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Authors

Seguin, Luisa

Thoms, Gary

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Reconciling ATB and parasitic gaps:
A smuggling analysis of P-mismatches in Italian

Luisa Seguin & Gary Thoms[*]

Abstract. This article addresses the longstanding debate on the unification of parasitic gaps (PGs) and across-the-board (ATB) constructions, discussing novel data from Italian. We show that PP PGs are indeed possible in the language (contra Cinque 1990), which undermines a previous argument against unification. We further show that apparent mismatches in the prepositional content of the main clause extractee and the "parasitic" extractee are allowed with certain reciprocal verbs like *litigare* 'argue', which feature an underlying unaccusative structure (van Craenenbroeck & Johnson 2023b) and prepositions that can "disappear" in specific alternations. We argue that PG constructions are derived through smuggling (Hicks 2009) of the parasitic extractee, which is underspecified for case, to the edge of the adjunct clause, from where it can then undergo ATB movement under identity with the main clause extractee. In using this analysis to explain the range of possible mismatches between PGs and their antecedents, we further strengthen the case for reducing PGs to ATB.

Keywords. parasitic gaps; ATB; Italian; P-mismatches; smuggling

1. Introduction. There is a long history of attempts to unify across-the-board (ATB) extraction and parasitic gaps (PGs), and it is easy to see why this has proven so tempting: both involve extraction from an environment which is normally an island – a coordinand in the case of ATB and an adjunct clause in the case of PGs – becoming licit just when there is an immediately local constituent that also contains a trace formed by A′-movement.

(1)   a.   I know which book Moe read before she bought.   PG
       b. *I know which book Moe read *Aspects* before she bought.

(2)   a.   I know which book Moe read and Bill bought   ATB
       b. *I know which book Moe read *Aspects* and Joe bought.

Reductionist analyses have been proposed in both directions: Haïk (1985) and Williams (1990) propose reducing PGs to ATB, and Munn (1993) proposes reducing ATB to PGs. The empirical landscape for the discussion of unification of PGs and ATB includes (a)symmetries within and across each construction, and some authors have argued that the asymmetries are too great for reduction to work at all (Cinque 1990; Postal 1993; Hein & Murphy 2020).

This article addresses two claimed differences between ATB and PGs: (i) ATB can target PPs but PGs cannot and (ii) PGs allows for a wider range of formal mismatches between the gap positions than ATB does. The claim in (i) was first made in Emonds (1985) and repeated in much subsequent work (Cinque 1990; Postal 1993; Nunes 2004), motivated by examples such as (3):

(3)   *This is a topic about which you should think before talking.   (Emonds 1985: 91)

Difference (ii) is identified by Hein & Murphy (2020), who show, building on Himmelreich (2017), that in languages such as Polish, PGs allow for case mismatches between the two gaps, while ATB extraction does not. This is demonstrated by (4)–(5), where "t_{ACC}" means that the indicated trace position is an accusative-assigned position: (4) demonstrates that ATB in Polish does not allow for case mismatches between the two extractees (with some nuances involving syncretism), while (5) demonstrates that PGs *do* allow case mismatches in Polish.

(4)   {*Czego / *co}   Jan nienawidz-i t_{GEN} a   Maria lub-ił t_{ACC}?
        what.GEN   what.ACC   Jan hate-PRS.3SG   and   Maria like-PRS.3SG
        Intended: 'What does Jan hate and Maria like?'

(5)   To   jest   dziewczyna, któr-a   Jan   lubi-ł t_{ACC}
        DEM.SG   is   girl   which-F.ACC   Jan   like-PST.M.SG
        [zanim   zaczą-ł   pomaga-ć t_{DAT}]
        before   start-PST.M.SG help-INF
        'This is the girl Jan liked before he started to help her.'

These differences stand in the way of reducing one dependency type to the other, although there remains a lot to be understood about these properties. For instance, while the analysis of PGs as nominal null operators accounts for the purported absence of PP PGs, the same analysis must say something extra to account for the fact that some languages (German, Hungarian, Greek) differ from Polish in that they *do* show case-matching with PGs (Himmelreich 2017).

    Our starting point is to show that claim (i) is incorrect, on the basis of data from Italian: examples such as (6) show that the language allows for PGs corresponding to PP-gap positions.

