

# Towards a consistent annotation of nominal person in Universal Dependencies

Georg F. K. Höhn

Georg-August-University Göttingen  
georg.hoehn@uni-goettingen.de

## Abstract

On the basis of four small scale studies on corpora of English, German and Modern Greek, this paper points out problems with the lack of annotation guidelines for adnominal pronoun constructions like *we linguists* in treebanks employing the Universal Dependencies framework. I propose that a more uniform strategy of annotating these constructions will improve the internal consistency of corpora and better facilitate crosslinguistic comparability. Specifically, I argue against the use of the APPOS(ition) relation for these constructions and in favour of employing the DET(erminer) relation as a default annotation strategy.

## 1 Introduction

While nominal expressions are often assumed to be third person by default, this is not necessarily the case. Nominal person marking describes a set of phenomena where a nominal expression morphologically indicates whether its reference set contains the author and/or addressee of an utterance. Crucially, the term does not refer here to the person of a possessor. The most widely discussed type of nominal person marking are what I call adnominal pronoun constructions (APCs) like English *we linguists*.

Investigating APCs in corpora that are only POS-tagged is complicated by the fact that linear sequences of pronouns and nouns also commonly occur outside of APCs, cf. *They gave [Ious] [Dohope]*. In languages with unambiguous case marking and given a sufficiently tagged corpus, this issue may be addressed by imposing identical case requirements on pronoun and noun, but in languages with little or no case marking on nouns (like German or English), the results of any search will inevitably contain a large number of false hits. This leads to the need for resource-intensive manual post-processing. Moreover, APCs can be syntactically complex (e.g. adjectival modifiers intervening between pronoun and noun), leading to more complex search patterns and further potential increases of false hits.

While treebanks offer an attractive way of formulating more precise search conditions to avoid a proliferation of false hits, the lack of recognition of nominal person and specifically APCs as an independent phenomenon holds back their potential in this area. I focus here on the Universal Dependencies (UD) framework (Nivre et al., 2020; de Marneffe et al., 2021)<sup>1</sup>, showing that APCs are annotated in (at least) two divergent ways in UD corpora of German and English and in a third way in a Greek UD-corpus. This is not only undesirable because it introduces an internal inconsistency, but also impedes crosslinguistic comparability, one of the core aims of UD.

In Section 2 I sketch some theoretical and typological aspects of the phenomenon of nominal person. Section 3 describes the results of searches for APCs in English, German and Greek UD-corpora and Section 4 concludes with a proposal for a more consistent annotation of APCs in UD.

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Abbreviations and glosses used: ACC=accusative, APC=adnominal pronoun construction, DEF=definite, DEM=demonstrative, DET=determiner, EXCL=exclusive, F=feminine, LIG=ligature, LOC=locative, M=male, N=neuter, NEG=negative, NOM=nominative, PL=plural, PRS=present, PRTCL=particle, PST=past, SG=singular, UD=Universal Dependencies.

<sup>1</sup>See also <https://universaldependencies.org>.

## 2 Structure and crosslinguistic variation in nominal person marking

APCs like English *we linguists* or its German (Indo-European, glottocode stan1295) counterpart (*wir Linguisten*) have been treated in the literature either as a type of apposition (Delorme and Dougherty, 1972; Olsen, 1991; Cardinaletti, 1994; Willim, 2000; Rutkowski, 2002; Ackema and Neeleman, 2013; Keizer, 2016; Ackema and Neeleman, 2018), sketched roughly in (1a), or as involving a pronominal determiner construction with the pronoun as head of a determiner phrase (Postal, 1969; Abney, 1987; Lawrenz, 1993; Lyons, 1999; Longobardi, 2008; Rauh, 2003; Roehrs, 2005; Bernstein, 2008b; Saab, 2013; Höhn, 2020), sketched in (1b).

