

## The Economy of Reanalysis: Syntactic Change as a Last Resort Operation\*

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This paper shows that change in syntax is not free, and that it is rather a last resort operation. The economy of grammar change will be illustrated by means of the restrictions in the diachronic extension of Russian instrumental case on noun predicates. Examples of such predicate instrumental nouns in Old and Present-day Russian are provided in (1):

- (1) a. Volodimerъ že *velikimъ mužemъ* stvori togo i otca ego.  
Vladimir part. [great man]<sub>INST.SG.</sub> made this<sub>ACC</sub> and [father his]<sub>ACC</sub>  
‘Vladimir turned him and his father into important men.’  
(*Laurentian Chronicle*, 43)
- b. Oni nazvali ego *direktorom*.  
they called him<sub>ACC</sub> director<sub>INST</sub>  
‘They named him director.’

### 1. Diachronic change in formal grammars

The framework adopted in this paper is a combination of historical linguistics and formal grammar. This approach has been explored by a series of formal linguists, starting from Lightfoot (1979) and afterwards; some of these scholars meet at the biennial DI(achronic) G(enerative) S(yntax) conference. Because of this, and following Lightfoot (2006), I will call the framework adopted here the “DIGS approach”.

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The DIGS approach can be briefly defined with the help of a core of general assumptions I will also adopt in this paper: a major assumption in the DIGS approach is the relation between language acquisition and linguistic change: the idea is that any “difficulty” in language processing during the acquisition period can be diachronically eliminated from a language or adapted to it.

Grammar change, then, stems from problems that learners have while they are fixing their grammar during the language acquisition period: some learners choose new ways of parsing the Primary Linguistic Data (PLD) they receive. Learners who innovate in parsing these PLD acquire, as a result, a grammar different than the one that produced those data (Lightfoot 1999, 2002, 2006, Pintzuk, Tsoulas & Warner 2000, Uriagereka 2004). This effect is known as the discontinuity of transmission of a language between generations.

In particular, I assume in this paper that acquisition cannot be error-driven, but must rather proceed according to a cue-based model, as proposed by Fodor (1998) and Lightfoot (2002). Cues in the PLD are unambiguous, so that the child fixes the “expected” structure or parameter as soon as he/she detects the crucial cue in the PLD.

Thus, learners have some times problems in interpreting the PLD (giving rise to grammar change), but still we say that the acquisitional process is not error-driven. Where is, then, the initial trigger of a change? Following Lightfoot (2002, 2006) and Uriagereka (2004), I will place this initial trigger outside the core syntax, in the small modifications of the PLD that can be produced by language contact, sociolinguistic fashions, and other factors derived from linguistic performance. Previous unrelated grammar changes –internal changes– can also have an effect in the cues of new PLD. To sum up, any modification that can condition the shape of an adult’s output, no matter where it comes from, can eventually give rise to new cues in the learner’s PLD.

So it is external changes in the cues that eventually lead to grammar change. However, changes in the shape of the data do not necessarily imply syntactic change: the child can acquire the “irregular” data as a special lexical specification, without innovating with respect to his/her parents.

To conclude this section, I will briefly describe the formal mechanism of reanalysis adopted in this paper: during the language

acquisition period, the child fails to relate features and items in the same way her parents did. As a consequence, a new relation between a feature and a lexical item arises (Pintzuk, Tsoulas & Warner 2000, Longobardi 2001). Syntactic change or reanalysis is then viewed as a process of feature reassignment.

## 2. The hypothesis

The claim I make in this paper is that reanalysis, in the sense described above, does not take place in an unrestricted way: it is subject to certain economy restrictions.

The restrictions of reanalysis of grammatical and m(orphological) cases are explored in Madariaga (in progress) and can be formalized in two simple principles:<sup>1</sup>

Principle (A): Syntactic reanalysis is only available when a learner needs to repair parsing conflicts in problematic data during the language acquisition period.