(6)   a. A chi$_j$ ha   regala-to   de-i   fior-i t_j
        to who   have.PRS.3SG   gift-PST.PTCP   PART-PL   flower-PL
        [dopo ave-r   da-to   un bacio pg_{PP}]?
        after   have-INF   give-PST.PTCP a   kiss
        'To whom did (s)he gift flowers after having given a kiss?'
    b. Le   ha   regala-to   de-i   fior-i
        CL.DAT.F3SG   have.PRS.3SG   gift.PST.PTCP   PART-PL   flower-PL
        [dopo ave-r-*(le)   da-to   un bacio].
        after   have-INF-CL.DAT.F.SF   give-PST.PTCP a   kiss
        '(S)he gifted her flowers after having given her a kiss.'

The empirical contributions are the following. We show that a wide range of PP types can be involved in PG dependencies (section 2). With the case-matching facts in mind, we ask whether strict matching of PP types is imposed in ATB and PG dependencies. We show that while identity of Ps is the rule with ATB and the norm with PGs, somewhat remarkably, mismatches *are* in fact possible with PP types in PG dependencies, with Ps that can "disappear" in certain argument structure alternations, with reciprocal predicates like *litigare* 'argue' and *innamorarsi* 'to fall in love'. We propose an account following Williams (1990), in which PGs are reduced to ATB, with the crucial innovation that PGs involve the same "operator movement" syntax as *tough* movement, which we reframe in terms of the account in Hicks (2009) (section 3):

(7)   [$_{CP}$ wh$_i$ … [$_{vP}$ ~~wh$_i$~~ [$_{VP}$ … ~~wh$_i$~~ …]] [$_{ADJUNCT}$ [$_{DP}$ [$_{NP}$ Op ~~wh$_i$~~]] […~~[$_{DP}$ [$_{NP}$ Op wh$_i$]]~~]]]]

             ATB   *smuggling*

We show that this can be used to explain the fact that a limited range of mismatches, in Italian and beyond, are possible under PG dependencies, starting with the case mismatches, and then elaborating to explain the Italian PP mismatch cases (section 4). A novel analysis of the reciprocal alternation in van Craenenbroeck & Johnson (2023a,b) plays a pivotal role in our analysis.

2. PP parasitic gaps. It has been repeatedly claimed in the literature that PGs are necessarily DPs and cannot be PPs. It seems the first reference for this claim is Emonds (1985), who provided the English example in (3) above as evidence, and the claim was repeated unchallenged by Cinque (1990), Postal (1993) and Nunes (2004), among others. While we have found that English speakers do find (3) somewhat degraded, this data is to be taken with a grain of salt, since most English speakers find pied-piping of PPs in questions marginal and high register to begin with, although some counterexamples have been noted in the literature (e.g., Levine et al. 2001: 185). Given these factors, we submit that English is not the best language for testing this claim.

     Languages such as Italian, where P-stranding is not an option and pied-piping is the norm, arguably constitute a cleaner test.[1] We have found that PP PGs are quite widespread in Italian, as speakers[2] readily accept (6) above, where the PG corresponds to an *a*-phrase, as well as the following examples with various other PP PGs with *con* 'with' (8) and *di* 'of' (9).[3] The (b) examples provide baselines showing that the gaps in the adjunct clauses are not possible without A′-movement; either full PPs or the comitative clitic *ci* and the genitive *ne* must be inserted.

(8)   a.   Con   chi$_j$ è   parti-t-a   in   vacanza   t$_j$
            with   who   be.PRS.3SG   leave-PST.PTCP-F.SG   on   holiday
            [dopo   ave-r   litiga-to   *pg*   a-lla   festa]?
            after   have-INF   argue-PST.PTCP   at-the   party
            'With whom did she leave for the holidays after having argued with at the party?'

---

[1] Cinque (1990) claims that the same constraint against PP PGs holds in Italian, providing only the example in (i) as evidence, without an extraction-free baseline.

(i) *A   chi$_j$ ha-i   lascia-to   la   lettera t$_j$ [dopo esser-ti-(ci)   rivol-to   *pg*]?
     to   who   have.PRS.2SG   leave-PST.PTCP the   letter   after be.INF-CL.REFL.2SG-CL.DAT turn-PST.PTCP
     'Who did you leave the letter to after having turned?'   (Cinque 1990: 102)

While we have replicated the judgment that Cinque reports, we also found that the version with a clitic in place of the PG in the adjunct clause is also bad, unlike the other cases we discuss here. This suggests there are independent problems involved here.

[2] We elicited judgments from five native speakers of Italian: four from northern Italy (3 Aosta Valley; 1 Piedmont) and one in the center (Marche). While the four northern speakers accepted PP-PGs, our consultant from the Marche region rejected them altogether. It is unclear, as well as beyond the scope of this paper, whether this is due to dialectal or rather cross-speaker variation. The judgments reported here thus do not include this consultant's.