- (1) a. apposition: [NP [Pron we] [NP linguists]]  
 b. pronominal determiners: [DP [D we] [NP linguists] ]

There is plenty of evidence against analysing English or German APCs as instances of loose apposition (Sommerstein, 1972; Pesetsky, 1978; Lawrenz, 1993; Lyons, 1999; Rauh, 2003; Roehrs, 2005; Höhn, 2016; Höhn, 2020) and most modern proponents of appositive analyses can presumably be understood in terms of close apposition (Burton-Roberts, 1975).<sup>2</sup>

Argumental uses of English APCs are restricted to first and second person<sup>3</sup> plural and they are typically in complementary distribution with the definite article, cf. *Many of us (\*the) linguists are actually quite sociable*.<sup>4</sup> Unsurprisingly, nominal person marking crosslinguistically diverges in various ways from the English type. Closely related German, for instance, allows argumental APCs in the singular (2a), see also (Rauh, 2004). The restriction against third person adnominal pronouns is also far from universal (Höhn, 2020), compare (2b) from Hausa (Afroasiatic, glottocode haus1257). And while definite articles are excluded in regular English or German APCs, in some languages they obligatorily require a definite article, as illustrated for Greek (Indo-European, glottocode mode1248) in (2c).<sup>5</sup> This type of APC structure has been connected to the availability of unagreement (Choi, 2014; Höhn, 2016). Unagreement (Hurtado, 1985), illustrated in (3) for Greek, but also found, e.g., in Spanish or Bulgarian, involves a plain definite subject co-occurring with a verb inflected for first or second person (typically plural) with an interpretation largely corresponding to an APC in English.

- (2) a. Der Editor ist schon eine feine Sache für **mich** **Linuxer**... German  
 DET.NOM.SG editor is.3SG PRTCL a nice thing for me.ACC Linux.user  
 ‘The editor is quite a neat thing for me (as a) Linux user...’ (attested online)<sup>6</sup>
- b. sū mutânê-n Hausa  
 they men-DEF  
 ‘they the men’ (Newman, 2000, 155)
- c. opos to legh-ame panta **emis** **i** **vuleft-es** Greek  
 like 3SG.N.ACC say-PST.1PL always we.NOM DET.PL.NOM MP-PL.NOM  
 ‘...like we members of parliament have always said.’ (UD\_Greek-GDT 2049)

<sup>2</sup>But see Roehrs (2005) and Höhn (2020) for arguments against a close apposition analysis of English/German-type APCs as well.

<sup>3</sup>Some varieties/registers seem to allow argumental third plural APCs as in *them politicians*, although these pronouns have been argued to actually realise demonstratives (Mačec, 1995; Rauh, 2003; Bernstein, 2008a; Hazen et al., 2011).

<sup>4</sup>Expressions like *we the people* have a different structure and a more restricted distribution than the *we linguists*-type APCs, see also Choi (2014, 23) and Höhn (2020, 1f.). For annotation purposes it may still be plausible to treat both as instances of nominal person marking however, see Section 4.

<sup>5</sup>While (2b) also contains a kind of definite marker, it is not obligatory in these constructions (Newman, 2000, 155), so Hausa and Greek probably represent different types of adnominal person marking.

<sup>6</sup>Archived at <https://web.archive.org/web/20211001193522/https://www.opena.tv/pc-ios-android-window-phone-programme-und-apps-fuer-stb/53395-demoneditor-fuer-linux-und-macos-post451749.html>; last accessed 1/10/2021.

- (3) me tin Arjentini i Evrope-i ech-ume Greek  
 with DET.ACC.SG Argentine DET.NOM.PL European-NOM.PL have-PRS.1PL  
 istorik-us dhesm-us  
 historical.ACC.PL bond-ACC.PL  
 ‘We Europeans have historical bonds with Argentine...’ (UD\_Greek-GDT 492)

Choi (2014) and Höhn (2016) reject an analysis of Greek-type APCs like (2c) in terms of (loose or close) apposition, see also Stavrou (1995). Choi (2014) proposes that the adnominal pronoun occupies a specifier position, see the sketch in (4a), and Höhn (2016) argues for an extension of the pronominal determiner approach along the lines of (4b). In any case, Greek APC structure clearly differs from that observed in English or German.

