted. There are only five floating subordinators: *sɜmɜj* 'in order that', *kɜd* 'if', *jugɜr* 'if', *səma* 'as if' and *salənmɜ* 'while'. Like preverbal subordinators, most of them are

[9] Most subordinate clauses in Ossetic can be considered subtypes of the so-called correlative construction (Srivastav 1991). For an in-depth overview of Ossetic correlatives, see Belyaev (2014a).

[10] The bold typeface in the correlative examples indicates the subordinator or relative phrase and the correlate. The possessive proclitic in this example is doubled by a dative-marked external possessor, which can be both an enclitic and a full NP; in the latter case it is freely positioned within the sentence. This is a widespread construction in Ossetic.

homonymous with or originally derived from interrogatives, except for *jugɜr* 'if', which goes back to Proto-Iranian **aivakara-* 'one time' (Abaev 1958: 559).

Correlates are optional with complement and purpose clauses such as (11a). But even in these clause types, the correlate is obligatory when the subordinate clause is center-embedded, as is shown in (11b), or sentence-initial, as in (11c). With other clause types using preverbal or floating subordinators, correlates are obligatory.

(11) (a) ɜž χɜr-ən **[sɜmɜj** sɜr-on] **(wəj təχχɜj)**
I eat-PRS.1SG PURP live-SBJV.1SG that[GEN] for

(b) ɜž **[sɜmɜj** sɜr-on] ***(wəj təχχɜj)** χɜr-ən
I PURP live-SBJV.1SG that[GEN] for eat-PRS.1SG

(c) **[sɜmɜj** sɜr-on] ***(wəj təχχɜj)** χɜr-ən
PURP live-SBJV.1SG that[GEN] for eat-PRS.1SG
'I eat **in order to** live.'

(ONC: *Max dug* 6, 2004)

From these examples, as well as from examples such as (10), it can be seen that there are two possible positions for subordinate clauses when a correlate is present: sentence-initial and left-adjoined to the correlate. This is typical for correlatives, e.g. see Bhatt (2003) for the Hindi data. In other words, the correlate can never precede the subordinate clause; the latter can only be sentence-final when there is no correlate.

These two strategies are used for the overwhelming majority of clause types traditionally classified as subordinate. From the structural point of view, they are also undoubtedly subordinating constructions, which follows from the fact that clauses with preverbal and 'floating' subordinators can be centrally embedded, and from other facts that will be demonstrated below. Therefore, in the following discussion, these strategies will be treated as 'canonical subordination', with which pseudocoordinating constructions will be compared.

The predominantly preverbal nature of focus in Ossetic imposes certain constraints on the types of tests I use for distinguishing between coordination and subordination. In particular, the well-known test on focusing the subordinate clause (Haspelmath 1995) is not directly applicable in Ossetic because a finite subordinate clause can never occupy the preverbal position. Instead, the pronominal correlate is focused, as in (12).

(12) [də =mən **k^{w}ə** žaχt-aj], ɜž **[ɜrmɜšt wɜd]**$_{FOC}$ ɜrba-səd-tɜn
thou me.DAT when say-PST.2SG I only then PV-go-PST.1SG
'I only came **when** you called me.'
(lit. '**When** you called me, I came **only then**.')

In (12), the adverbial phrase *ɜrmɜšt wɜd* 'only then' is found in the preverbal focus position in the main clause, while the subordinate clause remains in its normal clause-initial position.

Therefore, the test on focus becomes a test on whether one of the clauses contains a pronominal that refers to the other clause. Clearly, this is not directly

related to coordination and subordination, because coordinating sentences like *John has been to London, and I know **it*** also have a pronoun in the second clause that anaphorically refers to the first clause and that can be focused. Therefore, I will not use the focus test (in its most straightforward form) for distinguishing between coordination and subordination.

4. Ossetic pseudocoordination

The conjunction *ɜmɜ* 'and' in Ossetic is used for conjunctive coordination of different constituent types, in particular NPs and clauses:

(13) [$_{NP}$[$_{NP}$ žawər] **ɜmɜ** [$_{NP}$ alan]]
Zaur and Alan
'Zaur **and** Alan'

(14) [$_{S}$[$_{S}$ žawər alan-ə fetː-a] **ɜmɜ** [$_{S}$ =jɜm ba-zərtː-a]]
Zaur Alan-GEN see.PFV-PST.3SG and he.ALL PV-speak-PST.3SG
'Zaur saw Alan and called him.'

The origin of *ɜmɜ* is Proto-Iranian **ham* 'also' (Abaev 1958: 133–134), thus there is no doubt that its original function is coordinating, and the non-standard functions that will be described below are secondary.

Apart from coordinating various types of constituents, this conjunction can also introduce causal clauses when preceded by the dative singular form of the demonstrative pronoun *wəj*, illustrated above in (5). Ossetic grammars consider *wəmɜn ɜmɜ* to be a 'complex conjunction'. However, only *ɜmɜ* serves to conjoin the clauses themselves, while the pronoun *wəmɜn* is located in the first (functionally 'main') clause, and its function is to refer to the propositional content of the causal clause. Thus, it can be placed in the preverbal focus position, while *ɜmɜ* remains situated between the two clauses:

(15) ɜmbərd ɜrɜg-mɜ **wəm-ɜn** ra-jχɜld-i **ɜmɜ** [=zə
meeting late-ALL that-DAT PV-be.resolved-PST.3SG and it.IN
ɜvžɜršt-oj birɜ faršt-ətɜ]
discuss-PST.3PL many question-PL
'It was **because** many questions were discussed that the meeting ended late.' (Gagkaev 1956: 234)

(16) žawər ɜnɜqɜn fəčːən **wəm-ɜn** ba-χortː-a **ɜmɜ** [=jən ɜχχormag
Zaur whole f. that-DAT PV-eat-PST.3SG and he.DAT hunger
wəd-i]
be-PST.3SG
'It was **because** he was hungry that Zaur ate a whole *fəčːən*.'[11]

[11] The word *ɜχχormag* in predicate position can be used both as an adjective ('I was hungry') and as a noun ('to me was hunger' = 'I had hunger'). A *fəčːən* is an Ossetian specialty: a pie stuffed with meat.

The dative pronoun can be replaced by a synonymous expression such as *wəj təχχɜj* 'because of that'. This makes one wonder if examples like (16) might be instances of ordinary anaphoric reference to cause, as in English 'and because of that'. This is not so for at least three reasons.

First, the dative form of the distal demonstrative pronoun cannot be used for expressing cause in independent sentences:

(17) [wəj təχχɜj] / ***wəm-ɜn** žawər ɜnɜqɜn fəčːən ba-χortːa
that[GEN] for that-DAT Zaur whole f. PV-eat-PST.3SG
'**Because of that** Zaur ate a whole *fəčːən*.'

This means that the causal use of *wəmɜn* is construction-specific, and it is not a freely used pronoun.

Secondly, without the pronominal expression referring to it, the second conjunct cannot be interpreted as the cause of the first:

(18) žawər ɜnɜqɜn fəčːən ba-χortːa **ɜmɜ** =jən ɜχχormag wəd-i
Zaur whole f. PV-eat-PST.3SG and he.DAT hunger be-PST.3SG
'Zaur ate a whole *fəčːən*, **and** [afterwards] he was hungry.'
(≠ 'Zaur ate a whole *fəčːən* **because** he was hungry.')

Observe also that in (18), it is only possible for the first clause to temporally precede the second, while under causal pseudocoordination the opposite is most often the case, as seen in (15) above.

Finally, cataphoric reference to the following conjunct is found only in pseudocoordinating constructions. In ordinary coordination, when two clauses are conjoined, demonstratives in the first clause cannot generally refer to the second clause as a whole, unless the situation was mentioned before (although they may refer to its constituents):

(19) *ɜž **wə-mɜ** ɜnqɜlmɜ kašt-ɜn, **ɜmɜ** də ɜrba-səd-tɜ
I that-ALL (wait) look-PST.1SG and thou PV-go-PST.2SG
(intended: 'I was waiting for **it**$_i$, **and** [you came]$_i$.')

I will henceforth refer to this construction as CAUSAL PSEUDOCOORDINATION.

Additionally, *ɜmɜ* in Ossetic can be used to introduce complement clauses of some verbs, in particular, *ɜnqɜl wɜvən* 'to think, to believe', illustrated in (6) above, and *fɜndən* 'to want':

(20) mɜn fɜnd-ə **ɜmɜ** [də =mɜm ɜrba-sɜw-aj]
me.GEN want-PRS.3SG and thou me.ALL PV-go-SBJV.2SG
'I want[12] you **to** come to me.'

[12] The verbs *fɜndən* 'want', *qɜwən* 'need' and *wərnən* 'believe' in Ossetic have an 'inverted' argument structure: the Stimulus argument is the subject, while the Experiencer is the direct object.

This construction will be referred to as COMPLEMENT PSEUDOCOORDINATION. It must be noted that in all cases when *ɜmɜ* can be used for complementation, alternative strategies of complement clause marking are available. In particular, *ɜnqɜl wɜvən* allows using the subordinator *kɜj* or an asyndetic (i.e. conjunction-less) strategy, while *fɜndən* allows using the subordinator *sɜmɜj* or the infinitive in same-subject contexts, but no asyndetic subordination. Verbs that can use *ɜmɜ* for complementation are mostly those that introduce proposition complements (as opposed to facts or events, see Asher 1993); such predicates include *wərnən* 'to believe', *žɜʁən* 'to say', *tɜršən* 'to fear', *waržən* 'to like' (the list is not exhaustive), and various predicate nominals, such as *ɜvžɜr wɜvən* 'to be bad', *mɜng wɜvən* 'to be false', etc.

There are other uses of the conjunction *ɜmɜ* in Ossetic that do not seem to be typical of coordination from the semantic point of view, in purpose clauses ('I came in order to see you.'), degree clauses ('John was so drunk that he couldn't stand'), and a special construction that can be called 'coordinating inversion' (Belyaev 2014a). Coordinating inversion merits attention because it is somewhat similar to complement pseudocoordination found in examples like (6) above. It is an optional strategy for virtually any correlative clause, regardless of the subordinator's position (preverbal or floating). In this construction, the correlate is in focus position (pre- or postverbal), the dependent clause is placed after the main clause, and the conjunction *ɜmɜ* 'and' is placed between the clauses. Thus, the canonical correlative in (21a) can be transformed into an inverted one in (21b):

(21) (a) [də =mɜm **kʷə** rba-zərtː-aj], **wɜd** ɜž ɜrba-səd-tɜn
thou me.ALL when PV-speak-PST.2SG then I PV-go-PST.1SG
'I came **when** you called me.'

(b) ɜž **he** **wɜd** ɜrba-səd-tɜn, **ɜmɜ** [=mɜm də **kʷə**
I EMPH then PV-go-PST.1SG and me.ALL thou when
rba-zərtː-aj]
PV-speak-PST.2SG
'It is **when** you called me that I came.'

Coordinating inversion is attested with both temporal and complement clauses, as illustrated in the following examples:

(22) …fɜlɜ wəj **wɜd** wə-zɜn, **ɜmɜ** ɜχšɜnad-mɜ alə adɜjmag
but that.DEM then be-FUT[3SG] and society-ALL every person
=dɜr χɜžna-jaw nəmad **kʷə** w-a, wɜd …
ADD treasure-EQU consider.PTCP when be-SBJV.3SG then
'… but it will (only) be **when** every person will be considered a treasure for the society …'

(ONC: *Max dug* 11, 1997)

(23) lɜpːu-jɜn jɜ= χi =dɜr **wəj** fɜnd-ə, **ɜmɜ** [=jən **sɜmɜj**
boy-DAT his self.GEN ADD that.DEM want-PRS.3SG and he.DAT PURP

juwəl =dɜr žon-oj jɜ= waršt-ə təχχɜj]
everyone ADD know-SBJV.3PL his love-GEN for
'And what the boy wants is **for** everyone **to** know about his love.'
(ONC: *Max dug* 2, 2001)

Since the verb *fɜndən* 'to want' also allows using the subordinator *sɜmɜj* with the correlate *wəj*, it can undergo coordinating inversion as seen in (23). The overt difference between such examples and examples like (20) is only that the former contain the subordinator and the correlate. This makes the constructions look very similar, and yet they should be treated separately because of their different functions: coordinating inversion like in (21b), (22) and (23) necessarily involves focusing the subordinate clause via placing the correlate in pre- or postverbal focus position, while examples like (20) are not associated with any special information-structure function; the correlate may be used, but it is optional. In addition, not all of the complement clauses that can undergo coordinating inversion can function in constructions like (6) or (20).

In this paper, I will limit myself to the complement and causal constructions only, as the function of coordinating inversion is not yet fully understood, and other types of pseudocoordination are encountered much less frequently. It is to be expected that the properties of these other constructions will situate them within one of the two types that will be established in this paper. It appears, for example, that coordinating inversion is syntactically similar to complement pseudocoordination. However, a careful analysis of the syntactic properties of such constructions has not yet been carried out, and is a topic for further research.

Notably, along with *wəmɜn ɜmɜ* causal clauses, there are also canonically subordinate causal clauses in Ossetic, containing a preverbal subordinator *kɜj* and the correlate *wəj təχχɜj* 'because of that':

(24) [ɜχχormag =ən **kɜj** wəd-i], **wəj** **təχχɜj** žawər ɜnɜqɜn
hunger he.DAT COMP be-PST.3SG that[GEN] for Zaur whole
fəč:ən ba-χort:-a
f. PV-eat-PST.3SG
'Zaur ate a whole *fəč:ən*, **because** he was hungry.'
(lit. '**That** he was hungry, **because of that** Zaur ate a whole *fəč:ən*.')

The subordinator used in this construction is the same as that in complement clauses like (10) above. The two clause types differ in the choice of correlate: complement clauses use *wəj* 'that', while causal clauses use *wəj təχχɜj* 'because of that'.