[3] Full PPs and clitics are not freely interchangeable. If the referent is established in the discourse, a clitic is normally preferred, like *ne* 'of him' in (9b). However, clitics cannot express contrast, in which case a full PP or strong pronoun, like *di lui* 'to him', is required.

b. È   parti-ta   in vacanza   con   Maria
   be.PRS.3SG leave-PST.PTCP-F.SG on holiday   with   Maria
   [dopo ave-r-*(ci)   litiga-to   a-lla   festa]?
   after have-INF-CL.COM argue-PST.PTCP at-the   party
   'She left for the holidays with Maria after having argued with her at the party.'

(9) a. Di chi_j   ha   capi-to   di pote-r-si   fida-re t_j
    of who   have.PRS.3SG understand-PST.PTCP to can-INF-CL.REFL.3 trust-INF
    [solo   dopo esse-r-si   innamora-to pg_{PP} a-lla   festa]?
    only after   be-INF-CL.REFL.3 fallen.in.love-PST.PTCP   at-the party
    'Whom did he realize he could trust only after having fallen in love with at the party?'

b. Ha   capi-to   di   pote-r-si   fida-re   di
    have.PRS.3SG understand-PST.PTCP   to   can-INF-CL.REFL.3-CL.GEN trust-INF   of
    Ivana [solo dopo   esse-r-se*(ne)   innamora-t-o   a-lla   festa]?
    Ivana   only after   be-INF-CL.REFL.3 fallen.in.love-PST.PTCP   at-the party
    'He realized he could trust Ivana only after having fallen in love with her at the party.'

We conclude, then, that there is no ban on PP PGs. This undermines one of Postal's (1993) arguments against the unification of PGs and ATB, which was that ATB can target a wider range of categories than PG dependencies, including PPs. The following shows that Italian allows ATB-PP extraction as well.

(10) Con chi_i   ha   balla-to   t_j   e   Maria è   partita   t_j?
      with who have.PRS-3SG dance-PST.PTCP   and Maria be.PRS.3SG leave-PST.PTCP
      'With whom did he dance and Maria leave?'

Nevertheless, ATB and PGs come apart when we consider more intricate cases where the Ps that would head the main clause gap and the PG are distinct.

    ATB extraction disallows any kinds of mismatches in the PPs between the two gaps; for example, extraction of a PP headed by *con* in the first conjunct cannot be combined with extraction of a PP headed by *di* in the second conjunct (11) and vice versa (12). Note furthermore that adding a clitic pronoun in the second conjunct does not ameliorate the sentence.

(11) *Con   chi_i ha   litiga-to   t_j e   Marco se
    with   who have.PRS-3SG argue-PST.PTCP   and   Marco CL.REFL.3SG
    (ne)   è   innamorato   t_j?
    CL.GEN be.PRS.3SG   fallen.in.love-PST.PTCP
    Intended: 'Whom did (s)he argue with and Marco fell in love with?'

(12) *Di   chi_i Ivana   si   è   invaghi-ta   t_j   e
    of   who Ivana   CL.REFL.3 BE.PRS.3SG get.a.crush-PST.PTCP   and
    Marco (ci)   ha   discusso   t_j?
    Marco CL.COM have.PRS.3SG   argue-PST.PTCP
    Intended: 'Whom did Ivana get a crush on and Marco argued with?'

As far as we can tell, no mismatches in the PPs involved are tolerated in ATB extractions whatsoever. This is rather unsurprising. To some extent, something similar holds with PG dependencies, in that the following examples are all unacceptable with mismatches (but can

often be saved by including the locative clitic *ci* in the adjunct clause). "*con→a*" next to the translation indicates that the main clause gap corresponds to a *con*-phrase and the PG corresponds to an *a*-phrase.

(13) *Con   chi$_i$ ha   litiga-to t_j [dopo   ave-r   da-to
     with   who   have.PRS-3SG   argue-PST.PTCP   after   have-INF   give-PST.PTCP
     un   bacio   *pg*$_A$ a-lla   festa]?
     a   kiss   at.the   party
     Intended: 'Whom did (s)he argued with after having given a kiss at the party?'   ***con→a***

(14) *Per   chi$_i$ ha   per-so   la   testa t_j [dopo ave-r
     for   who   have.PRS-3SG   lose-PST.PTCP the   mind   after   have-INF
     da-to   il   suo   numero   *pg*$_A$]?
     give-PST.PTCP   the   POSS.M.SG number
     'For whom did (s)he lose his/her mind after having given his/her number to them.'***per→a***

This is also somewhat unsurprising. What is more surprising, however, is that some mismatches in PPs *are* possible in PG dependencies, as the following examples show.

