

Quirky Case and ‘Co-generative’ LFG+Glue*

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A feature of Icelandic that has been of interest since Andrews (1976) and Thráinsson (1979) has been the phenomenon often called ‘Quirky Case’ (QC), whereby NPs in a variety of traditional oblique cases can occupy apparent subject, object and second object position, in a rather large number of combinations, with interesting consequences for grammatical theory.¹ In this paper, I will argue that the best account of QC is still the ‘two layer’ analysis of Andrews (1982a, 1990a), henceforth A82/90, in which QC NPs have an outer layer of structure that is usually devoid of agreement-related features, which, in effect, often conceals the inner layer, where these features are both interpreted semantically, and spelled out in the morphology. This accounts for the main peculiarity of QC NPs, their non-agreement with main predicates, as well as their apparently paradoxical agreement with secondary predicates and certain kinds of controlled complements, and explains some further odd phenomena.

Although the analysis has a degree of transportability across frameworks, I will present it here in a version of LFG supplemented with ‘glue semantics’,² in which there is a kind of ‘feature interpretation’ developed in Andrews (2007a, 2008, 2010), that solves certain problems with the A82/90 version, including excessive stipulation and promissory notes on semantic interpretation. Along with a theoretical cleanup, this results in a sketch of an explicit account of how the intricacies of Icelandic case-marking and agreement are connected to formal semantic interpretation, something which I don’t think has been achieved before.

It isn’t really possible to analyse Quirky Case in complete independence from all the other kinds of case-marking, so we will also provide an analysis of ‘regular’ case-marking in Icelandic, accepting the general classification of case in Boboljik (2008) as ‘default’, ‘dependent’ or ‘oblique/semantic’ (although rejecting his attempt to eliminate GF from the typology of agreement). QC will be treated as a somewhat odd configuration in which the oblique/semantic case appears inside a core GF-bearer. Somewhat paradoxically, we will also claim that the treatment is substantially consistent with the construction-grammatical treatment of Icelandic case-marking in Barðdal (2008), in spite the fact that she denies the existence of any difference between QC and the other kinds of case-marking. The reason is that in the present approach, the differences lie in certain technical details of implementation, rather than a simple observational concept

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¹For a comprehensive, recent overview, see Thráinsson (2007).

²Dalrymple (2001), Asudeh (2004), and numerous other sources.

of ‘regular’ vs. ‘irregular’, and the case-marking properties of verbs are determined by a ‘semantic lexicon entry’ (SLE) which can be regarded as being a lexical construction in the sense of Construction Grammar (and notated rather similarly).

An important limitation of scope in this paper is that we will not be making any attempt to systematically deal with the relationships between QC and valence alternations, as explored for example in Svenonius (2002, 2006) and Sigurðsson (2009b). I suggest that the major explanations in this area are diachronic,³ and the fact that case-preservation in passive constructions to be quite variable across languages (varying between individual verbs in Faroese, as discussed in Thráinsson et al (2004)) would seem to support this position. On the other hand, there is also a considerable amount of systematicity, so that some account of it must be given, but won’t be here.

Before proceeding to the analysis, I will make a brief comment about an important ‘philosophical’ difference between LFG and the ‘Principles and Parameters’ approaches that many readers will be more familiar with. LFG never bought into the idea that the major differences between languages could be captured with a small set of parameters with very simple values, with residual problems being relegated in a meaningful way to some combination of lexicon and ‘periphery’. Rather the idea has been that the problem of excessive stipulation found with for example the traditional transformational passive rule should be addressed by modifying the architecture, to bring the level of stipulation down to a plausible level (for a creature which is, after all, pretty good at learning things). So the LFG architecture allows the passive to be greatly simplified by eliminating from it the re-statement of most of the main architectural features of the clause. LFG workers then accept rules, but aspire (without always succeeding) to keep the formulations as simple as possible, without requiring heroic measures to deal with evident typological variation.