The syntactic and semantic properties of both of the constructions under discussion will now be compared to those of canonical subordination and coordination. Since the subordinating/coordinating status of the pseudocoordinating constructions is not *a priori* clear, I will use syntactically neutral terms to refer to the individual clauses: the 'semantically main' clause will be called the PRIMARY clause, while the 'semantically subordinate' clause will be called the

SECONDARY clause. Most of the tests for the coordination vs. subordination distinction that I will apply in the remainder of this section are widely used, have been described in the literature (Zaliznjak & Paducheva 1975, van Oirsouw 1987, Haspelmath 1995, Culicover & Jackendoff 1997, Haspelmath 2004a, Kazenin & Testelec 2004), and do not require much elaboration. Those tests that have only been used in the Russian-language literature or are non-trivial in their application to Ossetic will be discussed in more detail.

4.1 *Embedding*

While canonical subordination in Ossetic allows central embedding of the subordinate clause inside the main clause, as is illustrated by (25), any kind of embedding is disallowed in canonical coordination and in both pseudocoordinating constructions:

(25) *Canonical subordination*
žawər, [ɜχχormag =ən **kɜj** wəd-i], **wəj** **təχχɜj** ɜnɜqɜn
Zaur hunger he.DAT COMP be-PST.3SG that[GEN] for whole
fəčːən ba-χortː-a
f. PV-eat-PST.3SG
'Zaur ate a whole *fəčːən* **because** he was hungry.'

(26) *Canonical coordination*
*žawər, [**ɜmɜ** š-χ^{w}əššəd], šɜ= χi-mɜ ɜrba-səd-iš
Zaur and PV-sleep[PST.3SG] their self-ALL PV-go-PST.3SG
(intended: 'Zaur came home **and** went to sleep.')

(27) *Causal pseudocoordination*
*žawər, [**wəm-ɜn** **ɜmɜ** =jən ɜχχormag wəd-i], ɜnɜqɜn fəčːən
Zaur that-DAT and he.DAT hunger be-PST.3SG whole f.
ba-χortː-a
PV-eat-PST.3SG
(intended: 'Zaur ate a whole *fəčːən* **because** he was hungry.')

(28) *Complement pseudocoordination*
*žawər, [**ɜmɜ** alan wə-mɜ ɜrba-səd-iš], ɜnqɜl u
Zaur and Alan that-ALL PV-go-PST.3SG (think) be.PRS.3SG
(intended: 'Zaur thinks **that** Alan came to him.')

4.2 *Position of the conjunction*

As has already been mentioned above, subordinators in Ossetic can be either preverbal or floating. In the latter case, the subordinator can optionally be preceded by any number of fronted constituents.

The coordinating conjunction *ɜmɜ*, on the other hand, cannot be preceded by any material belonging to the clause that is positioned after it:

(29) *Canonical coordination*
ɜž ba-zərtː-on žawər-mɜ, ⟨**ɜmɜ**⟩ wəj ⟨***ɜmɜ**⟩ ardɜm ⟨***ɜmɜ**⟩
I PV-speak-PST.3SG Zaur-ALL and that.DEM and hither and
ɜrba-səd-i
PV-go-PST.3SG
'I called Zaur, **and** he came here.'

In this respect, the conjunction *ɜmɜ* in Ossetic pseudocoordination behaves like a coordinating conjunction. It is not preverbal, nor can it be preceded by any material from the secondary clause, as demonstrated in the following examples, where the conjunction has been transposed to the preverbal position:

(30) *Complement pseudocoordination*
*žawər ɜnqɜl u [alan =ɜj **ɜmɜ** šaj-ə]
Zaur (think) be.PRS.3SG Alan he.GEN and cheat-PRS.3SG
('Zaur thinks **that** Alan is cheating him.')

(31) *Causal pseudocoordination*
*žawər ɜnɜqɜn fəčːən **wəm-ɜn** ba-χortː-a, [ɜχχormag =ən **ɜmɜ**
Zaur whole f. that-DAT PV-eat-PST.3SG hunger he.DAT and
wəd-i]
be-PST.3SG
('Zaur ate a whole *fəčːən* **because** he was hungry.')

Another fact that demonstrates that the conjunction in causal pseudocoordination does not belong to any of the two clauses is that it is possible to prepose the secondary clause, inverting the order of *wəmɜn* and *ɜmɜ*. Hence, the conjunction must always be positioned between the two clauses:[13]

(32) *Causal pseudocoordination*
(a) *[**ɜmɜ** =jən ɜχχormag wəd-i] **wəm-ɜn** žawər ɜnɜqɜn fəčːən
and he.DAT hunger be-PST.3SG that-DAT Zaur whole f.
ba-χortː-a
PV-eat-PST.3SG
('Zaur ate a whole *fəčːən* **because** he was hungry.')

(b) žawər-ɜn ɜχχormag wəd-i **ɜmɜ** **wəm-ɜn** wəj ɜnɜqɜn
Zaur-DAT hunger be-PST.3SG and that-DAT that.DEM whole
fəčːən ba-χortː-a
f. PV-eat-PST.3SG
'**Because** Zaur was hungry, he ate a whole *fəčːən*.'

[13] The example in (32b) cannot be analyzed as 'result coordination' similar to English *and because of that* due to the fact that, as demonstrated in (17) above, dative case is not regularly used for cause in Ossetic outside of this particular construction and a few other instances.

In complement pseudocoordination, the secondary clause must always follow the primary clause. This fact is inconclusive for establishing the linking type because both canonical coordination and subordination in Ossetic impose certain constraints on the linear order of the clauses, but none of these constraints are of the kind that holds for complement pseudocoordination.

4.3 *Secondary clause coordination*

Another test for distinguishing coordination and subordination has been proposed for Russian in Širjaev (1986). Two subordinate clauses can be conjoined by a coordinating conjunction, while two clauses preceded by coordinating conjunctions cannot (examples are from Testelec 2001: 259):

(33) *Russian: canonical subordination*
On skazal, [**čto** idët dožd'] i [**čto** poètomu my ostanemsja
he said that goes rain and that because.of.this we will.remain
doma]
at.home
'He said that it was raining and that because of this we would remain home.'

(34) *Russian: canonical coordination*
*Svetit solnce, [**no** vsë-taki xolodno] i [**no** ne xočetsja idti
shines sun but nevertheless is.cold and but NEG want to.go
gul'at']
to.take.a.walk
(*'The sun is shining, **but** nevertheless it is cold and **but** (we) don't want to go for a walk.')

This test gives the predicted results for canonical coordination and subordination in Ossetic:

(35) *Canonical subordination*
ɜž žon-ən [žawər =ɜj **kɜj** ba-kotː-a] fɜlɜ [wəj
I know-PRS.1SG Zaur it.GEN COMP PV-do-PST.3SG but that.DEM
kɜj fɜšmon kɜn-ə]
COMP repentance do-PRS.3SG
'I know **that** Zaur has done it, but **that** he repents.'

(36) *Canonical coordination*
*χur ruχš kɜn-ə [**fɜlɜ** važal u] ɜmɜ [**fɜlɜ** =mɜ nɜ
sun light do-PRS.3SG but cold be.PRS.3SG and but me.GEN NEG
fɜnd-ə težʁo kɜn-ən]
want-PRS.3SG promenade do-INF
(*'The sun is shining, **but** it is cold and **but** I don't want to go for a walk.')

According to this test, both pseudocoordinating constructions belong to coordination. As shown in the following examples, coordinating conjunctions *fɜlɜ* 'but' or *kɜnɜ* 'or' cannot be used to connect two secondary clauses in either causal or complement pseudocoordinating constructions:

(37) *Causal pseudocoordination*
*žawər ɜnɜqɜn fəč:ən **wəm-ɜn** ba-χort:-a [**ɜmɜ** =jən ɜχχormag
Zaur whole f. that-DAT PV-eat-PST.3SG and he.DAT hunger
wəd-i] kɜnɜ [**ɜmɜ** wə-sə χɜrinag birɜ waržə]
be-PST.3SG or and that-ATTR food a.lot like-PRS.3SG
('Zaur has eaten a whole *fəč:ən* **because** he was hungry, or **because** he likes this food a lot.')

(38) *Complement pseudocoordination*
*ɜž ɜnqɜl dɜn [**ɜmɜ** =jɜ žawər ba-kot:-a] fɜlɜ [**ɜmɜ**
I (think) be.PRS.1SG and it.GEN Zaur PV-do-PST.3SG but and
wəj fɜšmon kɜn-ə]
that.DEM repentance do-PRS.3SG
('I think **that** Zaur has done it, but **that** he repents.')

4.4 *Scope of mood*

Under canonical coordination, mood features assigned by a matrix verb or a construction (like a conditional construction) must be present in both conjuncts:

(39) *Canonical coordination*
[**kɜd** [χɜzar-mɜ ɜrba-sɜw**-aj**] **ɜmɜ** [š-χ^{w}əšš**-aj** /
if house-ALL PV-go-**SBJV**.2SG and PV-sleep-**SBJV**.2SG
*š-χ^{w}əšš**-zən-ɜ**]] **wɜd** rajšom ekzamen χorž rat:-zən-ɜ
PV-sleep-**FUT**-2SG then tomorrow exam well give.PFV-FUT-2SG
'**If** you come home **and** go to sleep, you will pass your exam well tomorrow.'

In canonical subordination, this requirement only holds for the main clause:

(40) *Canonical subordination*
[**kɜd** ba-žon**-aj** [wəj **kɜj** ɜrba-səd**-i**] **wəj**]
if PV-know-**SBJV**.2SG that.DEM COMP PV-go-**PST**.3SG that.GEN
wɜd =mən =ɜj zur
then me.DAT it.DAT speak[IMP.2SG]
'**If** you find out **that** he has arrived, tell it to me.'

When a causal pseudocoordinating construction is used in a conditional construction, the mood feature must be the same in both clauses, which points towards coordination:

(41) *Causal pseudocoordination*
[**kɜd** də uš **wəm-ɜn** ra-k^{w}ər**-aj** **ɜmɜ** [qɜždəg wa /
if thou wife that-DAT PV-ask-**SBJV**.2SG and rich be.**SBJV**.3SG
*u]] **wɜd** amonč:ən nɜ wə-zən-ɜ
be.**PRS**.3SG then happy NEG be-FUT-2SG
'**If** you take a wife **because** she has money, you will not be happy.'

But the mood feature only applies to the primary clause under complement pseudocoordination:

(42) *Complement pseudocoordination*
[**kɜd** ɜnqɜl w-aj **ɜmɜ** [=dɜ šaj-**ə**]] **wɜd**
if (think) be-**SBJV**.2SG and thee.GEN cheat-**PRS**.3SG then
a-liz
PV-run[IMP.2SG]
'**If** you (ever) think **that** he's cheating you, run away.'

4.5 *Correlative subordination*

In the most general sense, the Coordinate Structure Constraint (CSC, Ross 1967) can be formulated as the requirement that any syntactic operation external to the coordinating construction can only target all the conjuncts at the same time. That is, no conjunct may be singled out for extraction or similar processes.

As I have already stated above, testing extraction is problematic for Ossetic due to the paucity of non-local syntactic dependencies. One of the ways in which the CSC operates in Ossetic is the following: a main clause containing a canonically subordinate clause may be used in a correlative construction, with the preverbal subordinator (i.e. the relativized argument or adjunct) only found in the main clause (underline in the examples below marks the subordinator and the correlate that link the complex structure being analyzed to the higher clause):

(43) *Canonical subordination*
[[žawər **sə**$_{i}$ (*k^{w}ə$_{j}$) ba-kotː-a] **wəj**$_{i}$ k^{w}ə$_{j}$ ba-žətː-on]
Zaur what when PV-do-PST.3SG that.GEN when PV-know-PST.1SG
wɜd$_{j}$ jemɜ nəχaš kɜn-ən ba-wrɜtː-on
then he.COM speech do-INF PV-finish-PST.1SG
'When I found out **what** Zaur has done, I stopped talking to him.'

But in a canonically coordinating construction, the subordinator must be present in both of these clauses and must be the same in both instances:

(44) *Canonical coordination*
[[alan χɜzar-mɜ *(kɜj) ɜrba-səd-iš] **ɜmɜ** [*(kɜj)
Alan house-ALL COMP PV-go-PST.3SG and COMP
š-χ^{w}əššəd]] wəj žon-ən
PV-sleep[PST.3SG] that.GEN know-PRS.1SG
'I know that Alan came home **and** went to sleep.'

Again, the pseudocoordination strategies pattern differently: complement pseudocoordinate clauses can be involved in a correlative construction, while causal ones cannot:

(45) *Complement pseudocoordination*
[aftɜ ɜnqɜl kʷə wəd-a-in **ɜmɜ** =mɜ šaj-gɜ (*kʷə)
so (think) if be-CNTRF-1SG and me.GEN cheat-PCVB if
kɜn-əš] wɜd demɜ nəχaš nɜ kotː-a-in
do-PRS.2SG then thee.COM speech NEG do-CNTRF-1SG
'If I had thought **that** you cheated me, I wouldn't be speaking to you.'

(46) *Causal pseudocoordination*
*ɜž fetː-on [REL ɜnɜqɜn fəčːən či ba-χortː-a **wəm-ɜn**
I see.PFV-PST.1SG whole f. who PV-eat-PST.3SG that-DAT
ɜmɜ ɜχχormag wəd-i] wə-sə lɜpːu-jə
and hungry be-PST.3SG that-ATTR boy-GEN
('I saw the boy who ate a whole *fəčːən* **because** he was hungry.')

Therefore, the CSC does not hold in complement pseudocoordinate clauses (i.e. the antecedent demonstrative may be identified with a *wh*-pronoun in the 'main' clause), but does hold in causal pseudocoordinate clauses (no relativization at all is allowed, even of the 'across-the-board' kind, which is allowed under canonical coordination).

4.6 *Right dislocation*

Another application of the CSC in Ossetic concerns the clitic right dislocation construction:

(47) ɜž =**ɜj** fetː-on, **žawər-ə**
I he.GEN see.PFV-PST.1SG Zaur-GEN
'I saw **him**, Zaur.'