Principle (B): Given a reanalysed form, it can be extended to other contexts only when it is strictly necessary.

Principle (A) basically states that you must have a parsing conflict of a certain kind in the PLD in order to be able to reanalyse the data in a new way (different from the previous generations). This “conflict” stems from: (i) the loss of the cues that triggered the old structure, and (ii) the arising of new cues pointing to a new different structure.

A whole typology of possible conflicts can be proposed, depending on the portion of the structure that posits parsing difficulties to a learner. In this paper, I will concentrate on conflictive semantic relations between functional heads and their complements, formalized, as usual, in

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<sup>1</sup> For m-case, I will adopt Sigurðsson’s (2003) claim that morphological case is: (i) a PF phenomenon; (ii) preconditioned by different factors: not only by “deep” case (grammatical case), but also by idiosyncratic lexical case-selection, lexical semantics, style or register factors. For grammatical case, I will distinguish three types, following Wooldford’s (2006) and Bailyn’s (2001, 2004) classification: case can be (i) *lexical* (inherent case, i.e. valued on a DP by the same head that assigns it a theta-role + this head is a lexical head; (ii) *configurational* (inherent case, when the associated head is a functional head, such as little *v*, *Q*, and *Pred*); (iii) *structural*: it is valued on a DP against a head that is not a theta-role assigner.

thematic relations. Then, I will relate this type of conflictive data to changes in grammatical case and m-case.

Principle (A) will be briefly illustrated through a concrete example of case change in section 3, which will be our departure point to show the economy of reanalysis.

On the other hand, principle (B) restricts even more the possibilities of having syntactic change: not only the learner must be confronted with conflictive PLD but, in addition, he/she can apply already reanalysed forms only to the contexts where reanalysing solves a conflict or results in some functional advantage.<sup>2</sup> This means that conflictive data can be reanalysed in a structure, but are not automatically spread to similar or related structures, unless there is a conflict or a functional effect in those too. Therefore, principle (B) stands for the economy of spreading a reanalysed form, as I will show in section 4.

### 3. The change

In this section, I will introduce the reanalysis of the instrumental case as the case of non-verbal predication in Old Russian, in order to show the economy of change in case relations. The whole process is documented in old texts, as it took place in historical times, about the 13-14<sup>th</sup> centuries.

It is well-established that the first instances of instrumental predicate case documented in texts are closely related to the instrumental case that encodes adjoined phrases expressing manner and comparison. Example (2), extracted from one of the earliest Russian chronicles, illustrates such an adjunct of “manner”: it is marked with bare instrumental case, and indicates the way in which the verbal notion takes place:

(2) *Sta vsja zima teplomъ i dъžgemъ.* (*1<sup>st</sup> Novgorod Chronicle*, 32)

stood all winter hot<sub>INST</sub> and rain<sub>INST</sub>

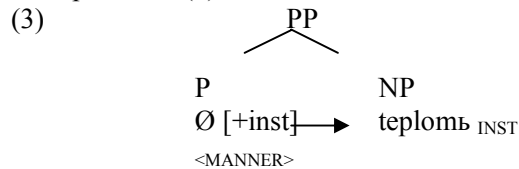
‘That winter was all the time hot and rainy.’

Bare adverbial adjuncts of this type are often analyzed as bare PPs, headed by a null P head (van Riemsdijk 1978, Kayne 1984). Null Ps can

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<sup>2</sup> Functional advantage can be defined as follows: a variant X is more functional than a variant Y, if there is one or more syntactic context in the language that can be disambiguated by X, but not by Y. Because of space reasons, I will disregard this type of effect in his paper.

assign different cases to their complements, as overt Ps do.<sup>3</sup> See structure (3), which represents the null PP analysis of the instrumental of manner exemplified in (2):



The null preposition here values inherent lexical case on its complement “on-merge”, together with theta-role assignment. Theta-role results from the lexical idiosyncratic relation between P and its complement; I will call this theta-role “manner”, because of the way they are interpreted in.