- (4) a. [DP [DP emis] [D' i vuleftes ]]  
 b. [PersP [Pers emis] [DP i vuleftes]]

Adnominal pronouns/APCs are not the only means of marking nominal person, although they are the most widely attested type and this paper focuses on them. Some languages employ clitic person markers to mark nominal person in noun phrases. The Bilua (Solomon Islands, glottocode bilu1245) example in (5) illustrates a case where an adnominal pronoun and clitic person marking can co-occur. For more details on crosslinguistic variation in nominal person marking see Choi (2014), Höhn (2017) and Höhn (2020).

- (5) **enge**=a Solomoni=a=ma maba poso=**ngela** Bilua  
 1PL.EXCL=LIG Solomon=LIG=3SG.F person PL.M=**1PL.EXCL**  
 ‘we, Solomon people’ (Obata, 2003, 85, (7.35))

For current purposes, the main take-away points from this section are that a) there is no full consensus in the literature concerning the syntactic relation between the pronoun and the nominal part of an English-type APC, particularly across syntactic frameworks, and b) there is real crosslinguistic variation in the structure of nominal person marking. In the next section I will show how this is relevant to the treatment of APCs in UD corpora for English, German and Greek.

### 3 Prototype survey in four UD corpora

#### 3.1 Methodology

To assess the current treatment of APCs in UD I conducted exemplary searches on the four corpora in (6) using the online tool TüNDRA (Martens, 2013).<sup>7</sup>

- (6) a. UD\_English-EWT v2.4 (Silveira et al., 2014), 251,521 tokens  
 b. UD\_German-HDT v2.4 (Borges Völker et al., 2019), 3,399,300 tokens  
 c. UD\_German-GSD v2.4 (McDonald et al., 2013; Bulgarian Academy of Sciences et al., 2015), 287,740 tokens  
 d. UD\_Greek-GDT v2.4 (Prokopidis et al., 2005; Prokopidis and Papageorgiou, 2017), 61,733 tokens

UD marks syntactic relations based on the universal Stanford dependencies (de Marneffe et al., 2014). I used the relations APPOS and DET to detect APCs annotated according to one of the two main available analyses of English-type APCs in (1), as shown in the search patterns in (7ab). In order to discover the relation(s) employed for marking APCs in the Greek GDT corpus, I first searched for collocations of a first or second person pronoun adjacent to a determiner ([pos="PRON" & person=("1"|"2")] . [pos="DET"]). The three instances of APCs found in the output were all encoded using the relation NMOD intended to be “used for nominal dependents of another noun or noun phrase and functionally corresponds to an attribute, or genitive complement”.<sup>8</sup> The corresponding

<sup>7</sup><https://weblight.sfs.uni-tuebingen.de/Tundra>, last accessed 4/10/2021.

<sup>8</sup><https://universaldependencies.org/u/dep/nmod.html>

search pattern I used to detect possible further instances of APCs is (7c).

(7) Search patterns for APCs

- a. apposition (APPOS):  
[pos="PRON" & person=("1"|"2")] >appos [pos="NOUN"]
- b. pronominal determiner (DET):  
[pos="NOUN"] >det [pos="PRON" & person=("1"|"2")]
- c. nominal modifier (NMOD):  
[pos="PRON" & person=("1"|"2")] >nmod [pos="NOUN"]

The following patterns were used to obtain the personal pronoun counts in English (8ab), German (8c) and Greek (8d) employed in Section 3.3. The patterns identify pronouns that can in principle occur as part of an APC, i.e. excluding possessive or reflexive pronouns. The Greek count could be further refined by excluding immediately preverbal clitic object pronouns, since that position does not allow APCs, but I refrain from doing so here.

- (8) a. [pos="PRON" & person="1" & number="Plur" & token!="/[o|O]ur.\*"/]
- b. [pos="PRON" & person="2" & token!="/[y|Y]our.\*"/]
- c. [token=("wir"|"Wir"|"WIR"|"uns"|"Uns"|"UNS")]
- d. [pos="PRON" & person="1" & number="Plur"] >case [pos=/.\*/] | [pos=/.\*/] >!nmod [pos="PRON" & person="1" & number="Plur"]

### 3.2 Results

Table 1 lists the number of hits for each search pattern in each corpus and how many of the hits were *bona fide* APCs on manual inspection. Outside the EWT corpus, all detected APCs were 1PL. For EWT, the amount of 1PL APCs is indicated in brackets. The final two columns provide the precision and recall values for each search pattern. Recall is calculated on the assumption that the 44 APCs covered by the table exhaust the number of APCs in the corpora. Since no full manual search was conducted, there may be undetected instances of APCs which would decrease recall for all search patterns.