This construction is obligatorily local, i.e. the dislocated noun phrase must be right-attached to the clause where the clitic is found. Hence, it is possible to place the dislocated NP after an embedded clause while the clitic is found in the matrix clause, but it is impossible to place the dislocated NP after two coordinate clauses where only the first contains the clitic:

(48) *Canonical subordination*
təng =**ɜj** fɜnd-ə [sɜmɜj ɜrba-sɜw-aj], **žawər-ə**
strong he.GEN want-PRS.3SG PURP PV-go-SBJV.2SG Zaur-GEN
'**He** strongly wants you to come, **Zaur**.'

(49) *Canonical coordination*
*ӡž =**ӡj** fetː-on, fɜlɜ =mən ni-sə žaχt-a,
I he.GEN see.PFV-PST.1SG but me.DAT NEG-what say-PST.3SG
žawər-ə
Zaur-GEN
('I saw **him** (GEN), but he told me nothing, **Zaur** (GEN).')

Once again, the two pseudocoordinating constructions pattern differently. The complement construction allows right dislocation, while the causal construction does not:

(50) *Complement pseudocoordination*
təng =**ӡj** fɜnd-ə **ӡmӡ** [ɜrba-sɜw-aj], **žawər-ə**
strong he.GEN want-PRS.3SG and PV-go-SBJV.2SG Zaur-GEN
'**He** strongly wants you to come, **Zaur**.'

(51) *Causal pseudocoordination*
*ӡž =**ən** ba-χatər kotː-on, **wəm-ӡn** ӡmӡ [wəj χorž
I he.DAT PV-forgiveness do-PST.1SG that-DAT and that.DEM good
lӡg u], **žawər-ӡn**
man be.PRS.3SG Zaur-DAT
('I forgave **him** (DAT) because he is a good man, **Zaur** (DAT).')

4.7 *Summary*

The above considerations are summed up in Table 1.

	Canonical		Pseudocoordination	
	Subordination	Coordination	Complement	Causal
Embedding	s	c	c	c
Position of the conjunction	s	c	c	c
Secondary clause coordination	s	c	c	c
Scope of mood	s	c	s	c
Correlative subordination	s	c	s	c
Right dislocation	s	c	s	c

s = subordination, c = coordination

Table 1
The properties of Ossetic pseudocoordination compared to canonical constructions.

5. Applying the multi-level approach

At first glance, the two pseudocoordinating constructions appear to fit the two-level approach of Culicover & Jackendoff (1997) and Yuasa & Sadock (2002) rather well: the features form two well-defined clusters, a 'syntactic' one and a 'semantic' one; the former is related to facts of word order and constituent structure, while the latter is mostly related to the operation of the CSC, argued to be semantic in the cited works. Hence, the complement construction can be described as syntactically coordinating but semantically subordinating, which corresponds fairly well to the intuitive idea that in this case a coordinating conjunction is used to encode an inherently subordinating relation between the clauses.

What is surprising is the behavior of the causal construction, which turns out to be both syntactically and semantically coordinating. Causal relations are normally thought to be subordinating (see e.g. Cristofaro 2003), and such constructions tend to have fully subordinating behavior in languages of the world (e.g., English *because* and Russian *potomu čto* are subordinating conjunctions; in certain other languages, e.g. Tsakhur (Kazenin & Testelec 2004) and Icari Dargwa (Sumbatova & Mutalov 2003), causal semantics correlates with subordinating properties). What is more, as mentioned above, Ossetic itself has another causal construction which is canonically subordinating. Therefore, there are two possibilities: either the two-level approach must be abandoned in its present form (i.e. what the 'semantic' tests are about is not semantics but something else) or there are two types of causal meanings: 'coordinating' and 'subordinating' cause. The latter possibility should not be rejected from the outset, as there is currently no universally accepted understanding of what 'semantic coordination' really means, and certain constructions whose semantics is quite close to cause (e.g. 'and therefore') are usually considered to be coordinating. But the solution of postulating two causal meanings is clearly *ad hoc* (and circular) if not backed up by some independent linguistic evidence that can allow us to distinguish 'coordinating' cause from 'subordinating' cause. In the next section, I will propose some tests that can be used as such independent criteria.

Ossetic causal pseudocoordination should also be compared with other cases where a coordinating type of cause has in fact been argued for. German is well-known for having two causal conjunctions, *weil* 'because', which behaves like a normal subordinator, and *denn* 'because, as', which has coordination-like syntactic properties, such as verb-second (V2) word order in the secondary clause. In Pasch (1997), *denn* is viewed as a connective that is neither coordinating nor subordinating. In a recent study of the semantics of causal constructions in German, Scheffler (2013) has proposed to treat *denn* as contributing a conventional implicature (in the sense of Potts 2005, as opposed to at-issue content; see Section 5.1 below), like coordinating conjunctions (according to the Gricean tradition, see discussion in Section 5.1), and unlike *weil*, which, like ordinary subordinators, contributes to at-issue meaning. The difference between French *car* 'because, as' and *parce que* 'because' has also been attributed to a

difference between a kind of semantic coordination (introducing discourse relations) and semantic subordination (introducing predicates) (Groupe λ-l 1975, Delort & Danlos 2005). I will review some of the arguments used by these authors and demonstrate that Ossetic causal pseudocoordination behaves quite unlike the German and French coordinating causal constructions.

5.1 *Is there a coordinating causal meaning?*

The first semantic test that I will use concerns distinguishing adverbial subordination from coordination. A relation introduced by a subordinating construction can be in focus (e.g. serve as an answer to a question, or as an objection to another statement about the same situation), while one introduced by a coordinating construction cannot:

(52) A: Navernoe, Petja stal bol'še rabotat', potomu čto ego
probably Petya became more to.work because him
povysili.
they.promoted
'Petya probably started working harder because he was promoted.'

B: (a) *Russian: canonical subordination*
Net, ego povysili **potomu, čto** on stal bol'še rabotat'.
no him they.promoted because he became more to.work
'No, it was **because** he was promoted that he started working harder.'

(b) *Russian: canonical coordination*
*Net, on stal bol'še rabotat', **i** ego povysili.
no he became more to.work and him they.promoted
('No, he started working harder, **and** he was promoted.')

In (52), it is impossible to focus the causal relation implied by *i* 'and' as an objection to the first utterance; it is only possible to negate the truth of one or more of the conjoined clauses.[14] In a neutral context where the causal relation need not be in (narrow) focus, a sentence like the answer in (52b) is perfectly acceptable (*Petja stal bol'še rabotat', **i** ego povysili* 'Petya started working harder **and** he was promoted'; it is implied that the former caused the latter).

[14] An anonymous *NLLT* referee points out that such examples become acceptable if an adverb explicitly signifying the causal relation is adduced to the second conjoined clause: *Net, on stal bol'še rabotat', i **poètomu** ego povysili* 'No, he started working harder, and **because of that** he was promoted'. Such examples are indeed somewhat better, although still pragmatically infelicitous. The reason for the improvement is that in this case, the asserted meaning is not contributed by the coordinating conjunction, but by the adverb *poètomu* 'because of this', which does not contradict my point about coordinating conjunctions. In addition, see (53), where the prepositional phrase *pri ètom* 'at the same time' also seems to define the relation of contrast, and yet its presence or absence does not influence the acceptability judgement, as far as I can tell.

A related fact is that the meanings of coordinating conjunctions cannot be in the scope of various sentence-internal operators, like negation:

(53) *Russian: canonical coordination*
A: Darginskij jazyk otnositsja k naxsko-dagestanskoj sem'e, **no** Dargwa language relates to Nakh-Daghestanian family but (pri ètom) javljaetsja ergativnym?
at.the.same.time is ergative
'Is Dargwa a Nakh-Daghestanian language, but an ergative one?'
B: *Net, naxsko-dagestanskie jazyki vse èrgativnyje!
no Nakh-Daghestanian languages all are.ergative
('No, all Nakh-Daghestanian languages are ergative!')

Here, one can negate the claim that Dargwa is ergative, or the claim that Dargwa belongs to the Nakh-Daghestanian family, but not the (wrong) implication that one of the claims generally contradicts the other (unless the negation is metalinguistic). The same is observed with modal adverbs. Compare the following two sentences:

(54) (At a party Masha ignored Petya. At some point he suddenly stood up and left. The speaker is thinking of a possible reason for Petya's behavior.)
(a) *Russian: canonical subordination*
Navernoe, Petja ušël, **potomu čto** Maša s nim ne
probably Petya left because Masha with him NEG
razgovarivala.
talked
'Petya probably left **because** Masha did not talk to him.'
(b) *Russian: canonical coordination*
?Navernoe, Maša ne razgovarivala s Petej, i on ušël.
probably Masha NEG talked with Petya and he left
('Probably, Masha didn't talk to Petya, **and** he left.')

In a context where the speaker knows that Petya left and Masha did not talk to him, (54a) is felicitous as a supposition about the latter being a possible reason for the former. However, (54b) is generally unacceptable in such a context; it is only the coordinate clauses that can be in the scope of 'probably', not the implicit causal relation. Hence, the meanings of 'and' and 'but' cannot be assertions in the same way as the meanings of subordinating constructions and verbal predicates are. They are not presuppositions either because, while a false presupposition normally leads to the whole sentence being meaningless, (53) can be judged to be true by any person familiar with the subject matter even though the adversative relation is clearly false. A more general example is a sentence like ?*John has been promoted, but started earning more*: such a sentence can be true or false regardless of the fact that there is no contradiction here. Thus,

coordinating conjunctions satisfy Potts' (2005: 32) definition of CONVENTIONAL IMPLICATURE (CI) in the part concerning independence of truth values, to which scopelessness (ibid.: 42) is closely related.

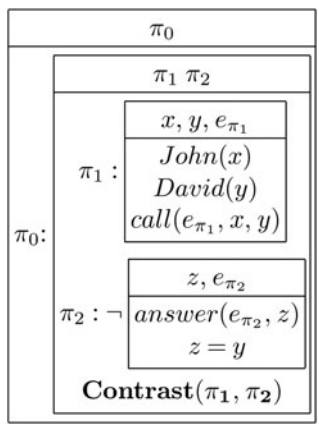
The treatment of coordinating conjunctions as introducing CIs has been popular since Grice (1975). However, some have challenged this approach (Bach 1999, Potts 2005). The most convincing counter-argument seems to be that in some cases there is a clear influence of the meaning of 'and' on the truth conditions of the whole sentence:

(55) Either he left her and she took to the bottle or she took to the bottle and he left her.

(Carston 2002: 227)

If the at-issue entailments of both clauses are the same, as the CI approach suggests, then the contribution of 'or' in (55) should be vacuous, which is clearly not the case. Thus, while coordinating relations look similar to CI, they must be distinguished from other types of the latter, such as appositive (non-restrictive) relative clauses. I believe that the issue can be resolved using a dynamic approach such as Segmented Discourse Representation Theory (SDRT, Asher & Lascarides 2003), an extension of Discourse Representation Theory (DRT) (Kamp & Reyle 1993), which introduces rhetorical relations between speech acts. Working in this framework, Txurruka (2003) analyzes the conjunction 'and' as connecting the predications not by logical conjunction, but by discourse/rhethorical relations. In SDRT, rhetorical relations are different from predicates in that the latter hold for discourse referents of type *e* while the former are relations between speech act discourse referents. For example, the sentence *John called David but he didn't answer* can be represented by the structure in (56).

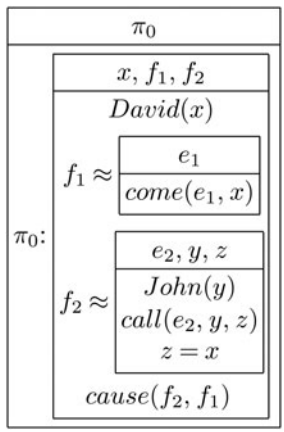
(56)



The two predications constitute separate segmented discourse representation structures (SDRSs) which represent speech acts and are denoted by the referents π_1, π_2,[15] and are both found in the SDRS π_0 which contains the rhetorical relation *Contrast*.

According to this analysis, a sentence containing a subordinate clause like *David came because John called him* would, in contrast, be represented as a single SDRS, corresponding to a single speech act that contains two discourse representation structures representing the clauses and a relation *cause*(f_1, f_2) that takes their propositional content as arguments (the convention for representing facts is from Asher 1993):

(57)



While the formal language that is defined for SDRT does allow discourse relations to be negated (Lascarides & Asher 2007: 15), it seems reasonable to assume that discourse relations do not fall under the scope of sentence-internal negation, excluding metalinguistic uses (Horn 1989), and other operators. In addition, compare a similar SDRT account of the difference between French *car* 'because, as' and *parce que* 'because' in Delort & Danlos (2005), where *car* is analyzed as involving a rhetorical relation while *parce que* contributes a predicate *cause*(f_1, f_2). Kobozeva (2011) argues for a similar analysis of the Russian conjunction *i* 'and' as contributing rhetorical relations in addition to simple Boolean conjunction.

Thus, in SDRT terms, coordination is different from subordination[16] in that the former introduces discourse relations which connect speech acts, while the latter introduces predicates holding between propositions or events. In coordinating

[15] I represent events using the original Davidsonian notation where the event argument is included in the argument list of the predicate. This is both for compactness and for more substantial reasons, which will be mentioned below.

[16] Note that my interpretation of these notions is unrelated to the distinction between 'discourse coordination' and 'discourse subordination' found in Asher (1993). Asher distinguishes between two kinds of discourse relations, symmetrical and asymmetrical, both of which belong to semantic coordination according to my definition.

constructions, the clauses are separate speech acts, while in subordinating constructions, all clauses belong to the same speech act. This is an appealing alternative to both the Gricean conventional implicature approach and the 'at-issue' or purely semantic approach proposed by other authors because it maintains the distinction between two types of clause combining without denying the intuitively plausible idea that coordinating conjunctions do contribute aspects of at-issue meaning.[17] Another advantage of this approach is that it accounts for some other differences between coordination and subordination. For example, coordinate clauses can have independent illocutionary force because they are separate speech acts, while subordinate clauses cannot (Verstraete 2005), because both the main and the subordinate clause belong to the same speech act.