1 ‘Quirky’ Case

‘Quirky Case’ (QC) is one of the names that has emerged for the phenomenon whereby nearly a thousand Icelandic verbs specify ‘non-canonical’ cases on their subjects, objects and ‘second objects’,⁴ in a considerable number of combinations.⁵ In this section we will examine various aspects of the behavior of these ‘QC NPs’, and discuss how A82/90 is supposed to account for them.

³So that, for example, if a detransitive construction derives from one involving a reflexive pronoun, case will not be preserved on the overt subject, since it was attached to the reflexive object, not the subject.

⁴The term we will use for the second bare NPs after the verb, in SVOO sentences.

⁵Obeying various restrictions, the most important of which is that truly Agentive subjects can never be Quirky. See Jónsson (2003) for a discussion of the semantic concomitants of Quirky Case.

1.1 Quirky vs ‘Regular’

Unfortunately, there is some controversy about which cases are Quirky or non-canonical, and, indeed, how truly noncanonical most of the uncontroversial QC NPs are actually are, since they tend to fall into semantically definable groups that have at least limited productivity (Jónsson (2003), Barðdal (2011)). Therefore, I will begin by characterizing them in a somewhat ‘dogmatic’ manner, attempting to justify the dogma later in the paper.

The default/canonical (and by far most frequent, on either a token or verb-type basis) case for subjects is nominative, but subjects can also be dative, accusative or genitive. The notion of non-nominative subject struck many people as rather exotic when it was introduced, but the evidence for their existence in Icelandic has proliferated to a level well beyond any reasonable doubt. For a recent overview, see Sigurðsson (2004). The most striking property of the non-canonical subjects, which I will take to be an essential attribute of Quirkiness in Icelandic, is that they don’t participate in person-number agreement with the finite verb.⁶ Some typical examples are:

- (1) a. Við fórum til Íslands
we(N) went(1PL) to Iceland
We went to Iceland
- b. Mér líkar þessi bíll
me(D) like(3SG) this car(N)
I like this car
- c. Okkur vantar peninga
us(A.PL) lack(3SG) money(A)
We lack money
- d. Verkjanna gætir ekki
the pains(G.PL) is noticeable(3SG) not
The pains are not noticeable

In (a), we get full person-number agreement on the verb, while in (b-d) we see combinations of first person and plural number on the subject failing to be registered on the verb, which remains in a ‘neutral’ 3rd person singular form.

For objects, things are a bit more complicated. Any of the four cases can also appear on objects, but subject to certain limitations. Accusative is clearly the commonest, while

⁶However, examples of such agreement do appear in Icelandic performance (Árnadóttir and Sigurðsson, 2008), as will be discussed later, and there are cases where features on a Quirky Subject seem to assist agreement that’s basically with something else (Holmberg and Hróarsdóttir, 2003). Furthermore, similar examples have an impressively high rate of acceptance in Faroese (Jónsson and Eythórsson, 2005). This will be considered later in the paper.

nominative on objects appears only when the subject is dative, is in (1b).⁷ Dative on objects is however fairly common, and appears to be the default for certain semantic roles, such as ‘propelled object’. Genitive on the other hand is small and dwindling.

When the subject is nominative, the object must be non-nominative, and the way the cases are treated under passivization indicates that the dative and genitive objects are QC NPs. In the passive, accusative objects become nominative, and both the passive auxiliary and the passive participle form of the verb agree with them (in gender, number and case, for the participle):

- (2) a. Hann barði strákana
 he hit(3SG) the boys(A.M.PL)
 He hit the boys
- b. Strákarnir voru barðir
 the boys(N.M.PL) were(3PL) hit(N.M.PL)
 The boys were hit

Genitives and datives, on the other hand, retain their case, and the auxiliary is third person singular, with the participle appearing in a neuter gender singular form that is neutral between nominative and accusative:

- (3) a. Strákunum var bjargað
 the boys(D.PL) was(3SG) rescued(N.Nt.SG)
 The boys were rescued
- b. Þeirra var beðið
 they(G.PL) was(3SG) waited for(N.Nt.SG)
 They were waited for

If we take nonagreement to be a major symptom of Quirkiness, and assume that it is more likely that Passive preserves Quirkiness than imposes it, the conclusion is that the dative and genitive objects are Quirky, whatever this property turns out to be, whether just ‘noncanonicity’ of case-marking, or some peculiar structural feature such as having two layers.