In early texts, these instrumental adjuncts were associated (in a restricted way) to a very concrete class of verbs, which could be inserted in predicational instances: the so-called verbs of “designation”. Borkovskij (1978) listed the verbs typical for these constructions: *narekati / nazyvati / imenovati* ‘to call, to designate’, *sotvoriti / učiniti / sdelati* ‘to make, to designate’, *postaviti* ‘to put’, *ostaviti* ‘to leave’, *posaditi* ‘to impose’, *vzjati* ‘to take’, *poloniti* ‘to capture’, *vvesti* ‘to introduce, to bring’ (also the passive counterparts of all of them, when there is subject antecedency), and the verb *byti* ‘to be’. They had the ability to take an instrumental NP of a closed class: names of professions, charges, and familiar relationship.

This use is observed already in Old Church Slavonic and continues its existence in Old Russian (Borkovskij 1978, Nichols 1981). In this first stage, the instrumental was clearly lexical and, presumably, still associated to an “adverbial” theta-role, perhaps the original role of manner and comparison.<sup>4</sup>

<sup>3</sup> Reisig Ferrazzano (2003) suggests that affixal null Ps behave more or less like adverbial cases, forcing their complement to be attached to P.

<sup>4</sup> I provide arguments in favour of a lexical analysis of this early instrumental in Madariaga (2007): first, both the verbs that were inserted in predicational structures and their potential instrumental NP complements belonged to restricted lexical classes. Borkovskij (1978) lists only 13 verbs and around 20 nouns associated to this primitive instrumental of predication. Besides this, the early predicative instrumental NPs often lacked phi-feature agreement with the subject of the predication, which follows straightforwardly from the fact that the instrumental modifier was not inserted in an SC together with the subject of the

The first instances of instrumental case in predicate contexts were, in words of Borkovskij (1978) and Sprinčak (1960), fixed legal formulae. With the extension of legal texts in the 12<sup>th</sup> century, this structure became more “fashionable” and had an influence on the PLD that new learners were receiving. Data changed externally because of the spreading of this structure, whose specificity eventually resulted in a parsing conflict of the kind introduced in Principle (A).

The parsing conflict affected the thematic relation between the predication / verb and the non-verbal predicate itself, marked with an “anomalous” instrumental case. Below, I will argue that this instrumental predicate NP could seem to a learner as if it received two different theta-roles, one from P, and another one from Pred; let us explain it in more detail.

In (4), an example of an early lexical instrumental predicate case is provided: a verb of “designation” *postaviti* ‘to put, to designate’ is associated to a predicational clause where the subject of the predication (the accusative direct object *mja* ‘me’) is modified by an instrumental noun denoting a religious charge, *popomь* ‘priest’:

- (4) Postavi mja *popomь* arxepiskopъ svjatyi Nifontъ.  
 put me<sub>AC</sub> priest<sub>INST</sub> archbishop saint Nifont  
 ‘The archbishop Saint Nifont designated me as their priest.’  
 (*1<sup>st</sup> Novgorod Chronicle*, 23b)

The use of an instrumental on the non-verbal predicate is innovative at this time. In the 12<sup>th</sup> century, an accusative on the NP predicate (mirroring the accusative on the subject of the predication) was highly preferred. See an example in (5):

- (5) Narekъ Čjudina vovodu. (*Hypathian Chronicle*, 306b)  
 said Chudin<sub>AC</sub> commander<sub>AC</sub>  
 ‘He designated Chudin as the commander.’