The operator scope test gives the predicted results for canonical coordination and subordination in Ossetic[18]:

(58) *Canonical subordination*
mɜng u ɜmɜ də ra-jqal dɜ [bon **kʷə**
false be.PRS.3SG and thou PV-awake be.PRS.2SG day when
wəd-i] **wɜd**. fɜštɜ-dɜr ra-jqal dɜ!
be-PST.3SG then late-COMPAR PV-awake be.PRS.2SG
'It is false that you woke up **when** it was dawn. You woke up later!'

(59) *Canonical coordination*
*mɜng u ɜmɜ wəj žončːən u **fɜlɜ** rɜšuʁd.
wrong be.PRS.3SG and that.DEM clever be.PRS.3SG but beautiful
rɜšuʁd čəžž-ətɜ =dɜr žončːən vɜjj-əns.
beautiful girl-PL ADD intelligent be.HAB-PRS.3SG
(intended: *'It is not true that she is intelligent **but** beautiful. Beautiful girls are also often intelligent.')

However, the causal construction turns out to be subordinating according to this test in contradiction to its behavior with regard to other 'semantic' tests:[19]

[17] Another alternative treatment of coordination is the pragmatic account of Carston (2002), who uses her concept of 'explicature' or 'semantic enrichment' to account for such meanings of *and*. In her view, they have nothing to do with the meaning of *and* itself, but are a product of pragmatic inference. This analysis shares similarities with both Gricean and purely semantic accounts. I am thankful to an anonymous *JL* referee for drawing my attention to this alternative. Note, though, that the discussion here only concerns relations such as causation and contrast; temporal relations may turn out to be 'at-issue' after all.

[18] The complement of 'it is false that' is introduced by the conjunction *ɜmɜ* 'and', which is another instance of complement pseudocoordination.

[19] An anonymous *NLLT* referee wonders if the acceptability of (60) cannot be due to the same reason as the acceptability of the Russian example in footnote 14: the presence of the pronoun *wəmɜn* 'to that', which explicitly refers to the subordinate clause and introduces the causal relation. But I have demonstrated above that the pronoun cannot be analyzed as the sole contributor of causal semantics, and the causal construction is not just a particular instance of ordinary

(60) *Causal pseudocoordination*
mɜng u ɜmɜ žɜlinɜ alan-mɜ čənz-ə r-səd-i
wrong be.PRS.3SG and Zalina Alan-ALL bride-IN PV-go-PST.3SG
wəm-ɜn ɜmɜ wəj qɜždəg u. wəj =jɜ
that-DAT and that.DEM rich be.PRS.3SG that.DEM he.GEN
warž-ə!
love-PRS.3SG
'It is not true that Zalina married Alan **because** he is rich. She loves him!'

Similarly, the causal meaning can be embedded under the scope of 'maybe':

(61) *Causal pseudocoordination*
zambolat-ə karž nəχɜš-tɜ =jɜm **ɜvɜcːɜgɜn** qar-gɜ =dɜr
Dzambolat-GEN severe speech-PL he.ALL maybe affect-PCVB ADD
nɜ ba-kotː-oj, **wəm-ɜn** ɜmɜ jɜ= quš-t-əl ɜndɜr nəχɜš-tɜ
NEG PV-do-PST.3PL that-DAT and his ear-PL-SUPER other speech-PL
wad-əštə
flow-PST.3PL
'Dzambolat's severe words did not have an effect on him, **perhaps, because** he imagined to hear different words.'
(ONC: *Max dug* 2, 2001)

Ossetic causal pseudocoordination can also easily serve as an answer to a 'why'-question:

(62) *Causal pseudocoordination*
A: teatr-mɜ sɜw-ən =dɜ **sɜm-ɜn** fɜnd-ə?
theatre-ALL go-INF thee.GEN what-DAT want-PRS.3SG
'**Why** do you want to go to (work at) the theatre?'
B: **wəm-ɜn ɜmɜ** ɜnɜ = scenɜ-jɜ mɜ= bon sɜr-ən
that-DAT and without stage-ABL my possibility live-INF
nɜ-w
NEG-be.PRS.3SG
'**Because** I cannot live without the stage.'
(ONC: *Max dug* 7, 2007)

These data of Ossetic are in sharp contrast with the German data. According to Scheffler (2013: 67–68), it is impossible to embed the meaning of German causal *denn* 'because, as' under negation or other external operators (modals, conditionals, questions). Similarly to my account, she treats this as evidence that *denn* contributes a conventional implicature, rather than an at-issue meaning. In addition, in Groupe

coordination. In addition, in (60), the pronoun is not in the preverbal position, which would be expected if it were the focus of negation.

λ-l (1975), it is shown that French *car* 'because, as', unlike *parce que* 'because', cannot be embedded under negation, modality, or question, which the authors treat as evidence for it introducing a discourse relation rather than an assertion of cause. Thus, if these tests are valid, the meaning of Ossetic causal pseudocoordination must belong to the at-issue dimension, or, in other words, semantic subordination. The same concerns the question-answer test: in German, *weil* 'because', the subordinating causal conjunction, can answer a *why*-question, while the coordinating *denn* cannot, as Scheffler claims (following Thim-Mabrey 1982: 208).

There is also another, less widely adopted test for distinguishing coordination from adverbial subordination, which has been proposed in Pekelis (2008). In Russian, one of the clauses in a subordinating construction can be replaced by the demonstrative pronoun *èto* 'this',[20] while this is impossible in a coordinating construction:

(63) *Russian: canonical subordination*
Sovremennaja fotografija stala banal'noj, pritornoj i neinteresnoj,
modern photography became banal luscious and uninteresting
i **vsë èto, potomu čto** mnit sebja iskusstvom.
and all this because imagines itself art
'Modern photography has become banal, luscious and uninteresting, and **all of this** (is) **because** it imagines itself (to be) art.'
(Pekelis 2008: 34)

(64) *Russian: canonical coordination*
Maša byla zanjata podgotovkoj k ekzamenu i k tomu že
Masha was occupied by.preparation to exam and besides
prostužena. ***Èto** / ***vsë èto i** my ne vzjali eë s soboj.
ill this all this and we NEG took her with ourselves
(*'Masha was occupied by preparation to her exams, and she had a cold; **this**, and we didn't take her with us.')
(Pekelis 2008: 35)

This test essentially concerns the same property that some of the previous tests do: whether the relation between the two propositions is accessible for clause-level operators. The function of this particular 'that'-construction in Russian is to focus the relation that holds between the two clauses or between a clause and an NP. When such a relation is not present at the at-issue level, is presupposed, or is a rhetorical relation, this construction cannot be used.

[20] This construction is similar to a Russian construction sometimes called 'cleft' (Gundel 1977), which also utilizes the demonstrative pronoun *éto*. But both the syntactic properties and pragmatic functions of this construction are different from those of the *èto*-cleft. Another similar but distinct construction is the one where *èto* introduces an NP that repeats a full NP in canonical argument or adjunct position, e.g.:
(i) Petja udaril Vasju, i éto Petja, kotoryj ne obidit i muxi.
Petya hit Vasya and that Petya which NEG will.hurt and fly
'Petya hit Vasya, and this is the Petya that wouldn't hurt a fly.'

My claim that the 'this'-construction is indeed a diagnostic for the presence of an additional assertion is confirmed by the following fact: it can also be used for asserting the relationship between a predicate and its adjunct, as seen in the Russian example in (65) below, but cannot be used with semantic arguments, even when they are syntactic adjuncts, like goals of verbs of movement, as in (66), and passive agents, as in (67):

(65) On žil na 10 000 rublej v mesjac, **i èto** v Moskve.
he lived on rubles in month and this in Moscow
'He lived for 10 000 roubles a month, **and that** (was) in Moscow.'
(This sentence implies that 10 000 roubles a month is not normally enough for Moscow.)

(66) *On priexal, **i èto** v Moskvu.
he came and this in Moscow
(intended: *'He came, and that (was) to Moscow.')

(67) *Stat'ja byla napisana, **i èto** Xomskim.
article was written and this by.Chomsky
(intended: *'The article was written, and that (was) by Chomsky.')

This behavior is due to the fact that adjuncts, like adverbial subordinate clauses, involve a separate asserted proposition[21] that specifies the relation that is supposed to hold between the situation and its adjunct, while there is no such assertion involved with arguments.[22] That is, if the meaning of *John came* is *come*(*John, e*), then the meaning of *John came yesterday* is *come*(*John*, *e*) ∧ *yesterday*(*e*) (assuming that *e* is a Davidsonian event argument).[23]

[21] Compare the representation of the meaning of adjuncts in Ernst (2004). Also on this issue, see Podlesskaya (1993: 36–37), Testelec (2001: 190–191).

[22] An anonymous *NLLT* referee claims that duration and temporal location phrases in Russian do not pass the *èto*-test despite being adjuncts: ?*Vasja čital knigu,* ***i èto*** *dva časa* 'Vasya read the book, and **that** for two hours'. This example is indeed hardly acceptable, but this seems to be more due to pragmatic reasons than to a grammatical prohibition. Similar examples which are perfectly acceptable are found in the Russian National Corpus, e.g. *voditeli, vyderživaja distancii, orientirovalis' liš' na belyj krug v korme vperedi iduščego,* ***i èto*** *vosem' časov bez edinogo privala* 'the drivers, keeping their distance, only took their bearings from white circles on the backs of the ones who preceded them, **and this** for eight hours without rest' (G.N. Vladimov, *General i ego armija*, 1994). In addition, even if some adjuncts do fail the *èto*-test, this does not falsify the generalization that if a constituent passes the test, then it is an adjunct.

[23] This kind of opposition between arguments and adjuncts can only be straightforwardly captured in the original Davidsonian approach to events. In the Neo-Davidsonian approach, both arguments and adjuncts are represented as separate predicates: ∃*e.come*(*e*) ∧ *Agent*(*John, e*) ∧ *yesterday*(*e*). Thus, the behavior under discussion has to be accounted for by some additional mechanism (e.g., not all predicates can be in the scope of external negation). There may be other reasons to adopt the Davidsonian approach; e.g, see Bierwisch (2006) for some criticism of Neo-Davidsonian event semantics. In general, though, I do not believe that the difference in this case is essential, and I use Davidsonian semantics only for ease of illustration.

This test has originally been proposed for German in Zifonun et al. (1997: 686), where the non-adjunct-like behavior of passive agents was noted.[24] If my analysis of this construction is on the right track, then there is no need to abandon the binary distinction between arguments and adjuncts in order to account for this behavior. Rather, this test demonstrates that passive agents express an entity that is an argument of the clause at the semantic level (i.e. occupies one of the theta-roles provided by the verb), even though this theta-role is mapped to an adjunct position.[25]

Ossetic has a similar construction, and this test gives the same results as for Russian for canonical coordination and subordination:

(68) *Canonical subordination*
wəj [**salənmɜ** χaməržɜ-jə nɜ-ma fetː-a] **wɜd-mɜ**
that.DEM while Khamirza-GEN NEG-yet see.PFV-PST.3SG then-ALL
'**That** (was) **while** he didn't yet see Khamirza.'
(ONC: Bic'oty Griš, *Kærdæǯy st'aly*, 2003)

(69) *Canonical coordination*
*də ba-fɜštiat dɜ. **wəj,** **ɜmɜ** dɜ= urok =dɜr ne
thou PV-delay be.PRS.2SG that.DEM and thy lesson ADD NEG
š-aχ^{w}ər kotː-aj
PV-study do-PST.2SG
('You were late. **This**, and you haven't learned your lesson.')

But the causal pseudocoordinating construction is once again exceptional according to this test, which classifies it as subordinating:

(70) *Causal pseudocoordination*
wəj **wəm-ɜn** **ɜmɜ** c'ereteli ɜpːɜt jɜ= sard ɜmɜ je= šfɜldəštad
that.DEM that-DAT and Tsereteli all his life and his creation
š-nəvond kotː-a jɜ= adɜm-ɜn
PV-sacrifice do-PST.3SG his people-DAT
'**This** (is) **because** Tsereteli sacrificed all his life and creation for the sake of his people.'
(ONC: Bestawty Georgi, *Wacmystæ*, vol. 3, 2004)

[24] Similar tests for English are the *do so* test (Lakoff & Ross 1976), the *happened* test (Culicover & Jackendoff 2003: 284–285), and pseudoclefting (Klima 1962, via Vestergaard 1977). However, to the best of my knowledge, they cannot be used for distinguishing between coordination and subordination.

[25] For a formal definition of the notion 'semantic argument' (which in the authors' LFG framework is different from syntactic argumenthood) see Asudeh & Toivonen (2012: 19). Related issues of mapping from argument structure to grammatical functions are considered in Asudeh & Giorgolo (2012) and Needham & Toivonen (2011).

The tests used in this section, which I claim to be semantic, have thus failed to distinguish the meaning of Ossetic causal pseudocoordination from that of canonical subordination. This construction does not seem to have any semantic properties in common with canonical coordination, either; while a coordination-like causal meaning has been observed in other languages, it is clear that Ossetic causal pseudocoordination does not belong to this type. Overall, there appears to be a tendency for cause to be expressed by coordination-like constructions: among well-known examples, apart from German *denn* 'because, as' and French *car* 'because, as', one can mention English *for* and Russian *tak kak* 'because, as' (Pekelis 2009), which have coordinating properties. In Mishar Tatar, causal constructions also display coordinating properties (Pazel'skaja 2007).[26] Therefore, the idea that criteria such as the operation of the CSC directly reflect semantic structure in cases like those analyzed here should probably be abandoned. But the other prediction of the multi-level approach that features of coordination and subordination should cluster into meaningful, cross-linguistically stable classes appears to be borne out in languages of the world, including Ossetic. There are thus reasons to maintain the multi-level approach, but in a modified form: the 'semantic' features really reflect some other level of language structure. But what can this level be?