Nominative objects on the other hand never Passivize, and show some other behaviors which cause me to put them into the non-Quirky basket, as will be discussed in subsection 5 below. Since nominative on an object is presumably ‘non-canonical’ by virtue of being part of a minority Dat-Nom case-marking pattern, this decision requires that Quirkiness not be the same thing as noncanonicity.

⁷Thráinsson (2007) discusses some other instances of potential nominative objects, but these are all idiomatic expressions in which the nominative apparent object and the verb constitute a complex predicate.

In addition to the patterns presented above, there are Acc-Acc verbs (a few), and one Acc-Gen verb, which appears to have fallen out of colloquial usage (Thráinsson, 2007, pg. 169). Our analysis will require that the object ACC of the Acc-Acc verbs be quirky, although there is no substantial independent evidence for this.

Moving on to ditransitives, the Nom-Dat-Acc (NDA) pattern is by far the commonest, although there are several others. The subject is always nominative, and there is a regularity that if the second object is an accusative true participant, then the first object is always dative.⁸ This means that, observationally, the dative on the first object of a ditransitive verb is highly predictable, a point first made by van Valin (1991). However, in terms of behavior under the passive, it's the dative that shows Quirkiness. This gives us a relatively concrete observational indication that there might be a difference between Quirkiness and noncanonicity.

It's an interesting fact about the passivization of the NDA verbs that for some of them, either the dative or accusative can appear in the subject position, but, whichever does, the dative retains its case, and the accusative becomes nominative (Thráinsson, 2007, pp. 135-6). Furthermore, both the auxiliary and participle agree with it:

- (4) a. Hann gaf mér peningana
 he gave me(D) the money(A.M.PL)
 He gave me the money
- b. Mér voru gefnir peningarnir
 me(D) were(3PL) given(N.M.PL) the money(N.M.PL)
 I was given the money
- c. Peningarnir voru gefnir mér
 the money(N.M.PL) were(3PL) given(N.M.PL) me(D)
 I was given the money

The ditransitives agreement phenomenon will be discussed later; for the present, note that the case-preservation of the dative recipient indicates that in spite of its predictability, it is Quirky, according to the definition used here (and the usual arguments for non-nominative subjects show that the dative is indeed the subject in (b)). For ditransitives other than these, only the first object becomes subject under Passive.

Having introduced some of the behavior of QC NPs, we'll present a structural hypothesis to account for and at least partially explain their behavior.

1.2 The Quirky Structure Hypothesis

The basic idea of A82/90 is that QC NPs have the structural peculiarity of having two layers in their abstract structure, an inner layer where the features spelled out on the

⁸The two instances of an NAA pattern, *cost* and *take* (a period of time) have the second accusative as a semantic measure-phrase (Thráinsson, 2007, 173). I take these to not be true participants.

nominal (and in NP-internal ‘concord’) reside, and an outer layer, usually empty in Icelandic, where non-secondary predicates look for their agreement features, and find them, with non-QC NP, which have only one layer. An overt model for this kind of structure, where two layers and their effects on agreement are morphologically visible, is provided by certain Bantu languages such as Chicheŵa (Bresnan and Mchombo, 1995). In the example below (50a, p.209), we can see the two morphological layers on the subject NP, with the verb agreeing with the outer layer, which expresses a locational relationship:

- (5) Pa-mu-dzi w-áthú p-ó-chítítsa chĩdwi pá-ma-sangaláts-á
 16-3-village 3-us 16-NONFIN-attract interest 16-PRS HAB-please-IND
 alěndo
 1-visitor
 Our interesting village pleases visitors

Interestingly, attributive modifiers can agree with either layer, depending on their concentric position with respect to the head noun, as discussed by Bresnan and Mchombo.