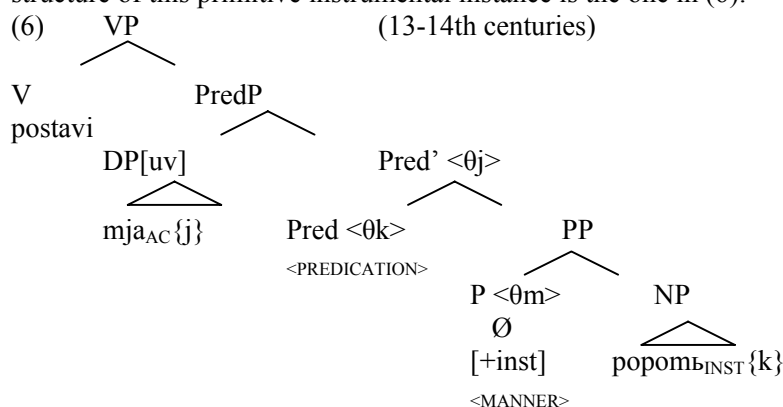
The example in (4) combines: (i) a predicational clause (let us assume it is an asymmetrical Small Clause, following Bailyn 2001 and Richardson

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predication. The reader can observe the lack of phi-feature agreement in example (1) of this paper, and also in the following example:

- (i) Ta dva byla *poslъmь* u rizě. (*Smolensk Treaty of 1229*, 5)  
 [those two]<sub>NOM.DUAL</sub> were<sub>DUAL</sub> ambassador<sub>INST.SG.</sub> in Riga  
 ‘Both were as ambassadors in Riga.’

2003); and (ii) a null PP of the type introduced in (2) and (3). The structure of this primitive instrumental instance is the one in (6):



I claim that, at this stage, a potential parsing conflict arises. Structure (6) represent the conflict that such PLD triggered in learners: the source of the inherent –instrumental– case on the predicate NP is Pred, but the semantic relation between the two is not so neat. According to the data a learner of this time was exposed, P assigned a theta-role of “manner” to its complement, together with instrumental case. But the learner is detecting a predicational clause, involving another type of semantic relation: call it, for instance, a theta-role of “predication”. The existence of two possible analyses of the PLD results in a theta-role conflict.

A way to solve the conflict is, as proposed in Principle (A) above, by reanalysing the problematic structure: the instrumental assigning P head is “eliminated” from the structure (i.e. not parsed / not acquired by the learner), and the Pred head is reanalysed as the only inherent case-valuing head in the asymmetrical SC. This is the structure proposed in synchronic analyses of Present-day Slavic instrumental predicates (Bailyn & Citko 1999, Bailyn 2001). See an example of this in in (7).<sup>5</sup>

(7) Taras byl kosmonavtom. (Present-day Russian -PDR)

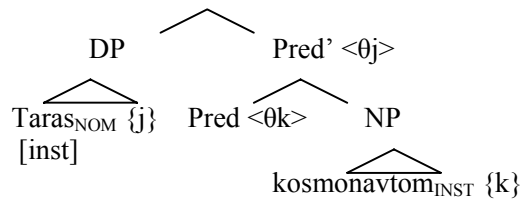
Taras<sub>NOM</sub> was astronaut<sub>INST</sub>

<sup>5</sup> A complete account of all the stages of this process, including relative dating of the reanalysis, the detailed analysis of the cues lost in the PLD, the functional advantage that determined the extension of the instrumental variant in a situation of diglossia, and other explanations and examples, are given in Madariaga (in progress).

‘Taras was an astronaut.’

Example (7) is represented in (8) as an asymmetrical Small Clause headed by a Pred, which assigns a theta-role and values inherent instrumental case on its NP complement (the non-verbal predicate):

(8) PredP (Present-day Russian)



#### 4. The Economy of the change

In this section, I will show the economy of the change introduced in the previous section. According to Principle (B) above, a reanalysed form spreads to other analogous structures only if it is strictly necessary.

In our case, the instrumental morpheme, marking NP predicates in asymmetrical instances of predication, will not overgeneralize to other non-verbal predicational contexts automatically. In the syntactic environments I will now review, instrumental as the mark of non-verbal predication does not spread, because the parsing conflict introduced above did not take place and, therefore, no reanalysis was needed.