5.2 *Three levels of language structure*

In my view, a proper solution to this problem lies in accepting a view of language that involves an intermediate 'relational' level between 'surface' syntax, where constraints on word order and constituent structure are defined, and semantics proper. It is the 'relational' level of syntax, not 'surface' syntax or semantics, where constraints on extraction, anaphora, scope of mood assignment, etc. are formulated. Hence, the notions 'semantic subordination' and 'semantic coordination' as defined in Yuasa & Sadock (2002) do not really apply to semantics proper, but to this level of 'relational' syntax.[27] The level of semantics is only concerned with truth-conditional representations of the meanings of linguistic expressions. The last two tests above (Section 5.1) are the only tests that directly concern the semantic level, where coordination can be defined as introducing a discourse relation that links several assertions that correspond to the conjuncts to each other. Any construction that does not fit this definition, e.g. where a predicate (not a discourse relation) representing the relation between the clauses is present, or where one of the clauses is presupposed, or

[26] A possible reason for this tendency is that causal clauses often express new information and even function as independent assertions (Diessel & Hetterle 2011). However, the overall number of well-described cases is quite small and mostly limited to European languages, which cannot rule out a sampling bias.

[27] Newer versions of Autolexical Grammar involve two additional levels of syntactic representation, Role Structure (Sadock 2012: 73–110) and the linear order component (ibid.: 111–146). The former level is roughly equivalent to LFG a-structure (argument structure), and the latter's functions are fulfilled by constituent structure in LFG as well as in most other theories. Neither is a level where notions such as 'coordination' and 'subordination' can be defined.

Construction	c-structure	f-structure	semantics
Complement	**co**ordination	**sub**ordination	**sub**ordination
Cause	**co**ordination	**co**ordination	**sub**ordination

Table 2
Ossetic pseudocoordinating constructions at the three levels of grammar.

where one of the propositions is the argument of another proposition, is semantically subordinating. 'Semantic subordination' is thus an umbrella term for whatever constructions are not semantically coordinating; these do not form a homogeneous class.

The most widely applied framework that postulates exactly this grammatical architecture is probably the theory of Lexical Functional Grammar (LFG, Kaplan & Bresnan 1982, Bresnan 2001, Dalrymple 2001). In the terminology of this framework, the 'surface' level of syntax is called c-structure, and is represented by a constituent structure tree; the 'relational' level of syntax is called f-structure, and is represented by a set of attribute–value pairs; finally, there is a level of semantic, or s-structure; meanings are usually represented by formulae of first-order predicate logic. In the rest of this paper, I will assume the LFG model of language. Accordingly, I will call coordination and subordination at c-structure 'c-coordination' and 'c-subordination'; the respective relations at f-structure will be called 'f-coordination' and 'f-subordination'. Finally, for the sake of clarity, I will precede the labels of the semantic types of clause linkage with the prefix 's-'. The way particular constructions under discussion align with respect to these notions is shown in Table 2.

The idea that there may be mismatches between f-structure and semantics is not new for LFG. Notably, it has been discussed in (Sadler and Nordlinger 2010) with regard to the distinctions between certain appositional and coordinating constructions in Australian languages. However, the idea that mismatches between c-structure, f-structure and semantics may concern the basic notions of clausal coordination and subordination has not, to the best of my knowledge, been formulated before.

5.3 *Interim conclusions*

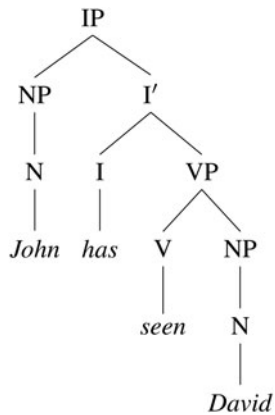
In Section 5, I have demonstrated the necessity of postulating a separate 'relational level' (f-structure) between constituent structure and semantics for explaining the data of Ossetic in terms of the mismatch approach. I have also demonstrated that the negation test and the 'that'-test properly belong to the level of semantics, while the tests that have been argued in the literature to be 'semantic' belong to the level of f-structure. Finally, I hope to have demonstrated that the chief difference between semantic coordination and subordination is that the former introduces discourse relations while the latter introduces predicates on a par with those contributed by clauses. In the next section, I will provide an outline of LFG, and in Section 7 I will propose an explicit formalization of the concepts introduced above.

6. The theory of Lexical Functional Grammar

Lexical Functional Grammar (Kaplan & Bresnan 1982, Bresnan 2001, Dalrymple 2001) belongs to the family of non-transformational, constraint-based, lexicalist grammatical frameworks. In LFG, language is described via parallel structures linked by correspondence relations; the grammar specifies constraints on these structures and on correspondences between them. This trait of LFG is shared with certain other frameworks, in particular the Parallel Architecture of Culicover & Jackendoff (2003) and Autolexical Grammar of Sadock (2012).

The range of structures that are included in this architecture of grammar varies among different practicioners of LFG, but three universally accepted structures play a central role: constituent structure (c-structure), functional structure (f-structure) and semantic structure (s-structure). C-STRUCTURE is represented as a tree like that in (71) defined by context-free phrase-structure rules, such as those found in (72).

(71)



(72) IP → NP I′ I′ → I VP
VP → V NP NP → N

C-structure is usually organized according to a version of X′ theory. The most important difference between the constituent structure theory used in LFG and the theories used in transformational frameworks is that particular grammatical relations or semantic roles are not necessarily associated with specific phrase-structure positions, and LFG allows the use of the non-endocentric category S for representing the constituent structure of non-configurational languages (Austin & Bresnan 1996).

Mathematically speaking, F-STRUCTURE is usually thought of as a function from attributes to values, or as a set of pairs where the first member is the attribute and

the second member is the value. F-structures are usually represented in tabular form, as attribute value matrices such as that labeled *f* in (73).

(73)
$$f:\begin{bmatrix} \text{PRED} & \text{'see}\langle\text{SUBJ OBJ}\rangle\text{'} \\ \text{TENSE} & \text{PRES} \\ \text{ASPECT} & \text{PERF} \\ \text{SUBJ} & \begin{bmatrix} \text{PRED} & \text{'John'} \\ \text{NUM} & \text{SG} \end{bmatrix} \\ \text{OBJ} & \begin{bmatrix} \text{PRED} & \text{'David'} \\ \text{NUM} & \text{SG} \end{bmatrix} \end{bmatrix}$$

F-structure includes a variety of feature types: those representing grammatical relations (GRAMMATICAL FUNCTIONS, or GFS), those representing information-structure functions such as topic and focus (DISCOURSE FUNCTIONS,[28] or DFS), those representing predicates (PREDS) and those representing various grammatical attributes such as case, person and number. Attributes can be valued as f-structures (GFS, DFS), or as atomic values (grammatical attributes). Predicate values are a special kind of feature values, SEMANTIC FORMS. They possess the feature of uniqueness: even if the same predicate occurs several times in the sentence, each of its occurences is treated as a unique value. Another important trait of semantic forms is that they specify those functions that are governed in the f-structure where the predicate is found (in other words, they specify the set of arguments of this predicate).

Eligible f-structures include sets of f-structures. For example, adjuncts are usually represented as sets, as in the (simplified) f-structure in (74).

(74) John calmly waited outside.
$$\begin{bmatrix} \text{PRED} & \text{'wait}\langle\text{SUBJ}\rangle\text{'} \\ \text{SUBJ} & \begin{bmatrix} \text{PRED} & \text{'John'} \end{bmatrix} \\ \text{ADJ} & \left\{ \begin{bmatrix} \text{PRED} & \text{'calmly'} \end{bmatrix}, \begin{bmatrix} \text{PRED} & \text{'outside'} \end{bmatrix} \right\} \end{bmatrix}$$

A parenthetical notation is used for referring to feature values. For example, the value of (*f* ASPECT) in (73) above is PERF, the value of (*f* OBJ NUM) is SG, and the value of (*f* SUBJ CASE) is undefined.

[28] There have been proposals to relegate discourse functions to a separate level of grammar, namely i(nformation)-structure (King 1997, Dalrymple & Nikolaeva 2011). Some of the sentences analyzed below involve NPs occupying the focus position; for simplicity, in treating them I follow the earlier view that discourse functions belong to f-structure (Bresnan & Mchombo 1987).

F-structure is projected from c-structure via the correspondence function ϕ. The rules of correspondence are described using ANNOTATED PHRASE-STRUCTURE RULES where nodes on the right-hand side are supplied with functional equations which define the f-structure features. The equations utilize metavariables $\downarrow$ and $\uparrow$, which are symbols for 'the f-structure of this node' and 'the f-structure of the parent node', respectively. Lexical entries are essentially the same kind of rules, but use a different notation, shown in (76). The rules in (75)–(76) are sufficient to construct the c- and f-structures in (71) and (73).

(75)
$$\begin{array}{lcl@{\qquad}lcl} \text{IP} & \rightarrow & \underset{(\uparrow \text{SUBJ})=\downarrow}{\text{NP}} \quad \underset{\uparrow=\downarrow}{\text{I}'} & \text{I}' & \rightarrow & \underset{\uparrow=\downarrow}{\text{I}} \quad \underset{\uparrow=\downarrow}{\text{VP}} \\ \text{VP} & \rightarrow & \underset{\uparrow=\downarrow}{\text{V}} \quad \underset{(\uparrow \text{OBJ})=\downarrow}{\text{NP}} & \text{NP} & \rightarrow & \underset{\uparrow=\downarrow}{\text{N}} \end{array}$$

(76)
$$\begin{array}{lll} \textit{John} & \text{N} & (\uparrow \text{PRED}) = \text{'John'} \\ & & (\uparrow \text{NUM}) = \text{SG} \\ \textit{David} & \text{N} & (\uparrow \text{PRED}) = \text{'David'} \\ & & (\uparrow \text{NUM}) = \text{SG} \\ \textit{has} & \text{I} & (\uparrow \text{ASPECT}) = \text{PERF} \\ & & (\uparrow \text{SUBJ NUM}) = \text{SG} \\ & & (\uparrow \text{SUBJ PERS}) = 3 \\ \textit{seen} & \text{V} & (\uparrow \text{PRED}) = \text{'see}\langle\text{SUBJ OBJ}\rangle\text{'} \\ & & (\uparrow \text{TENSE}) = \text{PRES} \end{array}$$

The rules in (75) signify that the f-structure of the NP in the specifier of IP is to be assigned the grammatical function SUBJ, while the f-structure of the NP complement of VP is to be assigned the function OBJ. The annotation $\uparrow=\downarrow$ signifies that the f-structure of the annotated node is to be UNIFIED with the structure of the immediately dominating node. This is a very important feature of the LFG formalism, which allows a single f-structure to be constructed on the basis of information from different c-structure nodes. For example, the features TENSE and ASPECT in (73) are contributed in different parts of the tree: in the V and I nodes, respectively.

Early on, PREDS were assumed to be the locus of semantic description (Kaplan & Bresnan 1982), but this idea has generally been abandoned; f-structure is now conceived of as a purely syntactic level of representation. In recent years, a theory based on Glue Semantics has become a *de facto* standard in semantic work in LFG (Dalrymple et al. 1999a, Lev 2007, Asudeh 2012). Glue Semantics itself is theory-independent and is essentially a method of coupling meaning representations with instructions on how they are to be combined (hence the use of the word 'glue'). In the version of Glue Semantics used in LFG, meaning representations are coupled with linear logic (Girard 1987) formulae in the way that is called the Curry–Howard isomorphism (Curry & Feys 1958, Howard 1980); such pairs are known as MEANING CONSTRUCTORS. The central feature of linear logic is its

RESOURCE-SENSITIVITY: formulae in proofs can only be used once. For example, in classical logic, given the premises *A, A→B*, one can infer *A, A→B, B*, but in linear logic, both the implication and the resource used as its condition are consumed, so the only possible inference is just *B*; neither *A* nor the implication can be used again. This feature of linear logic makes it well-suited for describing natural language semantics.

The way meaning constructors operate is best demonstrated by an example. Let us assume the following premises (⊸ is the symbol of linear logic implication):

(77) $\begin{array}{ll} John : j & \lambda X.\lambda Y.see(Y, X) : d \multimap (j \multimap s) \\ David : d & \end{array}$

The premises have two sides separated by colons; the left-hand sides are meaning terms (semantic representations), while the right-hand sides are linear logic formulae. Semantic composition proceeds by constructing a linear logic proof on the right-hand side while performing function application (and *β*-reduction) on the left-hand side. The proof, given the premises in (77), proceeds as follows:

(78) $\dfrac{\dfrac{\lambda X.\lambda Y.see(Y, X) : d \multimap (j \multimap s) \qquad David : d}{\lambda Y.see(Y, David) : j \multimap s} \qquad John : j}{see(John, David) : s}$

In LFG, semantic resources involved on the linear logic side of meaning constructors are provided via the mapping function *σ* from f-structure to semantic structure (s-structure). S-structure representations are attribute–value structures like the f-structure and, although often atomic, can also include other s-structures as feature values. For example, the s-structure of an anaphor is typically assumed to contain the feature ANTECEDENT instantiated with the s-structure of the pronoun's antecedent (Dalrymple 2001: 299–301). Meaning constructors associate meaning terms with linear logic formulae involving s-structures.