Pattern	EWT		HDT		GSD		GDT		Overall	
	Hits	APCs	Hits	APCs	Hits	APCs	Hits	APCs	Precision	Recall
(7a) APPOS	12	10 (1PL: 2)	19	14	8	5	1	0	0.725	0.659
(7b) DET	10	10 (1PL: 0)	0	0	2	2	0	0	1	0.2728
(7c) NMOD	5	0	2	0	2	0	7	3	0.1875	0.0682

Table 1: Hits and APCs among hits per corpus by search patterns, overall precision and recall for each search pattern

The English EWT and German GSD corpora encode APCs inconsistently as apposition or pronominal determiners, while the German HDT corpus exclusively employs the APPOS relation and Greek GDT only the NMOD relation. While the DET relation was only used for APCs in the EWT and GSD corpora, partly accounting for the relatively low recall value, it showed the highest precision where employed. In all corpora the apposition relation also included hits that were not APCs like German (9), reflected in a lowered precision value. Considering the relative flexibility of the notion of apposition this is not surprising. Some of these hits involved apposition to pronouns as indicated by commas or parentheses, like English (9).

(9) “Wenn wir dem Konsumenten Atmosphäre verkaufen, sind wir German  
 if we DET.DAT.SG consumer atmosphere sell.1/3PL are.1/3PL we  
 die ersten Ansprechpartner, nicht die **Illegalen**” ...  
 DET.NOM.PL first contact.person.PL not DET.NOM.PL illegal.PL  
 “If we sell the consumer atmosphere, we will be the first point of call, not the illegal ones (sources  
 for downloading music).” (UD\_German-HDT 12632)

(10) a. Also, can animals remember images on TV like **us, humans**? (UD\_English-EWT 12553)  
 b. I ca nt [sic!] speak for them but any tests or appointments they recommend are probably in  
 the best interests of **us** (the **patient** [sic!]) and ... (UD\_English-EWT 15813)

The NMOD relation in (7c) picked out no hits in the Greek corpus beyond those identified by the linear search pattern used to identify the NMOD relation as described above, including (2c). The pattern also yielded several non-APC results like the PP modifier in (11), as reflected by the low precision value in Table 1. There were no APC matches for the pattern in any of the other corpora.

(11) ...ochi mono se **emas** sto **Kinovulio...** Greek  
 NEG only LOC we.ACC LOC.DET Parliament  
 ‘not only to us in the Parliament’ (UD\_Greek-GDT 2100)

Overall, these observations illustrate that not only does the current annotation practice not provide a crosslinguistically consistent means of identifying APCs, but it also lacks consistency within languages.

### 3.3 Differences in frequency

While this paper has a methodological focus, a brief comparison of the results by corpus may be instructive as a starting point for future research. As a basic comparative measure of the prevalence of APCs in a given corpus, Table 2 indicates the frequency of APC relative to the number of pronouns with the same person/number combination in a corpus.<sup>9</sup>

	<b>EWT</b>		<b>HDT</b>	<b>GSD</b>	<b>GDT</b>
	<i>English</i>		<i>German</i>	<i>German</i>	<i>Greek</i>
	1PL	2PL	1PL	1PL	1PL
# pronouns	1334	(2771)	3012	441	89
# APCs	2	18	14	7	3
<b>Freq (APCs)</b>	0.15%	(0.65%)	0.465%	1.587%	3.371%

Table 2: Relative frequencies of APCs

These data display clear contrasts in the relative frequency of APCs between the corpora. The fact that, in spite of their marked difference from each other, both German corpora have a markedly higher 1PL APC frequency than the English EWT might suggest that language-level differences have at least some role to play in addition to other factors (e.g. genre or speech style).