##### 4.1. AP predicates

Adjectival predicates, from the viewpoint of syntax and grammatical case, did never accept instrumental case marking in a systematic way. The most striking fact about instrumental case on APs is that it extended over them very late, around the 17<sup>th</sup> century, while the reanalysis of this case as the case of predication on NPs took place in the 13-14<sup>th</sup> centuries. A synchronic property of the instrumental case on APs is that it is never mandatory in any syntactic environment (as it is on NPs), but depends on the semantic and pragmatic context, as suggested in Nichols 1981, Philip 2001, and Richardson 2003. This idea and its consequences have been explicitly developed in Madariaga (in progress).

The fact that AP predicate instances were not an appropriate context for a reanalysis of the type presented in section 3 follows straightforwardly from the hypothesis formulated above: reanalysis was

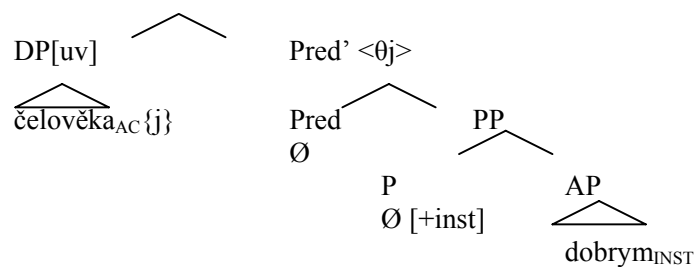
not even possible, as it was not necessary, given the fact that no parsing conflict arose in these data.

Let us recall Baker's (2003) account for lexical categories: a salient difference between nouns and adjectives is that the former receive theta-roles (even if they are predicates), while the latter never do so.

We know, on the other hand, that the first instrumental predicates, the primitive and somehow "defective lexical" instances of a predicate verb + instrumental case, were exclusive of NPs (see section 3). But even in the few cases where APs were allowed in such constructions ("nominalised" APs, for instance), no theta-role conflict should arise there, as adjectives as a morphological category, do not receive theta-role. Therefore, the adjectival counterpart of structure (6) could be acquired without problem generation after generation.

In Russian, Pred heads selected second-case marked APs, as is usual cross-linguistically (example 9a, 15<sup>th</sup> century). More rarely, Pred could select a PP including an instrumental AP inside it, as represented in (10), which corresponds to the 14<sup>th</sup>-century example in (9b):

- (9) a. I videvъ ju carъ zelo *dobru* sušče licem.  
and saw her<sub>AC</sub> tsar very good<sub>AC</sub> being by-face  
'And the tsar saw that she had a very beautiful face.'  
(1<sup>st</sup> Novgorod Chronicle, Commission Scroll, 34)
- b. Ti bo mimoxodjači proslavjajъ čelověka po vsěm zemljam ljubo  
those part. who-pass-by make-famous person<sub>AC</sub> in all lands or  
*dobrym ljubo zlym.* (Laurentian Chronicle, 80b)  
good<sub>INST</sub> or bad<sub>INST</sub>  
'Because those who are travelling make us famous all over the  
country either as good people or as bad ones.'
- (10) PredP (No PLD conflict, no reanalysis)



After the 17<sup>th</sup> century, AP predicates marked with instrumental case became much more frequent. However, this eventual spreading of the

instrumental predicate case over APs cannot be explained in the same terms as I did before for NPs. This partial extension had functional grounds, and was made possible only after the loss of short adjectives and the diversification of long adjectives as either predicates or attributives (Lopatina 1968).

There was no deep syntactic reason that forced the extension of the instrumental to APs, but we can rather observe that independent PF or spell-out rules arose, dependent on semantic (Philip 2001, Richardson 2003), functional and stylistic motivations (Nichols 1981).<sup>6</sup> Instrumental m-case on APs is analysed as corresponding not to “deep” or grammatical case, but to something else, perhaps lexical semantics or stylistics, as Sigurðsson (2003) suggests (see footnote 1).

#### 4.2. *Equative and presentative sentences*

Equative and presentative sentences are syntactic contexts where the reanalysis of the instrumental case as the case of NP predication did never take place; once again, reanalysis was not possible, as no PLD conflict arose in these sentences.