(15) a. A   chi$_j$ ha   racconta-to   i   suo-i   segret-it_j [dopo
         to who   have.PRS.3SG   tell-PST.PTCP   the POSS.3SG-PL   secret-PL   after
         [ave-r   litiga-to   *pg*$_{CON}$]?
          have-INF   argue-PST.PTCP
         'To whom did (s)he tell her secrets after having argued with them?'   ***a→con***
     b. Ha   racconta-to   i   suo-i   segret-i   a   Yuri   [dopo
         have.PRS.3SG   tell-PST.PTCP   the POSS.3SG-PL   secret-PL to Yuri   after
         [ave-r*(ci)   litiga-to]].
          have-INF-CL.COM argue-PST.PTCP
         'She told Yuri her secrets after having argued with him.'

(16) a. A   chi$_j$ ha   racconta-to   i   suo-i   segret-it_j [dopo
         to who   have.PRS.3SG   tell-PST.PTCP   the POSS.3SG-PL   secret-PL   after
         esser-si   invaghi-t-o   *pg*$_{DI}$]?
         have-INF   get.a.crush-PST.PTCP-M.SG
         'To whom did he tell his secret after getting a crush on?'   ***a→di***
     b. Ha   racconta-to   i   suo-i   segret-i   a   Ivanna   dopo
         have.PRS.3SG tell-PST.PTCP   the POSS.3SG-PL   secret-PL to Ivanna   after
         esser-si   invaghi-t-o   *(de   lei).
         have-INF   get.a.crush-PST.PTCP-M.SG   of   her
         'He told his secrets to Ivana after getting a crush on her.'

(17) a. Su chi$_j$ è   determinat-a   a   fa-r   colpo [dopo
         on who   be.PRS.3SG   determined-F.SG to make-INF   hit   after
         esser-si   innamora-t-a   *pg*$_{DI}$ a-lla   festa]?
         be-CL.REFL.3 fall.in.love-PST.PTCP-F.SG   at.the   party
         'Whom is she determined to impress after having fallen in love with at the party?'
                                                                                su→di

b. È   determinat-a a fa-r   colpo su Marco [dopo
  be.PRS.3SG determined-F.SG to make-INF hit on Marco after
  esser-si   innamora-t-a   *(di lui) alla festa].
  be-CL.REFL.3 fall.in.love-PST.PTCP-F.SG of him at.the party
  'She is determined to impress Marco after having fallen in love with him at the party.'

For reasons of space, it is not possible to report an example for each combination. We report the complete array of examples here; Table 1 summarizes the pattern.

wh/PG	*a*-PP	*con*-PP	*di*-PP	*per*-PP	*su*-PP	*su(loc)*-PP
a-PP	ok	ok	ok	*	*	*
con-PP	*	ok	ok	*	*	*
di-PP	*	ok	ok	*	*	*
per-PP	*	ok	ok	ok	*	*
su-PP	*	ok	ok	*	ok	*
su(loc)-PP	*	*	*	*	*	ok

Table 1. Summary of main clause extractee/PG combinations in Italian

Nonetheless, it is important to briefly discuss *su* and *per* PPs. Cases of perfect matching, e.g., *per*wh-*per*PG, are always possible, but with mismatches we see interesting patterns. In Table 1, we distinguish between locative *su(loc)*PP and other *su*PP arguments, as in *fare colpo su* 'to impress' and *contare su* 'to rely on', as they behave differently. Only *su*PP arguments belonging to the second group license PGs (17)–(18), whereas *su(loc)*PP do not (19). Examples with *su(loc)*PP in combination with verbs that take *con*PP, like *litigare* 'to argue' (19), and *di*PP, like *innamorarsi* 'to fall in love', are slightly absurd, but the pattern is reported for completeness.

(18) a. Su chi_j sa   di pote-r conta-re *t*_j [dopo ave-r
    on who know.PRS.3SG to can-INF rely-INF   after have-INF
    litiga-to   *pg*_{CON} a-lla festa]?
    argue-PST.PTCP   at.the party
    'On whom does he know he can count on after having argued with him at the party?'
  b. Sa   di pote-r conta-re su Yuri [dopo ave-r-*(ci)
    know.PRS.3SG to can-INF rely-INF on Yuri after have-INF-CL.COM.3SG
    litiga-to   a-lla festa].
    argue-PST.PTCP at-the party
    'He knows he can count on Yuri after having argued with him at the party.'

(19) *Su chi_j è   inciampa-to *t*_j [dopo ave-r
   on who be.PRS.3SG trip-PST.PTCP   after have-INF-CL.COM.3SG
   litiga-to   *pg*_{CON} a-lla festa].
   argue-PST.PTCP   at-the party
   Intended: 'Who did he trip over after arguing with at the party?'