A82/90 resembles this treatment of Bantu, except that the outer layer doesn’t usually have any feature content (and never any that is interpreted there), and in f-structure, the inner layer appears as value of the case-label, used as an attribute of the outer layer, a formalistic trick that we will dispense with later.

So for example the sentence (6a) gets the structure (6b):

- (6) a. Okkur rak á land
 us(A.PL) drifted(3SG) to shore
 We drifted to shore

b.
$$\left[\begin{array}{l} \text{SUBJ} \\ \text{TENSE} \\ \text{PRED} \\ \text{PCOMP} \end{array} \left[\begin{array}{l} \text{ACC} \\ \text{PAST} \\ \text{'Reka(SUBJ ACC, PCOMP)'} \\ \left[\begin{array}{l} \text{PRED 'Á'} \\ \text{OBJ} \left[\begin{array}{l} \text{PRED 'Land'} \end{array} \right] \end{array} \right] \end{array} \right] \right]$$

This structure is supposed to explain the failure of finite verb agreement to register the person and number features of the Quirky subject, as follows.

In LFG, the agreement specifications for finite verbs need to specify person and number values for the subject attribute of the verb, in a manner that can be conveniently depicted like this for the first person plural:

$$(7) \quad \text{um:} \left[\text{SUBJ} \left[\begin{array}{cc} \text{PERS} & \text{I} \\ \text{NUM} & \text{PL} \end{array} \right] \right]$$

The idea is that in a structure like (6b), these specifications would have to apply to the top level of the structure, which would cause a problem.

But exactly what problem? In Classic LFG, there is in fact no reason why a specification like (7) (technically, its obvious recasting as a set of ‘defining equations’) couldn’t just dump person and number features at will into the upper level of the SUBJ-value of (6), thereby allowing things like *Okkur rökuð (2PL) á land*, as well as *Okkur rökum(1PL) á land*. But this is typologically unheard of. A82/90 stipulatively imposed the restriction that the agreement specifications be ‘constraining equations’, an LFG facility whereby a specification can require something to be present without actually putting it there. This solves the immediate descriptive problem, but is clearly too stipulative. A possible alternative would be to install some kind of conflicting values for NUM and PERS on the upper level, but this would also be stipulative, especially because LFG does not use the kinds of feature-typing constraints that might be used to install such values automatically in a framework such as HPSG. Requiring specific feature-values in the outer layer would furthermore run into difficulties with the A82/90 analysis of agreement with nominative objects, as we shall see.

Andrews (1990a) discussed this problem, suggesting that the real answer had something to do with semantics, but was unable to propose anything of a concrete nature. Using glue semantics, we will finally be able to fix this problem, essentially on the basis that person and number features can’t exist in f-structures without being semantically interpreted, in a sense we’ll develop more precisely in subsection 2.1 below.

1.3 Quirky Structural Behavior

An important fact is that passive participles appear obligatorily in the accusative case under certain circumstances, especially when they have a non-Quirky surface subject that is appearing in the accusative position of an ‘*accusativum cum infinitivo*’ (ACI) construction, a.k.a. derived object position of an SOR verb a.k.a. ECM construction. Some examples are:

- (8) a. Fólk telur hana hafa verið ríka
 people believe her(A.F.SG) to have been rich(A.F.SG)
 People believe her to have been rich
- b. Hún er talin hafa verið rík
 she(Nom) is believed(N.F.SG) to have been rich(N.F.SG)
 She is believed to have been rich

- c. Ég álít hana vera talda hafa verið ríka
 I think her(A.F.SG) to be believed(A.F.SG) to have been rich(A.F.SG)
 I think that she is believed to have been rich.