On the other hand, unlike predicate APs, no functional or semantic motivations for the PF differentiation between second case and instrumental marker arose in these sentences, so the instrumental morpheme is disallowed even as an m-case in the broad sense, suggested by Sigurðsson (2003).

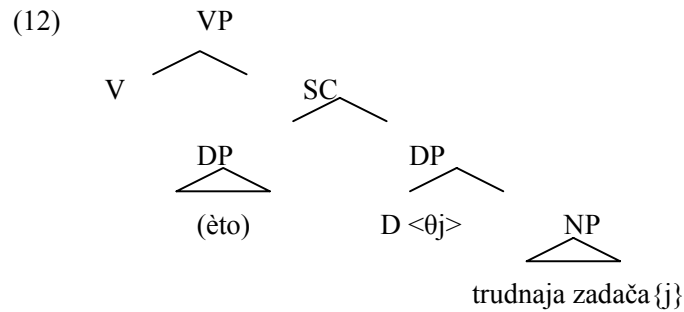
The reason why reanalysis did not take place in equative and presentative sentences is the following: these constructions are not asymmetrical PredP, like the ones analysed in section 3 and 4.1, but rather symmetrical bare DP instances. In fact, these constructions have been cross-linguistically analysed as two DPs equidistant from T (Green 2004, Pereltsvaig 2006).

See an example of a Russian presentative sentence in (11):

- (11) Èto budet / byla trudnaja zadača.  
this will be / was difficult task  
'It will be / was a difficult task.'

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<sup>6</sup> See Madariaga (in progress) for a specific interpretation of Philip's (2001) and Richardson's (2003) semantic constraints on AP predicates, and Nichols's (1981) stylistic and functional factors.



Reanalysis was not necessary (i.e. not even possible) here. Full DPs, such as the one integrated in the Small Clause in (12), are “saturated”, that is, they have their theta-requirements satisfied, unlike bare NPs, which need to have their theta-role valued by something else (Higginbotham 1985, Baker 2003).

Reformulating this idea from the viewpoint of referential indexes, D can value the referential index on an NP, but predicate NPs, lacking a D, value their referential index through theta-role from Pred’ (Baker 2003).

In any case, no thematic conflict arises in such a structure, as the Pred head is not part of it, and cannot be therefore be reanalysed, as it happened in structure (6).

#### 4.3. Nationality nouns and proper names

A similar effect is the one observed in sentences including nationality nouns and proper names in Russian. Here, variation is a little bigger than in presentative and equative sentences, as instrumental case on the predicate is exceptionally allowed in restricted semantic / pragmatic contexts, I will disregard in this paper (namely, in case the NP predicate has a very marked transient property).

Nowadays, proper names are not allowed to take instrumental case in colloquial Russian (it can be some times found in old-fashioned literary texts, though). See an example of a Present-day-Russian predicate proper name in (13):

- (13) *Moja babuška byla Polina Nikolaevna / \*Polinoj Nikolaevnoj.*  
 my grandma was Polina Nikolaevna<sub>NOM / \*INST</sub>  
 ‘My grandma was Polina Nikolaevna.’

I will claim that this restriction is due to the fact that proper names in Russian are D-level elements, following Longobardi (1994) and Franks & Pereltsvaig (2004). Being D-elements, their theta-role is satisfied

inside the DP they themselves project. In this sense, the structure proper names trigger is similar to the one proposed for equative sentences, and represented in (12): the subject and the predicate proper name are two equidistant DPs. Structure (14) represents the example in (13):

(14) [<sub>TP</sub> byla [<sub>SC</sub> [<sub>DP</sub> Moja babuška] (byla) [<sub>DP</sub> Polina Nikolaevna]]]

No thematic conflict took place here; therefore, the extension of the reanalysis was disallowed.