Meaning constructors are provided as annotations of phrase-structure rules or lexical items that utilize the metavariables $\uparrow_\sigma$ and $\downarrow_\sigma$, which are shorthand for $\sigma(\uparrow)$ and $\sigma(\downarrow)$ (i.e. 'the semantic projection of my parent's f-structure' and 'the semantic projection of my f-structure', respectively). For a sentence to be well-formed, the proof must utilize all of the meaning constructors and result in obtaining the semantic resource corresponding to the uppermost f-structure. In the above examples, the meaning constructors only need to be provided for the lexical entries in (76) above. They should be the following (for brevity and clarity, I omit the functional annotations, which should be same as in 76):

(79) $\begin{array}{llll} John & \text{N} & John : \uparrow_\sigma \\ David & \text{N} & David : \uparrow_\sigma \\ seen & \text{V} & \lambda X.\lambda Y.see(Y, X) : (\uparrow \text{OBJ})_\sigma \multimap [(\uparrow \text{SUBJ})_\sigma \multimap \uparrow_\sigma] \end{array}$

The annotations for *John* and *David* simply specify that the semantic resources of their f-structures are associated with the meanings *John* and *David* (both of type *e*). The annotation of 'seen' signifies that first, the object resource should be consumed (and the verb meaning applied to the object meaning on the left-hand side) to receive the resource for 'seen-David'; then this should consume the subject resource, obtaining the meaning of the whole sentence. If appropriate s-structures are instantiated, the proof is the same as in (78) aboves.

This has been a very concise summary of LFG and its semantic theory. My analysis of the pseudocoordinating constructions given below is based on prior work in both syntax and semantics. The representation of c- and f-structure of coordination essentially follows the standard LFG account first proposed in Kaplan & Maxwell (1995). The semantic representation follows Dalrymple (2001: 374–379). Clause coordination is represented at f-structure as a set and the meaning constructor is provided by the conjunction (Cnj):[29]

(80) $\text{XP} \rightarrow \underset{\downarrow\in\uparrow}{\text{XP}} \quad \underset{\uparrow=\downarrow}{\text{Cnj}} \quad \underset{\downarrow\in\uparrow}{\text{XP}}$

and Cnj $\quad (\uparrow \text{CONJ}) = \text{AND}$

$\lambda X.\lambda Y.X \wedge Y : (\uparrow\in)_{\sigma\langle t\rangle} \multimap [(\uparrow\in)_{\sigma\langle t\rangle} \multimap \uparrow_{\sigma\langle t\rangle}]$

For anaphora, I follow the standard LFG assumption that the antecedent is syntactically determined and its semantic resource is mapped to the ANTECEDENT feature of the pronoun's semantic structure (Dalrymple et al. 1999b). There have been several proposals for what meaning constructor should be provided for pronouns; I use the simplest, variable-free treatment found in Dalrymple et al. (1999b) and Asudeh (2012: 83–86). Specifically, the meaning constructor has the following form:

(81) $\lambda Z.Z \times Z : (\uparrow_\sigma \text{ANTECEDENT}) \multimap ((\uparrow_\sigma \text{ANTECEDENT}) \otimes \uparrow_\sigma)$

On the linear logic side, the meaning constructor signifies that one should take the antecedent's semantic resource and combine it via conjunction with the pronoun's resource. On the meaning side, the antecedent's meaning is replicated so that it can be used twice: when consuming the antecedent's semantic resource and when consuming the pronoun's semantic resource. The way this meaning

[29] I only provide the meaning constructor for two conjuncts because my analysis does not involve structures with more. The notation $(\uparrow\in)$ is a Functional Uncertainty (Kaplan & Zaenen 1989) expression, meaning 'some f-structure belonging to my parent's f-structure, which is a set'. The subscript in angle brackets denotes the type the meaning representations of the conjuncts must belong to.

constructor can be used is illustrated by the following example from Asudeh (2012: 84):

(82) Thora said she giggled.

$$\dfrac{\dfrac{\dfrac{thora : \lambda Z.Z \times Z : \quad t \multimap (t \otimes p)}{thora \times thora : t \otimes p} \qquad \dfrac{\dfrac{\lambda U.\lambda Q.say(U,Q) : \quad [x:t]^1 \quad t \multimap g \multimap s}{\lambda Q.say(x,Q) : \quad g \multimap s} \qquad \dfrac{\lambda X.giggle(X) : \quad [y:p]^2 \quad p \multimap g}{giggle(y) : \quad g}}{say(x, giggle(y)) : s}}{\text{let } thora \times thora \text{ be } x \times y \text{ in } say(x, giggle(y)) : s}\otimes_{\epsilon,1,2}}{say(thora, giggle(thora)) : s} \Rightarrow_\beta$$

In the proof, p stands for 'pronoun', $\Rightarrow_\beta$ indicates β-reduction of a lambda term, and $\otimes_{\epsilon,1,2}$ indicates the Conjunction Elimination proof rule (Asudeh 2012: 79–80). The way the latter rule is applied essentially amounts to assuming two variables that stand in for the pronoun and the antecedent, and then discharging them by decomposing the semantic resource which contains the conjunction of the appropriate resources in its right-hand side.[30]

7. A THREE-LEVEL THEORY OF CLAUSE COMBINING

In this section I will provide a formalized LFG account of the three-level approach to clause combining outlined above. I must stress that the main point of the paper is not to provide a detailed account of the semantics of clause combining, but to demonstrate the necessity of differentiating between semantics proper and f-structure in the domain of clause combining. Therefore, the semantic representations contain only the bare minimum necessary for advancing this point.

In the architecture of LFG, c-structure, f-structure and semantic representation are different kinds of structures. Therefore, it is hardly possible to formulate a single pair of definitions for coordination and subordination that would cover all the three levels. This may be seen as a disadvantage of the approach I propose in comparison with that of Yuasa & Sadock (2002), where a single definition is used. However, the distinct organization of different levels in LFG is independently motivated, e.g. see Bresnan (2001: 1–40) for a number of arguments in favor of distinguishing between c- and f-structures. In addition, the definitions that I will provide do have a trait in common, which is, informally, that the members of a coordinating relation have equal status with respect to each other, while there is some asymmetry between members of a subordinating relation.

[30] In the proofs in the appendix, the pronoun is assumed to refer to a proposition (type t) instead of an entity (type e). This is not desireable from the point of view of contemporary accounts of event reference, which use (Neo-)Davidsonian event arguments, but is sufficient for the purposes of this paper, where nothing rests on the way events are referred to.

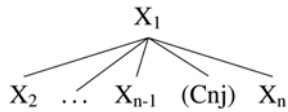
I would also like to specify that the definitions provided in this section are not basic formal notions, i.e. no new mechanisms are introduced to the LFG formalism. These are simply labels used to classify the constructions of natural language into meaningful, cross-linguistically valid groups. Thus, the exact formulations do not have much significance and can be modified in accordance with different conceptions of how the phenomena in question are structured, insofar as they capture the same classes of constructions.

7.1 *C-coordination and c-subordination*

7.1.1 *Definition*

The definition of coordination at c-structure is fairly standard: it is any construction where the category of the mother node is the same as the categories of all its daughters (except the conjunction, if present):

(83)



All the constituents $X_2 \ldots X_n$ are coordinate to each other; X_1 as a whole is a 'coordinate phrase'. This is the standard definition of coordination adopted in such works as Yuasa & Sadock (2002) and Haspelmath (2004a).[31]

Therefore, a general definition of c-coordination can have the following form:

> Nodes *A* and *B* are C-COORDINATE iff all of the following are true:
>
> - *A* is the sister of *B*,
> - the category of *A* is the same as the category of *B* and the category of the immediately dominating node *C*,
> - all sisters of *A* and *B* either have the same category as *A* or have the category Cnj.

Note that I assume a flat structure for coordination, since this is the approach most widely adopted within LFG. However, my definition can be trivially adopted to a coordinate phrase (CoP, Johannessen 1998) or 'boolean' phrase (BP, Munn 1987) analysis of coordination: two nodes are c-coordinate if they occupy the

[31] This definition of c-coordination implies that only constituents of the same type can be coordinated. This is at odds with the facts observed in Sag et al. (1985), which point, at least at first glance, towards the possibility of cross-categorial coordination. Some of such facts can be accounted for in LFG by analyzing them as instances of non-constituent coordination (Maxwell & Manning 1996), but it is not clear whether all facts of cross-categorial coordination can be accounted for in this way (Mary Dalrymple, p.c.). If true cross-categorial coordination is accepted as a valid concept, the category of the coordinate phrase will not be identical to the categories of its children but will be the value of some function over them (e.g. composition).

complement and specifier positions of the same CoP, or if one of them is a complement of a BP which is adjoined to the other conjunct. However, see Borsley (2005) for some important arguments against the existence of a CoP or a similar structure.

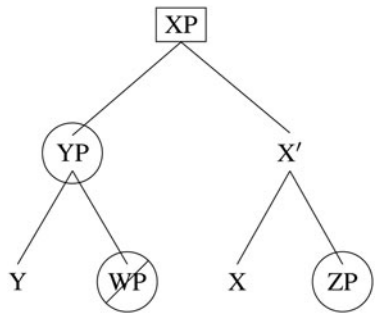
While coordinate structures can be considered to be multi-headed, with each of the conjuncts determining the external distribution of the coordinate phrase, subordinating constructions have only one head, with the subordinate constituents subcategorized for by this head (see Zwicky 1985 and various chapters in Corbett, Fraser & McGlashan 1993 for the different approaches to defining the syntactic notion 'head'). This principle of constituent structure is called endocentricity. Endocentricity in LFG is modeled via a version of X′ theory, thus c-subordination amounts to the requirement that the subordinate constituent occupy the complement, specifier or adjunct positions of the X′ structure it is subordinate to. For the only non-endocentric category S, one may assume that all constituents immediately dominated by S are c-subordinate to S. This can be generalized in the following way:

> A maximal projection *B* is C-SUBORDINATE to a maximal projection *A* iff both of the following are true:
>
> - *A* dominates *B*,
> - every maximal projection that dominates *B*, if it is not *B* itself, dominates *A*.

For the purposes of this definition, S is a maximal projection; every tree node dominates itself by the usual convention (Partee, ter Meulen & Wall 1990: 440).

In other words, *B* is c-subordinate to the closest dominating maximal projection. For example, in the tree structure below, only the nodes marked by circles are c-subordinate to XP, marked by rectangle. X, X′ and Y are not maximal projections and thus cannot be c-subordinate to anything. WP is not c-subordinate to XP, even though it is a maximal projection, because another maximal projection, YP, stands between WP and XP. Thus, only YP and ZP are c-subordinate to XP, and WP is c-subordinate to YP.

(84)



This definition is similar to the definition of m-command (and, ultimately, government) in Government and Binding Theory. M-command (as defined in Chomsky 1986) is a variant of c-command: *A* is said to m-command *B* iff *A* does not dominate *B* and every maximal projection *G* that dominates *A* dominates *B*. This makes the head m-command all of the specifiers, complements and adjuncts of its phrase. The definition above could be reformulated as the requirement that the head of *A* m-command *B*, but this is undesireable due to the fact that the head of S cannot always be determined on the basis of c-structure alone.

It must be noted that, according to these definitions, all of the conjuncts in a coordinating construction are c-coordinate to one another but c-subordinate to the dominating node (the coordinate phrase). This result may appear counter-intuitive, but is in fact quite expected if one thinks of c-subordination as largely equivalent to the widely adopted notion of embedding. Indeed, all conjuncts are embedded in the coordinate phrase in the sense of hierarchical structure, but none of them is embedded in the other, and this is what is essential for the definitions that I use. Another problem is that it is not always easy to distinguish between adjunction of same categories (e.g., CP to CP) and c-coordination, but this ambiguity is probably inherent in the domain of clause combining (note that CP adjuncts are often described as being similar to coordination, e.g. in Haegeman 2004: 71).

What can also be an important consideration is the similarity between the construction in question and the standard form of coordination/subordination in a given language. For example, if the lexical form and c-structure properties of some seemingly subordinating construction like Ossetic pseudocoordination or English $_{\text{LS}}$*and* are virtually identical to those of normal coordination with a conjunction like 'and', yet differ sharply from those of all well-established subordinating structures in the language, this is a strong argument in favor of treating the said structure as c-coordinating. However, formalizing this intuition requires an appeal to an explicit notion 'construction', which, although possible for LFG (Asudeh, Dalrymple & Toivonen 2008), would lead us too far away from the main point of the paper.

I will now review the tests that may be used to distinguish between c-coordination and c-subordination.

7.1.2 *Center-embedding*

If it is possible to embed one of the constituents in a different one, the construction is undoubtedly c-subordinating, since the definition of c-coordination above rules out the possibility of one of the clauses occupying some position inside the other. However, the opposite is not true: not every construction that disallows center-embedding is c-coordinating. For example, complement clauses, which are normally considered to be subordinate at c-structure (however, see Van Valin (2005: 189), where certain infinitival complement clauses in French are described as 'core coordination'), cannot be centrally embedded in many languages, including English. Hence, this test must only be evaluated in view of the overall behavior of subordinate clauses in the language: the impossibility of center-embedding can only

be taken as an argument towards c-coordination if subordinate constructions of this type in this language generally do allow such embedding.

7.1.3 *Position of the conjunction*

If the conjunction in a given construction is not structurally positioned inside any of the clauses, then the construction is c-coordinating. It is logically impossible for a conjunction to belong to neither of the clauses in a c-subordinate construction because one of the clauses is, by definition, hierarchically embedded under the other. Hence, the conjunction is found either in the subordinate clause or in the main clause.

The tests that may determine whether or not the conjunction forms a constituent with one of the clauses differ from language to language. In Ossetic, the fact that the conjunction *ɜmɜ* in both canonically coordinating and pseudocoordinating constructions is not found in any of the clauses is easily demonstrated by the fact that it does not belong to either of the two classes of subordinators in Ossetic: preverbal and floating. It is always located between the two clauses and can never be preceded by any material from the second clause; at the same time, it can host pronominal clitics from the following clause, which rules out the possibility of its being located inside the first clause.[32]

However, this criterion does not apply to those constructions where clauses are conjoined via an enclitic found inside one of the clauses, or in both of them. Such constructions are found, for example, in Ossetic, where the enclitics *=dɜr*, expressing the meaning 'also' or topic, and *=ta*, expressing contrast, can be used as the sole means of clause coordination. It is not even clear whether such enclitics should be analyzed as conjunctions (as in traditional grammar) or as particles, since they can be used in independent sentences, too. In any case, the position of the conjunction test is obviously inapplicable to such constructions, as well as to asyndetic coordination, where no coordinating conjunction is present.