These examples illustrate how the passive participle in the intermediary clause (and also the predicate adjective in its complement) changes case to agree with whatever case its ‘understood subject’ is showing in the overt structure.⁹

(Andrews, 1982a, pg. 469) observed that if the bottommost verb in a structure like this was one that took a Quirky accusative object, then the agreement with an accusative became optional. To test this, I included some sentences of this form in a questionnaire distributed at the University of Iceland in 1983, including these examples:

- (9) a. Þeir segja hana vera talda elska Svein
 They say her(A.F.SG) to be believed(A.F.SG) to love Svein(A)
 They say that she is believed to love Svein
- b. Þeir segja hana vera talið elska Svein
 they say her(A.F.SG) to be believed(N.Nt.SG) to love Svein(A)
- c. Þeir segja hana vera talda vanta peninga
 they say her(A.F.SG) to be believed(A.F.SG) to lack money(A)
 They say that she is believed to lack money
- d. Þeir segja hana vera talið vanta peninga
 They say her(A.F.SG) to be believed(N.Nt.SG) to lack money(A)

This questionnaire was returned by seven respondents, who scored it as follows, where the top two grades can be regarded as ‘OK’, the middle two as ‘doubtful’, and the bottom two as ‘bad’ (see Andrews (1990a) for discussion of the scale and its characterization in the questionnaire; the low usage of the lowest acceptability grade was probably due to a design error):

(10)	✓	?	??	?*	*	**
a.	5	1	1	0	0	0
b.	0	0	0	0	7	0
c.	5	2	0	0	0	0
d.	1	3	0	1	2	0

Agreement of the intermediate passive participle was accepted by all respondents for both examples, but non-agreement was only possible, for a bit more than half of the respondents, when the complement verb took a Quirky accusative subject (agreement of the participle with a Quirky accusative in finite subject position is completely impossible).

⁹This collection of examples is extended somewhat to make this point in Thráinsson (2007, p. 438).

The acceptability of agreement for all respondents can be explained on the basis that most of the possible choices for material that would come after the participle would in fact require agreement: there are only a small number of verbs that take Quirky accusative subjects, and the verb doesn't appear until after the participle. By contrast, when the Quirky accusative appears in finite subject position, it's appearing in a place where nominative is normally expected, and so its Quirky nature is evident before agreement with it has to be manifested. It would be good if this were tested on a larger scale (and compared with results for genitive and dative Quirky subjects), but the motivation for including some sort of special property in the internal structure of the Quirky NP would seem evident.

In particular, proposals such as that of Sigurðsson (2009a) to implement Quirky case in terms of “little v's” with extra *'s doesn't seem sufficient. The ‘enhanced little v’ would sit on top of the lowest verb, but somehow has to interfere with the agreement of a higher one with its moved complement:

- (11) [NP V_{pass} ... [v* NP ...]]

This would appear to show that there must be some special material in the Quirky NP itself.

There are various possible ideas about what the special material might be, the simplest of which is that the Quirky accusative is just a different feature-value than the regular accusative, which is spelled differently on predicate modifiers than on nominals (and their attributive adjectives). But phenomena of agreement of secondary predicates and similar items, investigated extensively by Sigurðsson (1991, 2002, 2008) shows that this won't work either:

- (12) a. Strákana rak þyrsta og svanga á
 the boys(A.PL.M) drifted(SG) thirsty(A.PL.M) and hungry(A.PL.M) to
 land
 shore
- b. Strákana vantaði alla í skólann
 the boys(A.PL.M) lacked(SG) all(A.PL.M) in school
 The boys were all absent from school

The morphology of these accusative secondary predicates modifying Quirky accusatives is identical to that of normal accusatives and predicates of all kinds agreeing with them, so merely adding on an additional feature value would be completely unmotivated.

Main predicate adjectives, on the other hand, act like passive participles in not agreeing with their quirky subject:¹⁰

¹⁰Note that the forms glossed ‘N.Nt’ (Nominative Neuter) are morphologically the same as Accusative Neuter).