What about nationality nouns? At a first sight, it does not seem that nouns denoting nationality are of the same exact type as proper names. In Russian, a transient property on nationality Ns makes them much better candidates to be encoded with instrumental case, as shown in (15):

(15) Li byla kitajanka / kitajankoj, a potom stala amerikankoj.

Li was Chinese<sub>NOM/INST</sub> but then she became American<sub>INST</sub>

However, neutral uses of nationality nouns, such as (16), suggest that instrumental case is much restricted than on other NPs, where it is obligatory:

(16) Li byla kitajanka / ?? kitajankoj.

Li<sub>NOM</sub> was Chinese<sub>NOM/??INST</sub>

Leaving aside semantic considerations of this kind, I will now show that syntactically, Russian nationality nouns have a very similar distribution to proper names, and different than other common nouns. This would explain why nationality NPs were not reanalysed: as it happened with proper names, they were inserted in a saturated DP and reanalysis was no possible, as no theta-role conflict arose there.

The syntactic tests that show the parallel distribution of proper names and nationality NPs are the following:

(A) Postal's (1998) "antipronominalization" test: regular NP predicates, such as professions, pass the antipronominalization test, when the pronominal shows up in instrumental case, as in (17). Proper names (18a), as expected for saturated DPs, fail the test. Nationality nouns follow the patten of proper names, in that they also fail the test (18b):

(17) Moja dočka byla medsestroj, no tvoja *ej* ne byla.

my daughter was nurse, but yours *her*<sub>INST</sub> not was

'My daughter was a nurse, but yours was not.'

(18) a. Moja dočka byla Irina, no tvoja (\**ej*) ne byla.

my daughter was Irina, but yours (*her*<sub>INST</sub>) not was

Meaning: 'My daughter was Irina, but yours was not Irina.'

b. Moja dočka byla kitajanka, no tvoja (\**ej*) ne byla.

my daughter was Chinese, but yours (*her*<sub>INST</sub>)not was

Meaning: ‘My daughter was Chinese, but yours was not.’

(B) A’-extracting an NP containing the crucial type of noun: NPs including a name of profession allow wh-extraction, as shown in (19):

(19) *Kakaja ona byla medsestra?*

which-like she was nurse

‘Which kind of nurse was she?’

However, once again, proper names (20a) and nationalities (20b) pattern together in that they do not allow, under neutral conditions, wh-extraction:<sup>7</sup>

(20) a. ??\**Kakaja ona byla Irina?*

which-like she was Irina

Intended: ‘Which kind of Irina was she?’

b. ?? *Kakaja ona byla kitajanka?*

which-like she was Chinese

Intended: ‘Which kind of Chinese was she?’

## 5. Conclusion

In this paper, I have suggested that reanalysis proceeds according to certain economical restrictions. I have illustrated the economy of syntactic change with the help of a concrete example: the triggering and spreading of the Russian predicate instrumental case on NPs.

This instrumental case started in very restricted predicative contexts as a lexical case on NPs and inside PPs. Afterwards, a semantic conflict in the PLD (formalized here as a conflict in theta-role assigning) arose, and some learners parsed the crucial structures in a new way, namely, the instrumental case being directly valued by the Pred head that headed the Small Clause. However, this reanalysis did not spread through all predicate non-verbal complements: (i) predicate APs, which lacked the necessary conflict to be reinterpreted in the same way as predicate NPs;

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<sup>7</sup> Examples (19) and (20) are instances of split NP, besides wh-extraction. I provide these “split” examples because they sound more natural to speakers, but the non-split counterparts show the same effect: wh-extraction possible for professions (*Kakaja medsestra byla ona?*), but much worse if we try it on proper names and nationalities (?? *Kakaja kitajanka byla ona?* / ??\* *Kakaja Irina byla ona?*).

(ii) equative and presentative sentences, which lacked a Pred projection, escaping the reanalysis too; (iii) proper names and nationality nouns also failed to reanalyse, because of their DP-nature, which prevented them from displaying a thematic conflict.

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