Of course, due to the limited size of the datasets this can only serve as a first tentative approximation to the issue. Particularly for the Greek GDT corpus, the small corpus size and low number of 1PL pronouns prevents any strong claims for now. If, however, the comparatively high frequency for Greek APCs turns out to be corroborated by more data, this might be connected to the generally marked nature of overt pronouns in pro-drop languages on the one hand and the availability of unagreement, cf. (3), on the other hand.

<sup>9</sup>Note that the frequency for 2PL APCs in English is only provided for rough orientation and is not directly comparable the other values because the number-ambiguity of *you* the # pronouns cell includes singular and plural uses in this case. The real 2PL APC frequency in English must be higher than indicated.

More data and closer investigation of further potential parameters (e.g. genre, style, modality) are needed to establish which factors influence the frequency of APCs and to clarify whether there are stable language-level differences, but these preliminary observations show the potential role of corpus research in a better understanding of the crosslinguistic distribution of nominal person phenomena.

#### 4 Discussion

The inconsistent treatment of APCs observed above is a clear shortcoming and harmonisation, at least within the same language, is highly desirable. So how can the situation be improved?

To start, encoding English or German APCs with the UD-relation APPOS seems questionable, even setting aside the question of the most appropriate theoretical analysis. The UD documentation explicitly aims at employing the APPOS relation for loose apposition, noting that “the two halves of an apposition can be switched”.<sup>10</sup> This diagnostic does not apply to English, German or Greek APCs (12) and as mentioned in Section 2 the literature widely rejects a loose apposition analysis for these languages.<sup>11</sup>

- (12) a. \*linguists we  
 b. \*Linguisten wir German  
     linguists we  
 c. \*i ghlosoloj-i emis Greek  
     DET.NOM.PL linguist-NOM.PL we.NOM

Against this background, one way of dealing with English- and German-type APCs is to systematically employ the DET relation. This should maintain consistency with the current definitions of relations and requires only minor clarifications to the guidelines. While the recall rates in Table 1 for APPOS are considerably higher than for DET, this is of course mainly a reflection of it being the more widely (albeit not consistently) used annotation strategy in the corpora. The lower precision for the APPOS search pattern is, on the other hand, systematically inevitable precisely because that relation is also used for constructions that are clearly not akin to APCs, e.g. (9) and (11).

Concerning appositives with pronoun-noun collocations like (10), the typographic convention of using commas in languages like English or German permits a distinction from APCs in written corpora with a certain amount of confidence. As correctly implied by a reviewer, this convention may not be followed consistently, especially in informal writing (e.g. web corpora) and it is unlikely to be helpful in corpora on less or non-standardised languages. However, this does not mean that such typographic cues (and theoretical insights) should be ignored where available. There may be further language-specific indicators for identifying certain pronoun-noun collocations as real cases of apposition. In the absence of such indications, however, I advocate against using the APPOS relation as a default. While annotation inconsistencies are bound to occur in any case, using the APPOS relation for APCs, unclear cases of APCs and various other constructions systematically reduces the precision rate for searches for APCs as pointed out above. Using the DET relation as default instead allows keeping “potential” APCs apart from other constructions. Closer inspection of the “unclear” APC cases may in turn enable the discovery of more of the abovementioned “further language-specific indicators” of apposition vs. APCs.

How should we pursue the aim of crosslinguistic comparability in the face of the observable variation? Just like APPOS is not a satisfactory label for the relation between adnominal pronouns and their nominal complement in English-type APCs, I do not think the NMOD relation currently employed in the Greek corpus is an attractive solution for encoding APCs in that type of language. It again conflates APCs with different, unrelated constructions (PP modifiers, genitives), does not contribute to the goal of crosslinguistic comparability and obfuscates the fact that even though English and Greek APCs have clear structural differences, they are comparable at least on a descriptive or phenomenological level.

Since UD does not impose a limit on the number of DET relations with a noun,<sup>12</sup> both the adnominal pronoun and the article in Greek APCs like (2c) may be analysed with a DET relation from the noun.

<sup>10</sup><https://universaldependencies.org/u/dep/appos.html>

<sup>11</sup>But see Höhn (2017, 46–50) for a small number of languages for whose APCs this diagnostic may apply after all.

<sup>12</sup><https://universaldependencies.org/u/pos/DET.html>



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