Finally, *su(loc)*PGs are tricky to test, as the locative PP argument often seems to be optional in the baselines, as in (20b); this is likely due to the fact that Italian seems to allow for null locative PPs (Tortora 2001). Again, we include them for completeness.

(20) a. Di quale cartone_j si è libera-to t_j [dopo
on which carton CL.REFL.3 be.PRS.3SG free-PST.PTCP after
esse-r-si-(ci) appoggia-to pg_SU]?
be-INF-CL.REFL.3-CL.LOC lean-PST.PTCP
'Which carton did he get rid of after having leaned on?'

b. Si è libera-to di quel cartone [dopo
CL.REFL.3 be.PRS.3SG free-PST.PTCP of that carton after
esse-r-si-(ci) appoggia-to].
be-INF-CL.REFL.3-CL.LOC lean-PST.PTCP
'He got rid of that carton after having leaned on it'

*Per*PPs present another challenge: these are limited to causatives (*per la neve* 'because of the snow') and temporal PPs (*per tre ore* 'for three hours'), both impossible to use for the present purpose, and benefactives. Since they are non-core arguments, the presence of benefactive PGs are evidenced not by the acceptability of the string but by the availability of the relevant benefactive reading in the adjunct clause. Such a reading is not available in (21), and the sentence can only mean that Lucia bought a car for herself.

(21) *Con chi_i ha litiga-to Lucia t_j [dopo ave-r
with who have.PRS.3SG argue-PST.PTCP Lucia after have-INF
compra-to un auto pg_PER]?
buy-PST.PTCP a car
Intended: 'Who did Lucia argue with after buying a car for?'

Table 1 summarizes the pattern. The existence of P-mismatches in PG constructions provides *prima facie* evidence against a unification account of PGs and ATB, as mismatches are impossible quite generally with ATB (11)–(12). Nevertheless, the fact that not everything goes with PGs suggests that there is a nontrivial role for syntax in determining the relationship between the contents of the two gaps in Italian. The question, then, is how this should be done.

3. PG mismatches, null operators and smuggling.

3.1. THE NULL OPERATOR APPROACH TO PGS. To build our account of the Italian data, we begin by returning to a matter which was mentioned in the introduction, which is that some but not all languages allow case mismatches in PG dependencies. Himmelreich (2017), citing data from Citko (2013), reports that Polish allows mismatches, as examples such as (5) illustrate. These contrast with the ATB cases in (4), where we saw that Polish disallows case mismatches under ATB extraction, at least if the form of the extractee would be distinct in the cases in question. However this is not always what we find across languages, as Himmelreich (2017) claims that PG dependencies in German and Greek show case matching of the sort that we see in ATB dependencies. A German example exemplifying this (where the licensing extraction is clause-internal scrambling) is in (22), which shows that there's no way to resolve a situation where the PG is dative and the extractee is accusative.

(22) *weil Hans {der_DAT/die_ACC} Frau [anstatt zu helf-en_DAT] behinder-te_ACC
because Hans the.DAT/ACC woman instead.of to help-INF hamper-PST.3SG
Intended: 'because Hans hampered the woman instead of helping her.'

Hungarian and Russian are described by Kiss (1985) and Franks (1995) respectively as also showing case matching in their PG dependencies. In addition, Himmelreich (2017) reports that

Polish speakers do not always accept the mismatches as reported by Citko (2013), which suggests the phenomena may be variable at the individual level.

Himmelreich (2017) works out an analysis of case matching and mismatching in PGs (and other constructions) cross-linguistically in which there is some Agree dependency that is established between the PG position and the main clause gap position, and her analysis is akin to a version of the classic operator movement theory, according to which the PG is a null operator that moves to the edge of the adjunct clause (Chomsky 1986; Nissenbaum 2000).

(23)   [$_{CP}$ antecedent$_i$ ... t_i ... [$_{ADJUNCT}$ Op$_j$ ... t_j ...] ...]

Adjunct-internal movement of the PG to the edge of the adjunct clause is motivated empirically by the adjunct-internal island effects observed by Kayne (1983), and Nissenbaum (2000) claims that it is motivated semantically by the need to create a predicate that can modify the main clause vP, to which the adjunct clause is adjoined. On Himmelreich's analysis, the adjunct clause is adjoined lower, to VP, and movement of the null element to SpecCP of the adjunct clause puts it into a configuration where it is locally c-commanded by the antecedent extractee in the main clause, which has moved to Spec$v$P (on its way to SpecCP in the case of questions and relative clauses), and in this configuration an Agree relation can be established between the null element and the antecedent that determines case agreement between the two.