7.1.4 *Coordination of secondary clauses*

Finally, if two clauses, each containing an overt conjunction, may be unified into a coordinating structure, as in (33) above, the construction is c-subordinating. This has a rather clear motivation if one adopts a flat approach to c-coordination (like the one above) because the conjunction does not form a constituent with any of the conjuncts, which explains the unacceptability of coordination in examples like (34) above.

However, under the CoP or BP approach to coordination, the conjunction does in fact form a constituent (Co′ or BP) with one of the conjuncts (the

[32] Hosting pronominal enclitics from successive clauses is normal for coordinating conjunctions in Ossetic and cannot be considered to constitute evidence in favor of subordination.

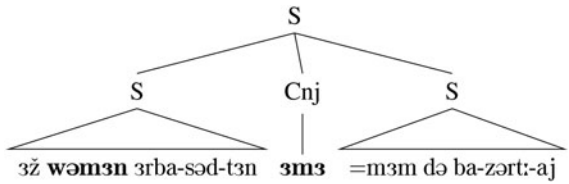
complement of CoP or BP). Presumably, some independent syntactic or semantic constraints are required in order to rule out such a possibility in languages like English, where, in spite of the evidence for a Co′ or BP constituent that includes the conjunction and the second conjunct, coordination of two Co′ or BP constituents is impossible (*[$_{\text{CoP}}$ *John* [$_{\text{Co′}}$ *and Mary*] *and* [$_{\text{Co′}}$ *and Jim*]]).

In any event, there is no need for such constraints in Ossetic because, if the conjunction does form a constituent with one of the conjuncts, it is the first one, not the second one, as demonstrated by the behavior of second-position enclitics, which attach to the conjunction: *žawər* **ɜmɜ** =**mɜm** *alan ɜrba-səd-əštə* (Zaur and me.ALL Alan PV-go-PST.3PL) 'Zaur **and** Alan came **to me**' (although this may merely be a fact of prosody, not of syntax). This is actually predicted for left-branching languages (Johannessen 1998: 109). Hence, the coordination of two clauses starting with *ɜmɜ* can only be possible in a c-subordinating construction; since it is impossible in both pseudocoordinating constructions, they have to be analyzed as c-coordinating.

7.1.5 *Pseudocoordination at c-structure*

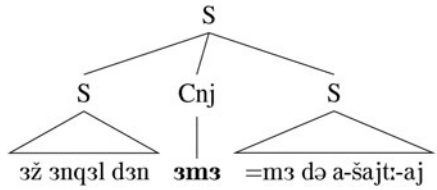
Since both pseudocoordinating constructions are c-coordinating, their overall c-structures are almost identical and are no different from ordinary coordination. The c-structure of (85) is shown below:

(85) *Causal pseudocoordination*
ɜž **wəm-ɜn** ɜrba-səd-tɜn **ɜmɜ** [=mɜm də ba-zərtː-aj]
I that-DAT PV-go-PST.1SG and me.ALL thou PV-speak-PST.2SG
'I came **because** you called for me.'



The c-structure of the complement construction in (86) is not significantly different:

(86) *Complement pseudocoordination*
ɜž ɜnqɜl dɜn **ɜmɜ** [=mɜ də a-šajtː-aj]
I (think) be.PRS.1SG and me.GEN thou PV-cheat-PST.2SG
'I think that you've cheated me.'



7.2 *F-coordination and f-subordination*

7.2.1 *Definition*

The standard LFG representation of coordination has the conjuncts appear as members of a coordinate set. This makes a number of correct predictions regarding, for instance, the impossibility of extraction from just one of the conjuncts;[33] however, it also implies that the relation between elements of a coordinate structure is symmetrical, i.e. that their order is irrelevant for syntax as well as for semantic interpretation. But it has been shown in Kuhn & Sadler (2007) that certain agreement facts require the representation of coordinate structures as ordered sets, or LOCAL F-STRUCTURE SEQUENCES (*lfsq*). Hence, the definition of f-coordination is rather straightforward:

> Two f-structures f_1 and f_2 are F-COORDINATE iff they both belong to the same local f-structure sequence.

I define f-subordination as basically identical to the notion of syntactic dependency. That is, for an f-structure to be subordinate to another f-structure is to occupy one of its grammatical functions (or be a member of the set of adjuncts, so that individual adjuncts are f-subordinate instead of the whole set):

> An f-structure f_2 is F-SUBORDINATE to an f-structure f_1 iff $(f_1\ \mathrm{GF}) = f_2$, where
>
> $$\mathrm{GF} \equiv \{\mathrm{SUBJ}|\ \mathrm{OBJ}|\ \mathrm{OBJ}_\theta|\ \mathrm{OBL}_\theta|\ \mathrm{COMP}|\ \mathrm{XCOMP}|\ \mathrm{ADJ}\in|\ \mathrm{XADJ}\in\}.$$

7.2.2 *Tests for f-coordination and subordination*

All of the tests belonging to the f-structure class that have been used in this paper can be described as particular applications of the Coordinate Structure Constraint (CSC), understood in a general way: an externally assigned feature (mood, subordination or coreference in right dislocation) must extend either to both clauses (in coordination) or

[33] This may not be a very welcome prediction, because a number of violations of the CSC have been observed in the literature (Lakoff 1986). Such examples are indeed problematic for the standard LFG analysis, but an attempt to explain them has been carried out in Asudeh & Crouch (2002), where it is proposed to account for the violations by appealing to parallelism between Glue Semantics proofs. The CSC may thus sometimes be partly semantically motivated, but this probably does not apply to the Ossetic examples discussed above.

only to the main clause (in subordination). In its original formulation, the CSC is understood only as a constraint on movement/displacement, but its LFG treatment is based on the idea that features spread over all the conjuncts of a coordinate structure; thus, there are no substantial differences between displacing arguments and assigning grammatical features like case or mood. The operation of this constraint is modeled in LFG by representing coordinate structures as sets (Kaplan & Maxwell 1995). Rules of feature resolution require that if a distributive feature (such as a grammatical function feature) is taken of a set, this feature must have the same value in all of the members of this set. Hence, if some constituent is extracted from only one of the conjuncts, then the functional uncertainty equation associated with the dislocated position (say, (↑ TOPIC) = (↑ GF*)) will point to the coordinate structure *s*; but since it is not the case that both of the conjuncts have the same value for the grammatical function in question, the function (*s* GF) will be undefined. Therefore, if the CSC operates in a given construction, then the construction is f-coordinating, and if it does not operate, then the construction can only be f-subordinating.

Gapping and right node raising, used to distinguish 'semantic' coordination and subordination in Culicover & Jackendoff (1997), have different analyses in LFG (Maxwell & Manning 1996, Alzaidi 2010), but all of these analyses are based on how features are resolved in coordinating constructions at f-structure. Therefore, in those languages where these tests are valid, they can also be used as criteria distinguishing between f-coordination and f-subordination. There are no comparable constructions in Ossetic (there is the possibility of gapping, but its mechanisms have to be studied separately), which is why I have not used these tests in this paper.

7.2.3 *Pseudocoordination at f-structure*

According to the tests above, the f-structures of the two pseudocoordinating constructions differ from each other. The causal construction is f-coordinating, and the phrase structure rule that generates it, provided in (87), is an extension of the standard coordination rule, with the limit of just two conjuncts and the addition of special annotations on the first conjunct.

(87) $S \rightarrow$ S (↓∈↑; %PRON∈(↓ ADJ); (%PRON PRED FN) =c PRO; (%PRON SPEC) =c DIST; (%PRON NUM) =c SG; (%PRON CASE) =c DAT) Cnj (↑ CONJ)=AND; ↑=↓ S (↓∈↑)

This rule utilizes a local variable name %PRON (Dalrymple 2001: 146–148), which refers to an f-structure belonging to the set of adjuncts of the first conjunct. The other annotations require this adjunct to be a 3rd person singular dative demonstrative (*wəmɜn* 'to that') pronoun that refers to the second clause. These constraints are satisfied if there is such an adjunct. As has been stated above in Section 4, other

pronominal expressions may appear in place of *wəmɜn*, including *wəj təχχɜj* (that[GEN] for) 'because of that'. Unlike *wəmɜn*, whose use for expressing cause is restricted to this particular construction, *wəj təχχɜj* 'because of that' is a regular expression of cause in Ossetic– thus the annotation above should have a simpler and more general variant which does not define the pronoun's case directly. I do not provide it here for the sake of brevity, as nothing hinges on these details.

I use the notation (PRED FN) to denote the name of the predicate used in the f-structure, following Asudeh et al. (2008) (simply checking the value of the PRED feature would fail because PRED features are uniquely instantiated).

The partial f-structure of example (85) above is the following:

(88)
$$\begin{bmatrix} \text{CONJ} & \text{AND} & \\ f: & \left\{ \begin{bmatrix} g: & \begin{bmatrix} \text{PRED} & \text{'come}\langle\text{SUBJ}\rangle\text{'} \\ \text{FOCUS} & p \\ \text{ADJ} & \left\{ p:\begin{bmatrix}\text{PRED} & \text{'PRO'}\end{bmatrix} \right\} \\ \text{SUBJ} & \begin{bmatrix}\text{PRED} & \text{'PRO'}\end{bmatrix} \end{bmatrix} \\ h: & \begin{bmatrix} \text{PRED} & \text{'call}\langle\text{SUBJ OBL}_{\text{all}}\rangle\text{'} \\ \text{SUBJ} & \begin{bmatrix}\text{PRED} & \text{'PRO'}\end{bmatrix} \\ \text{OBL}_{\text{ALL}} & \begin{bmatrix}\text{PRED} & \text{'PRO'}\end{bmatrix} \end{bmatrix} \end{bmatrix} \right\} \end{bmatrix}$$

The pronoun in the primary clause is in focus because it occupies the preverbal position (which is probably associated with a particular c-structure position, such as specifier of VP).

The f-structure of the complement construction is different: the second clause is the COMP of the first clause. Accordingly, the phrase structure rule is the following (PC stands for pseudocoordination):

(89) $\text{S} \rightarrow \underset{\uparrow=\downarrow}{\text{S}} \quad \underset{\uparrow=\downarrow}{\text{Cnj}} \quad \underset{\substack{(\uparrow \text{COMP})=\downarrow \\ (\downarrow \text{COMPTYPE}) =_c \text{PC}}}{\text{S}}$

The annotation $(\downarrow \text{COMPTYPE}) =_c \text{PC}$ requires the complement clause type to be pseudocoordinating. This feature is contributed by a special variant of the conjunction *ɜmɜ* 'and', which has the following lexical entry:

(90) *ɜmɜ* Cnj $(\uparrow \text{COMP COMPTYPE}) = \text{PC}$

Thus, the annotation of the complement clause in (89) ensures that the conjunction is *ɜmɜ* (in its pseudocoordinating use), and not some other coordinating

conjunction, such as *fɜlɜ* 'but'. Unlike normal *ɜmɜ*, this variant does not have a meaning constructor, which means that the two propositions are not combined via conjunction, which would not be a proper analysis of complementation.

Accordingly, the f-structure of example (86) above is the following:

(91)
$$f:\begin{bmatrix}\text{PRED} & \text{'think}\langle\text{SUBJ COMP}\rangle\text{'}\\ \text{SUBJ} & i1:\begin{bmatrix}\text{PRED} & \text{'PRO'}\end{bmatrix}\\ \text{COMP} & c:\begin{bmatrix}\text{PRED} & \text{'cheat}\langle\text{SUBJ OBJ}\rangle\text{'}\\ \text{COMPTYPE} & \text{PC}\\ \text{SUBJ} & j:\begin{bmatrix}\text{PRED} & \text{'PRO'}\end{bmatrix}\\ \text{OBJ} & i2:\begin{bmatrix}\text{PRED} & \text{'PRO'}\end{bmatrix}\end{bmatrix}\end{bmatrix}$$

7.3 *Semantic types of clause combining*

7.3.1 *Definitions*

As has been discussed in Section 5.1 above, the most plausible approach to s-coordination appears to be that of SDRT (Segmented Discourse Representation Theory, Asher & Lascarides 2003), in which s-coordination of clauses can be defined as a construction that introduces a rhetorical relation holding between them. It is contrasted with adverbial subordination in that the latter introduces a predicate that links the two propositions which are found within the same speech act SDRS (segmented discourse representation structure). Such predicates, unlike discourse relations, can be put under the scope of negation and modal operators, or focused. The definitions of s-coordination and s-subordination would then be rather straightforward:

> Two clauses are S-COORDINATE iff they map to different speech act discourse referents which are linked by a rhetorical relation.
>
> One clause is S-SUBORDINATE to the other iff they are both found within a single SDRS corresponding to the same speech act, and are connected by a predicate linking their propositional content.

I omit the issue of how the direction of subordination is established: this is different for different constructions.

A more formal statement of these notions would be straightforward in terms of Glue Semantics. However, there is currently no formalization of SDRT that would connect it to the Glue architecture of LFG semantics, and implementing such a formalization would be unfeasible within the scope of this paper.

Therefore, I will assume a simplified notion of s-coordination in Pottsian terms, whereby it consists of a simple conjunction of the coordinated propositions at the at-issue level and the coordinating relation linking them at the level of conventional implicature (see Potts 2005). In contrast, adverbial subordination includes an additional proposition that links the two clauses as an at-issue entailment, while contributing no CIs. As discussed above, this analysis seems to provide the same predictions as the SDRT approach as far as the tests described in this paper are concerned.

Following Arnold & Sadler's (2010) adaptation of Potts' theory to LFG, the meaning constructor for clause coordination can be modified to include a CI:

(92) $\lambda X.\lambda Y.[X \wedge Y, coord\_rel(X, Y)] :$
$(\uparrow \in)_{\sigma\langle t\rangle} \multimap [(\uparrow \in)_{\sigma\langle t\rangle} \multimap \uparrow_{\sigma\langle t\rangle} \otimes \uparrow_{\sigma\langle t^c\rangle}]$

Applying this meaning constructor leads to deriving a pair of meanings corresponding to the conjunction of two propositions (the at-issue dimension) and some coordinating relation linking the same two propositions (the CI dimension). On the glue side, the result is a linear logic conjunction of the coordinating construction's semantic resource of type t and a corresponding conventional implicature resource of type t^c. The relation *coord_rel* can be any relation for which coordinating conjunctions exist: consequence, temporal sequence, contrast, or even, in some languages, cause. In the latter case the resulting meaning is almost exactly the same as proposed in Scheffler (2013) for German *denn* 'because, as'.