- (13) Mér er kalt
 me(D) is cold(N.Nt.SG)
 I am (feel) cold

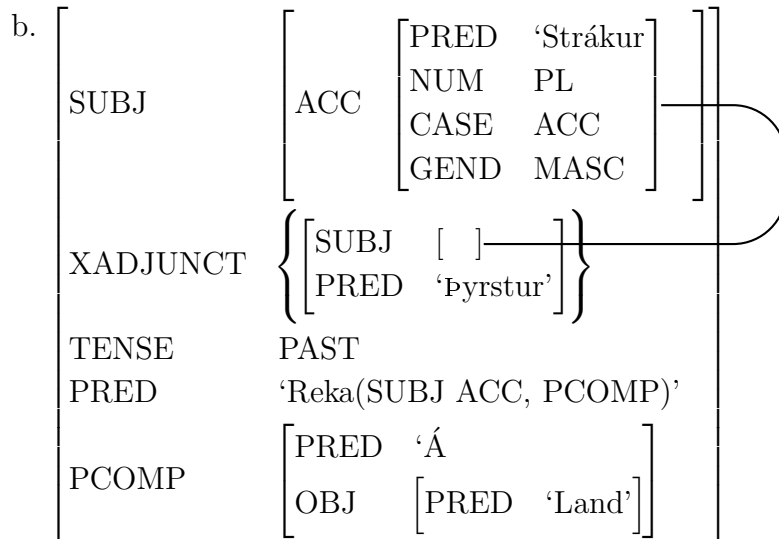
The two-level hypothesis provides an explanation of why secondary predicates agree with their understood subjects, even though the main predicates we have been considering don't (although there is an annoying analytical indeterminacy to deal with).

In LFG, the standard analysis for secondary predicates is that they are 'XADJUNCTs' with functional control, meaning that, in f-structure, they have subjects that are identical to their controllers. This predicts that they will agree obligatorily with a Quirky controller if they can be controlled by them at all.

The reason is that, in LFG, the semantic linking of the arguments of a predicate to the grammatical relations expressing them is 'dumb' in exactly the same way as agreement is. If a predicate says that its argument is to be found as value of its SUBJ attribute (or, more precisely, the SUBJ-value of its f-structure correspondent), it will look there, and if it finds nothing, the structure will 'crash' (unless some 'smarter' principle is proposed to save it, which would have to work in more environments than just an XADJUNCT). So, given that the semantics works as just described, an XADJUNCT can only be interpreted if its control equation identifies the inner layer of the controller NP with the SUBJ-value of the XADJUNCT, which means that agreement will work in the same way with a Quirky controller as with a normal one.

We illustrate this with the f-structure for a simplified example:¹¹

- (14) a. Strákana rak þyrsta á land
 the boys(A.M.PL) drifted(SG) thirsty(A.M.PL) to shore



¹¹More discussion of how this kind of analysis works can be found in Haug (2008).

The agreement restrictions on the secondary predicate will have to be satisfied by the controller, regardless of whether it is Quirky or not.

The analytical indeterminacy alluded to above comes from the fact that (Sigurðsson, 2002, pg. 710) provides some examples where a secondary predicate can appear in the nominative rather than the case of the controller (here, dative):

- (15) a. Henni leið illa sem presti/prestur
 her(D) went badly as priest(D/N)
 She was unhappy as a priest
- b. Henni verður kalt svona fáklæddri/fáklædd
 her(D) will be cold so scantily dressed(D/?N)
 She will be cold so scantily dressed

The nominative in (b) is a bit questionable, but nowhere near as bad the standard neuter non-agreement form would be. The possibility of nominative suggests that it is at least possible for secondary predicates to have ‘PRO’ subjects, since predicate adjectives agreeing with PRO subjects can in general be nominative. But agreement appears to be the norm, suggesting that functional control is the usual structure.