(24)   [$_{v}$P antecedent$_i$ ... [$_{VP}$ [$_{VP}$ ... t_j ...] [$_{ADJUNCT}$ Op$_j$ ... t_j ...] ...]]

Himmelreich's implementation of the case agreement interaction allows for variation, and so her analysis captures the possibility of cross-linguistic (and also language-internal) variation with respect to the case matching effects. However it is far from clear how it would generalize to cover the Italian data above. If all Ps were treated as mere case markers, we would surely expect mismatches to extend to *a*-PPs, which are often analyzed as dative DPs.

Still, there is much to recommend the idea that PGs involve dependencies much like those involved in other A′-constructions that have been analyzed as involving operator movement. One important point is that PGs share a lot of properties in common with *tough* constructions (TCs, e.g., *artists are tough to please*), which Chomsky (1977) famously analyzed in terms of operator movement. We mention a few commonalities between PGs and TCs in English here (and we refrain from attempting to explain them on this occasion). First, they both fail to target subjects of finite and ECM clauses (25)–(26).

(25)   a. *Bill is hard to believe to be insane.
        b. *Bill is hard to believe is insane.

(26)   a.?*Who did you talk to while believing to be insane?
        b. *Who did you talk to while believing is insane?

Related to this, they seem to generally resist extraction across a finite clause boundary, despite normally being characterized as unbounded, and they also both improve in the same circumstances, in particular when the embedded subject is not a new discourse referent, e.g., is a bound pronoun or a nonreferential indefinite.[4]

(27)   a.?*John is tough to convince people that Bill should talk to.

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[4] The observation regarding bound pronouns is made by Richards (2010) for *tough* movement, and the parallel with PGs is our observation. The observation that indefinites behave similarly is due to an anonymous reviewer.

b.?*Who did you argue with after convincing people that Bill should talk to?

(28)   a. ?John is tough to convince people that they/someone should talk to.
        b. ?Who did you argue with after convincing people that they/someone should talk to?

Another property of both constructions that has attracted some discussion is the fact that they are both sensitive to so-called *antipronominal contexts* (29) (Postal 1993; Stanton 2016).

(29)   a. *What color did they criticize after painting their house?   (Postal 1993: 744)
        b. *This color isn't easy to paint your house.

None of these restrictions are shared by ATB extraction, as (30) show.

(30)   a. Who does John expect to win and Bill expect to lose?
        b. Who does John believe will win and Bill believe will lose?
        c. Who does John think we should invite and Mary think we should exclude?
        d. The color that they chose yesterday and will paint their barn tomorrow is red.
                                                                          (Postal 1993: 744)

Postal (1993) argues that this disparity is problematic for the unification of ATB and PGs.

We could potentially reconcile these facts with an analysis of PGs as involving a two-step derivation, in which there is operator movement of some kind to the edge of the adjunct clause, and this feeds the formation of an ATB dependency that is established from the adjunct clause's edge and the edge of the vP to which it is adjoined.

(31)   [$_{CP}$ wh … [$_{vP}$ [$_{vP}$ ~~wh~~$_i$ [$_{VP}$ … ~~wh~~$_i$ …]] [$_{ADJUNCT}$ Op$_j$ [… ~~Op$_j$~~ …]]]]]

This would in effect be like a combination of Williams's (1990) ATB theory of PGs, where there is true extraction from both the matrix clause and adjunct clause, and Nissenbaum's implementation of the operator movement approach, where it is crucial that there is extraction to the edge of the vP (due to successive cyclicity demands) and extraction to the edge of the adjunct clause that is adjoined to the same vP (which we can also assume to be a phase).[5] What remains to be resolved, however, is how true *wh*-movement in the matrix clause and null operator movement in the adjunct clause could then feed ATB extraction together. We try to make progress on this issue by revisiting operator movement, starting with the reassessment of TCs in Hicks (2009).

3.2. OPERATOR MOVEMENT, SMUGGLING, AND CASE MISMATCHES. A novel version of the operator movement approach to TCs has been put forward in Hicks (2009). Hicks aims to capture the apparently "mixed" A/A′-character of TCs: it can cross clause boundaries, as in cases like (28a), but it also feeds case, agreement and binding in the matrix clause.