Using this approach to the meaning of coordination, the notion can be defined in the following way:

> The clauses f_1 and f_2 in the minimal f-structure g that contains both of them are s-coordinate iff the proof contains the expressions $P : (f_1)_{\sigma\langle t\rangle}$, $Q : (f_2)_{\sigma\langle t\rangle}$ and $[P \wedge Q,\ R(P,\ Q)] : g_{\sigma\langle t\rangle} \otimes g_{\sigma\langle t^c\rangle}$, where P and Q are logical formulae, R is some relation and P does not contain Q or vice versa.

This means that a necessary condition for s-coordination must be the presence of linking between the clauses at the CI level and the absence of such linking at the at-issue level.[34] I assume that all coordinate clauses are linked by some relation at the CI level, and there are no coordinating constructions in natural language that involve a simple conjunction of two predications.

I will not provide a formalized definition of s-subordination because it is not clear whether it is a homogeneous class. In fact, judging from the semantic treatments of various constructions, it seems very probable that it is not. Compare

[34] A more subtle definition could utilize the notion of construction, which would potentially allow making a distinction depending on where the relevant meaning constructor is introduced (although this may lead to a definition that appeals not only to semantics but also to syntax, which I am trying to avoid).

Karttunen (1971) for complement clauses, Hulsey & Sauerland (2006) for relative clauses, and Johnston (1994) and Ernst (2004) for adverbial clauses: all provide very different meaning representations. For the purposes of this paper, then, I will assume that any clause combining strategy that does not conform to the above definition of s-coordination is s-subordinating, regardless of its particular semantic structure (i.e. it may contain an additional assertion linking the two clauses, or one of the clauses may be an argument of the other, etc.).

The tests that I have used for distinguishing adverbial s-subordination from s-coordination have been described above (Section 5.1). What I believe is important to note in the present section is that these tests are probably not applicable to all languages, and are not the only tests that can be used for this purpose. What these tests demonstrate is simply the existence of a separate proposition at the semantic level that can be negated or focused. This proposition is the only universal difference between adverbial s-subordination and s-coordination.

Another test that may be used to distinguish between these notions involves presupposition: one of the clauses in an s-subordinating construction may be presupposed, while both clauses in an s-coordinating construction are always asserted. But this test only works in one direction: if one of the propositions in a construction is presupposed, then this construction is s-subordinating, but if both propositions are asserted, the construction may be both s-coordinating and s-subordinating; examples of s-subordinating constructions that involve both clauses in assertion are *because*-clauses in English and the complement clause of the verb *to think*. Therefore, despite the fact that subordination is equated with presupposition in some literature, e.g. Cristofaro (2003), presupposition alone cannot be used as a test that distinguishes semantic or functional coordination from subordination.

7.3.2 *Semantic derivation of pseudocoordination*

Both of the pseudocoordinating constructions are s-subordinating. The semantic derivation of the complement construction is relatively straightforward: since the complement clause is already subordinate at f-structure, we only have to use a semantic constructor that interprets it as an argument of the verb in the upper clause. The semantic derivation of complement clauses can be found in e.g. (Dalrymple 2001: 330–338), and there are no substantial differences that single out Ossetic complement pseudocoordination in particular. Nothing should be added to the phrase structure rules specified above; the meaning constructor contributed by the verb 'to think' is a standard meaning constructor used for complement clauses:

(93) $\lambda X.\lambda P.think(X, P) : (\uparrow \text{SUBJ})_\sigma \multimap [(\uparrow \text{COMP})_\sigma \multimap \uparrow_\sigma]$

Since the phrase structure rule for complement pseudocoordination presupposes selecting a version of *зæ* 'and' that has no meaning constructor, such a rule will combine the two clauses, giving, for (86) above, the resulting meaning '*think* (*me, cheat*(*you, me*))'.

The derivation of the causal construction is more complicated. Since the causal construction requires the presence of the pronominal element *wəm-ɜn* (that-DAT) in the first clause referencing the causal clause, it is with this pronominal element that the causal relationship is established. Now we need an annotation that would correctly select the antecedent for this pronoun, but there is no way to access particular conjuncts in the standard LFG formalism.[35] But since the causal pseudocoordinating construction consists of just two conjuncts (by definition), we can bypass this constraint by stating that the antecedent must simply belong to the set. Interpretations where the pronoun refers to its own clause will be excluded on semantic grounds, as a situation cannot be its own cause. This ensures that the conjunct that is chosen is always the second conjunct.

This idea is formalized in (94) below, by explicitly identifying the antecedent of the pronoun by the annotation $(\%\text{PRON}_\sigma\ \text{ANTECEDENT}) = \%\text{CAUSE}_\sigma$.

(94) $S \rightarrow$

S	Cnj	S
$\downarrow \in \uparrow$	$(\uparrow \text{CONJ}) = \text{AND}$	$\downarrow \in \uparrow$
	$\uparrow = \downarrow$	

$\%\text{PRON} \in (\downarrow \text{ADJ})$
$(\%\text{PRON PRED FN}) =_c \text{PRO}$
$(\%\text{PRON SPEC}) =_c \text{DIST}$
$(\%\text{PRON NUM}) =_c \text{SG}$
$(\%\text{PRON CASE}) =_c \text{DAT}$
$\%\text{CAUSE} \in \uparrow$
$(\%\text{PRON}_\sigma\ \text{ANTECEDENT}) = \%\text{CAUSE}_\sigma$
[cause] $\lambda P.\lambda Q.\ \text{cause}(P,Q) \wedge Q{:}\%\text{PRON}_\sigma \multimap [\downarrow_\sigma \multimap \downarrow_\sigma]$

This annotation means that the pronoun's antecedent must be resolved as one of the clauses belonging to the coordinate structure, which is, for lack of other variants, invariably the second clause. A meaning constructor is provided that consumes the pronoun's semantic resource and contributes an additional conjoined proposition expressing the causal relationship between the second clause (the pronoun's antecedent) and the main clause.

For anaphoric pronouns, I use the definition provided in Section 6 above, but any other variant can be substituted. As a slight simplification, I assume that the causal construction utilizes the ordinary variant of the conjunction 'and', which contributes the meaning constructor $\lambda X.\lambda Y.X \wedge Y : (\uparrow \in)_\sigma \multimap [(\uparrow \in)_\sigma \multimap \uparrow_\sigma]$ (Dalrymple 2001: 374) and does not contribute any conventional implicature. The output of the meaning constructor [**cause**] is consumed by the meaning constructor for 'and', giving the following result:

(95) *cause* (*call* (*you*, *me*), *come*(*me*)) ∧ *come*(*me*) ∧ *call* (*you, me*) : f_σ

[35] In principle, since f-coordination is represented as an ordered set, it is quite simple to devise a notation that would refer to individual conjuncts. In fact, such a notation has already been described in Kuhn & Sadler (2007) (f_L for leftmost conjunct, f_R for rightmost conjunct), but the authors explicitly state that it is only used in the definitions of 'proximity-based' and 'left-peripheral' feature types, and 'there seems to be no need to introduce new designators to LFG's functional description language' (page 17). The same holds for the data of Ossetic, which can be accounted for without such modifications.

This meaning[36] is exactly the same as characteristic of adverbial subordination in my analysis. Full semantic proofs for both constructions (as manifested in examples (85) and (86) above) will be found in the appendix.

8. Conclusions

In this paper, I have analyzed the surface properties of two Ossetic constructions utilizing the coordinating conjunction *зæ* which have the functions of cause and complementation. These constructions are called 'pseudocoordinating' following the usage in Yuasa & Sadock (2002). The analysis of the surface features of these constructions has allowed me to come to the following conclusions:

- Traditional approaches to coordination and subordination, as well as the notion of unbalanced coordination, are inadequate for describing the syntactic properties of Ossetic pseudocoordination.
- Applying the multi-level approach of Culicover & Jackendoff (1997) and Yuasa & Sadock (2002) to Ossetic pseudocoordination meets with difficulties: the causal construction turns out to be 'semantically coordinating' according to this approach in spite of cause being a subordinating relation.
- These difficulties can be resolved by adopting a three-level representation of sentence structure, with an intermediate level between constituent structure and semantics. Such a representation of syntactic structure is used in the theory of Lexical Functional Grammar, where the intermediate 'relational' level of syntax is called 'f(unctional)-structure', as opposed to c(onstituent)-structure and s(emantic)-structure.
- If one strives for a semantic definition of clause coordination, it is different from subordination in that it involves a rhetorical relation linking two speech acts, while in subordinate constructions both clauses represent parts of the same speech act whose propositional contents are linked by some asserted predicate. This can be adequately formalized in terms of SDRT (Asher & Lascarides 2003), which distinguishes between rhetorical relations representing discourse structure and ordinary predicates linking entities (which includes fact, proposition and event arguments). An alternative analysis is to treat the meanings of coordinating constructions as conventional implicatures (Potts 2005), while subordinating constructions contribute at-issue entailments. Both accounts make similar predictions regarding the tests used in this paper.
- The LFG formalism allows one to define the notions 'coordination' and 'subordination' at all three levels in such a way that all the properties distinguishing

[36] I am of course using a very simplified representation of the meaning of adverbial clauses. The most important feature of this representation is that there is a separate proposition linking the two clauses, a fact which is generally accepted in the literature on the semantics of adverbial subordination (Johnston 1994). Otherwise, the semantic representation may be modified in accordance with more advanced theories of event structure or subordination.

coordination from subordination at each of these levels follow directly from the definitions. The strong prediction of my analysis is that for any construction in any given language, there must be no discrepancies between the tests that apply to a single level of grammar.

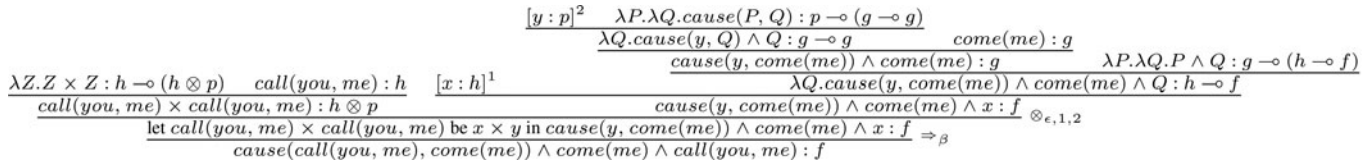
This paper only analyzes two kinds of mismatches: c-coordination vs. f- and s-subordination, and c-coordination and f-coordination vs. s-coordination, but mismatches in the opposite direction are also possible. Apart from the cases treated as pseudocoordination in Yuasa & Sadock (2002), a large number of languages express coordination-like relations using converbs. In some of these, such constructions have fully subordinating properties (Kazenin 1999, Creissels 2010). It is not clear whether converbs can be considered semantically coordinating in these cases, but see Bary & Haug (2011), where a semantics quite close to coordinating has been proposed for converbally-used participles in Ancient Greek. Therefore, the area where the three-level mismatch theory can be applied is wider than what is covered by this paper.

While the idea that the notions of coordination and subordination must be defined at different levels of grammar is not new, it has not yet gained mainstream acceptance among theoretical linguists or typologists. In this paper, I have provided evidence from yet another language that such a distinction is essential for understanding the nature of clause combining, and argued for a distinction to be drawn between three levels of grammar: constituent structure, semantics, and a separate level of functional structure that mediates between the other two. This argument provides a clear case in favor of constraint-based, multi-level approaches to grammar such as Lexical Functional Grammar. Hopefully, the distinction that I have maintained, and my discussion of the diagnostics for coordination and subordination at different levels of language, do not only have a purely theoretical significance, but will prove useful for descriptive work on other languages of the world where similar constructions are encountered.

APPENDIX

Semantic proofs of examples (85) and (86)

Proof of example (*85*)
For the sake of brevity and readability, I assume that the meanings of both individual clauses ('I came' and 'you called me') are premises of the proof, since their derivation is trivial. I also assume that the meaning constructor for the anaphoric pronoun in the primary clause is $\lambda Z.Z \times Z : (\uparrow_\sigma \text{ANTECEDENT}) \multimap [(\uparrow_\sigma \text{ANTECEDENT}) \multimap \uparrow_\sigma]$, taken from Asudeh (2012: 61), but with the omission of types, because in this case the pronoun refers to a predication and thus has type *t* instead of the more normal *e*. The names of semantic resources are the same as the names of corresponding f-structures in Section 7.2.3.



The result is, therefore, the conjunction of three assertions (two predications and a causal relation between them), in exact correspondence to the representation of the meanings of adverbial subordination maintained herein.

Note that the proper way to address anaphoric reference to events is different: the pronoun should refer not to the predication itself, but to its Davidsonian event argument. However, it would require using a much more complex mechanism of defining event meanings, which would unnecessarily complicate the exposition.

Proof of example (*86*)

Since the f-structure of complement pseudocoordination is the same as that of ordinary complement clause constructions, its semantic proof is rather trivial. Once again, the names of semantic resources are the same as the names of corresponding f-structures in Section 7.2.3.

$$\dfrac{\dfrac{me : i1 \quad \lambda X.\lambda P.think(X, P) : i1 \multimap (c \multimap f)}{\lambda P.think(me, P) : c \multimap f} \quad \dfrac{you : j \quad \lambda X.\lambda Y.cheat(X, Y) : j \multimap (i2 \multimap c)}{\dfrac{me : i2 \quad \lambda Y.cheat(you, Y) : i2 \multimap c}{cheat(you, me) : c}}}{think(me, cheat(you, me)) : f}$$

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