One might suppose that the a PRO analysis can explain why agreement with QC is normal, without reference to the two-layer idea, but this is not the case, because of the phenomenon of ‘case-attraction’ of PRO, discussed extensively for Ancient Greek by Quicoli (1982), and Icelandic by various authors, such as, recently Sigurðsson (2008). In case-attraction (called ‘transmission’ by Sigurðsson), items that are expected to agree with PRO manifest properties of the controller of the PRO rather than the PRO itself. In Icelandic, case-attraction is usually optional, especially from Quirky controllers (and for many speakers, basically impossible):

- (16) Ég skipaði þeim að vera hæfir/hæfum
 I ordered them(D) to be well-behaved(N/D)

The problem is that if Quirkiness is just another feature, being manifested by agreement, why doesn’t it ever get transmitted by case-attraction, producing an N.Nt (*hæft* in (16))? If Quirky case itself never got transmitted, it would be understandable why Quirkiness itself isn’t, but this is not the case, specially for secondary predicates, for which case-attraction must usually be obligatory under the PRO analysis.

An arguably worse problem arises with certain predicates that impose Quirky dative on an argument which they also set as controller/understood subject of an adjectival complement (Andrews, 1990a):

- (17) a. Þeir lýstu glæpamanninum sem stórhættulegum
 They described the criminal(D.M.SG) as very dangerous(D.M.SG)

- b. Hann heldur tönnunum sínum hvítum og hreinum
 He keeps teeth his(D.PL) white(D.PL) and clean(D.PL)

In LFG, these would appear to be functional control constructions,¹² requiring a control equation that sets that inner layer of the dative object NP as the SUBJ-value of the complement.¹³

Under the two-layer hypothesis, this leads to a rather interesting prediction, which is that Quirky subjects, even dative ones, will not be able to appear in the complement. This appears to be the case:¹⁴

- (18) a. Glæpamanninum var (mjög) hlýtt til fjölskyldunnar
 criminal-the(D) was (very) warm towards the family
 The criminal was (very) warm towards his family
- b. *Þeir lýstu glæpamanninum sem (mjög) hlýtt til
 They described criminal-the(D) as (very) warm towards
 fjölskyldunnar
 the family
 They described the criminal as (very) warm towards his family

(a) illustrates a dative subject adjective, (b) that it can't be complement of a dative-controller verb.

This phenomenon is not expected from alternatives to the two-level hypothesis. For example, if Quirkiness consists in having a particular value for some feature, we don't expect a problem when this feature is required on both the controller and the controllee, but that's what we see in (18). A more sophisticated account that has the same problem is the HPSG analysis of Sag et al (1992). Here, 'Quirkiness' consists in having non-equated values for two features, CASE, which is morphologically spelled out, and DCASE (default/'structural') case, which is not (unless it is equated to CASE). There is no reason why lacking an equation between these attributes should cause a unification to fail, so this analysis doesn't explain (18) (and also makes no attempt to deal with any of the effects of Quirkiness on agreement).

Andrews (1990a) didn't draw strong conclusions from the phenomenon of (18), apparently not being sure that the expressions were actually AP that would be generated as complements in these constructions. But in retrospect, this would appear to be an excessively tentative conclusion: 20 years have gone by during which apparent adjectives

¹²Which predicts that nominative in the complement should be impossible; I don't know whether this is actually the case.

¹³Note that, under the QSH, the situation here is similar to that with predicates taking 'Raising into prepositional object position' in Modern Irish, as described by McCloskey (1983).

¹⁴Of nine respondents to a questionnaire distributed for me in 1986 by Höskuldur Þráinsson, 7 found (b) completely ungrammatical, one a bit unnatural, and one doubtful. Other similar examples making the same point produced similar results.

with QC subjects have been written about by many people, especially Sigurðsson, and nobody has ever suggested that they not adjectives.

1.4 Issues of Stipulation

So we have some phenomena for which the two-layer hypothesis seems to offer a better account than various alternatives, but the A82/90 analysis nevertheless faces a number of problems of excess stipulation. One of these we have already mentioned, the need for person/number features to be specified with constraining rather than defining equations, to keep them from being dumped freely into the upper layers of the Quirky NPs.

Another problem arises with anaphoric control/PRO. A82 relied on Bresnan's 1982 rule of 'anaphoric control' to produce the f-structure for the non-overt subject here, but there is a problem in that the structure of a Quirky NP is rather complicated, involving a substructure whose attribute is the same as the value of CASE in its value, and with gender and number values to boot. In order to produce these structures, A82 needed an ad-hoc elaboration of either the anaphoric control rule, or the rules producing *að* infinitives; neither approach is fully satisfactory,¹⁵ because it needs to recapitulate the kind of structure found in the independent lexical entries of pronouns.