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[5] Although they are quite different in their specifics, these analyses share the property that they both take the adjunction structure involved in clausal modification by an adjunct clause to create what is a conjunction structure semantically. For Williams, this is why ATB extraction from both clauses takes place, although Williams does not address the need for adjunct-internal movement, or indeed successive-cyclic movement to Spec$v$P in the main clause. For Nissenbaum, movement to the edge of the adjunct clause is motivated by the need to create a predicate that can combine with the predicate formed by successive-cyclic movement to Spec$v$P via Predicate Modification, which is essentially a semantic conjunction rule. Nissenbaum's analysis has the same issue as other operator movement accounts with respect to predicting matching and mismatching extractions, which we lay out here.

(32) a. {He/*him} is tough to convince people to talk to.
      b. They {are/*is} tough to convince people to talk to.
      c. [No boy]$_i$ is easy for his$_i$ mother to chase.

Hicks argues that this can be captured with a two-step analysis of TCs that exploits the notion of *smuggling* (Collins 2005), where A-movement is fed by a prior step of A′-movement of some larger constituent. He proposes that the object of the infinitival clause is a complex element with the structure in (33), where the D head bears a *wh*-feature and requires a single argument, the null operator Op, which then takes another DP as its argument; see the derivation in (33) for (32a).

(33) [$_{DP1[uCase,uWH]}$ [$_{NP}$ Op [$_{DP2[uCase]}$ he]]]

The derivation of TCs proceeds as follows. First, DP1 receives Case in its base position in the *tough* infinitive; second, DP1 undergoes A′-movement to the edge of the CP embedded by the *tough* predicate; third, the "smuggled" DP2 A-moves from within DP1 to the matrix SpecTP, where it receives nominative case and controls agreement.

(34) [$_{TP}$ [$_{DP2[uCase]}$ he]$_j$ is [$_{AP}$ tough [$_{CP}$ [$_{DP1[uCase,iwh]}$ [$_{NP}$ Op t_j]]$_k$ [uWH] [$_{TP}$ [$_{vP}$ v$_{[uCase]}$ [$_{VP}$ please t_k]]]]]]]

On this account, then, the operator is essentially the "vessel" by which the *tough* subject is smuggled to its higher position, and it ensures that the smuggled DP receives case in its derived position and not in the lower one. For a language to have TCs, it must have the relevant smuggling technology (the Op nominal that smuggles DP2), as well as a set of adjectives (the *tough* predicates) that bear features that can attract a DP of this type.

We propose that the preceding analysis of TCs can be extended to PGs in languages such as Polish that allow case mismatches. Specifically, operator movement à la Hicks (2009) moves the object, DP1 in (33), from within the adjunct clause to its edge, and then from there, there is subextraction of DP2 in an ATB fashion with extraction of the argument that has been moved to Spec*v*P of the main clause. This is in (35), which is much like what was sketched in (31).

(35) [$_{CP}$ wh ... [$_{vP}$ wh$_i$ [$_{VP}$ ... wh$_i$ ...]] [$_{ADJUNCT}$ [$_{DP}$ [$_{NP}$ Op wh$_i$]] [.... wh$_i$ ...]]]

         ATB   *smuggling*

A crucial detail of this derivation is that the element that is ATB-extracted from the adjunct clause, DP2, has not received a case value lower in the structure at that point in the derivation, and so is underspecified for case features. We claim that this means it can be ATB-extracted along with the *wh*P in the matrix clause, which has already received its case value, without any sort of case conflict arising. The intuition is a simple one: because DP2 has no case features at all, it cannot conflict with the other extractee, and therefore no conflict will arise when an ATB dependency is established between the two positions.

For an implementation of ATB extraction to capture this effect, we adopt a version of the proposal in Citko (2005) for handling cases of apparent "salvation by syncretism" in ATB dependencies, where syntactically nonidentical extractions are licensed just when the two extractees exhibit case syncretism. One such example from Polish is given in (36), where one extractee is genitive and the other accusative.

(36)   Kogo   Janek   nienawidz-i t_{ACC} a   Maria   lub-i t_{GEN}?
       What.ACC/GEN   John   hate-PRS.3SG   and   Maria   like-PRS.3SG
       'Who does John hate and Maria like?'   (Citko 2005: 487)

This effect is also seen with PGs in languages in which case mismatches are not otherwise tolerated, such as German, see (37).

(37)   weil   Hans   der~GEN/DAT~   Verstorbenen [anstatt   ein   Gedicht   zu
       because   Hans   the.M.SG.GEN/DAT   dead   instead.of a.N.ACC   poem   to
       widm-en~DAT~]   in   einer   Gradrede   gedachte~GEN~
       dedicate-INF   in   a.F.DAT   eulogy   commemorate.PST.3SG
       'because Hans commemorated the dead one in a eulogy instead of dedicating a poem to
       her.'   (Himmelreich 2017: 52)

The fact that syncretism has the ATB-style "repairing" effect with PGs (e.g., in German, which shows case matching with PGs) is another motivation for a unified analysis.