What we actually want is something that can produce these structures automatically, but also give them the somewhat degraded acceptability that they seem to have (see Andrews (1990a) for one study; Barðdal (2006) for much more extensive investigations).

A final issue is the complexity of the rules that A82/90 uses to produce the Quirky NP structures, slightly different in the two versions, but excessive in either.

We will show next that adding LFG's 'glue semantics' to the analysis in a particular way permits progress with these issues, as well as of course attaining the inherently desirable goal of connecting the complexities of Icelandic case-marking and agreement to semantic interpretation in a formally precise way.

2 A version of LFG+glue

In the original conception of Glue semantic (Dalrymple, 1999), annotations in lexical entries would specify a semantic assembly in parallel with an f-structure. But Andrews (2007a, 2008) finds certain problems with this approach, and further issues arise when we find some reason to supply at a more abstract level of structure something that is missing from the overt form, for the reason that we are likely to have to postulate two mechanisms to build the abstract structure, one for the case where the usual surface support is present, the other for when it isn't. This is exactly what happens in Andrews (1982a) for anaphoric control versus an overt NP. We can address this

¹⁵Note that the elaborations required to produce the agreement features will be required for many more languages than Icelandic, such as, for example, Ancient Greek (Andrews 1971, Quicoli 1982).

problem by modifying the architecture so as to use glue’s inherent ability to function as a ‘generative’ level, in the sense of Pullum and Scholz (2001) similarly to and together with phrase structure.

2.1 Co-generative Glue

Glue can function as a ‘generative’ level because it is based on a notion of linear logic proof (able to appear in a number of different looking guises) that satisfies some reasonably strong constraints of its own, with the result that, given a collection of ‘meaning constructors’, the lexical specifications of meanings in glue, there are a limited number of ways in which they can be put together to produce a semantically coherent result. Conventional glue makes no explicit use of this possibility (especially if the proposal of Kuhn (2001) to retire the Completeness and Coherence constraint is not adopted), but Andrews (2007a, 2008, 2010) proposes (in somewhat different forms) a variant glue architecture that does.

The motivation behind Andrews (2007a) was to find a version of glue semantics that would work for OT-LFG, which seemed to be conceptualized as a system of principles for choosing between alternative expressions of some f-structure, which was taken to represent the meaning (Kuhn, 2003). But it wasn’t at all clear how any such thing could actually work in concert with traditional glue, where the meaning is constructed on the basis of the meaning-constructors introduced by the lexical items used in the overt form. The proposed modification was to have the f-structure be the main basis on which the meaning-constructors were introduced, by means of a ‘Semantic Lexicon’ that would pair descriptions of (pieces of) f-structures with pieces of meaning. An f-structure with appropriately assembled meanings could then provide a basis for OT-LFG to use as an input.¹⁶ This treatment turned out to have some desirable properties missing from the standard one, especially in explaining the fact that most grammatical features do one of the following two things (or both, varying with the circumstances):

- (19) a. Take one of a number of interpretations provided by the grammar, on their own (e.g. NUM PL signifying semantic plurality, or GEND FEM on a pronoun, signaling female sex).
- b. Take an ‘idiomatic’ interpretation jointly with a specific lexical item (e.g. *pluralia tantum*, grammatical gender with most common nouns).

Although conceived to support OT-LFG, the notion of a Semantic Lexicon producing pairings of a semantic assembly and an f-structure¹⁷ can also function in a non-OT

¹⁶Unbeknownst to Andrews at the time, the glue implementation in the XLE LFG system also worked directly off f-structure, but for computationally pragmatic rather than theoretically motivated reasons (Richard Crouch, p.c.).

¹⁷Or, more generally, an f-description perhaps also including some constraints applying to c-structure via the ‘inverse projection’ concept of Kaplan (1995).