     Citko proposes that these syncretism effects can be handled on a multidominance approach to ATB constructions in combination with an underspecification-based approach to syncretism. The multidominance-based analysis of ATB dependencies involves a given XP being merged into two distinct thematic positions in separate conjuncts (in "parallel", hence Citko's term "Parallel Merge"[6]), followed by merge of the same XP into a higher position that c-commands into both conjuncts and where it is linearized in accordance with standard copy pronunciation rules; pronouncing XP once in this higher position precludes any linearization problems from attempting to linearize XP in two distinct positions in the same structure. Merging XP into two distinct positions is taken to be possible so long as that XP's feature content is compatible with both positions, and so long as the chain formed can be interpreted at the interfaces.

     In a simple case of mismatches, such as the German example in (22), merging the same DP into both positions would not work, since one position requires a dative D, which spells out as *der,* and the other requires an accusative, which spells out as *die*, and these DPs must be featurally distinct in order to ensure they map onto different Vocabulary Items in the first place. For cases where the DP merged into the two positions is syncretic, such as (37) or indeed (36), the idea is that the DP would have a feature specification that is compatible with both positions; as Hein & Murphy (2020: 271) note, this likely requires that cases be decomposed into subfeatures (such as ±OBLIQUE), and a DP that is syncretic for two cases will therefore be underspecified for a subfeature that is distinctive for other non-syncretic pairs.

     To come back to the ATB dependencies involved in PGs in Polish-type languages with Hicks-style operator movement, our claim is that a DP that has no specification for case-relevant features, such as the DP2 contained within a smuggling vessel that has moved to an adjunct's edge, will be able to merge into a thematic position in the main clause, and then subsequently merging the same DP into SpecvP and SpecCP will introduce no featural conflicts and no conflicts at spellout. It is the radical underspecification for case-related features that affords a smuggled DP the freedom to remerge into another clause with no conflicts arising.

     Before moving on, we should return briefly to the question of why case mismatches (of the regular type, not the syncretism-licensed type) are possible in Polish-type languages under PG

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[6] de Vries (2009) points out that "Parallel Merge" is formally indistinguishable from other derivational options such as "sideward movement" and "external remerge".

dependencies, but not ATB dependencies. Since it is the Hicks-style operator movement component that brings about mismatches with PGs, it must be the case that this kind of operator movement is not freely available and cannot be deployed freely in ATB constructions. We assume that this kind of operator movement is only licensed selectively in certain environments, for instance within the complement CPs of a class of adjectival predicates, and so it cannot be deployed freely in all A′-extraction contexts. We can capture this by stipulating that the movement of the smuggling vessel is driven by a special feature, the distribution of which needs to be acquired directly. Certain languages will simply lack this feature, and thus this derivational option, and in some languages, e.g., Polish and Italian as we will see in the next section, it is only tied to a certain set of environments, like PG constructions but not ATB. Needless to say we aspire to do better than this stipulation in future work.[7]

4. Analysis. Our main proposal is that the analysis of PGs just outlined can be extended to account for the Italian data, with Hicks-style operator movement in the adjunct clause, ensuring that the two extractees need not show strict identity. (We simply assert that Italian is like Polish in allowing for the Hicks-style derivation with its PGs.) However, it's clearly not as simple a matter as analyzing Ps that seem not to "count" for the relevant identity calculation as case markers (e.g., *con* as comitative, *di* as genitive), as such an analysis would struggle to explain why PGs corresponding to *a*-phrases (which, by the same logic, would be analyzed as datives), and indeed P-less DPs (i.e., accusatives) do not participate in such mismatches as well. We claim that the relevant property that distinguishes *con* and *di* is that they can be "dropped" derivationally under A-movement, in particular in configurations that correspond to the reciprocal alternation.

4.1. THE RECIPROCAL ALTERNATIVE. The reciprocal alternation is an alternation with symmetric predicates such as *marry* and *argue*, where a seemingly binary variant alternates with a unary one with a coordinated or plural subject.

(38) a. John married Joan.=Joan married John.
     b. Joan and John married.

(39) a. John argued with Joan. = Joan argued with John.
     b. Joan and John argued.

Recently, van Craenenbroeck & Johnson (2023a,b) have argued that this alternation (38)–(39) can be given a derivational treatment, in which the predicates uniformly lack an external argument and the two frames involve distinct unaccusative-style derivations (40) where there is raising from within VP. The predicates require a plurality for an internal argument, and this can

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[7] As mentioned in section 2, in ATB construction with P-mismatches, like (11)–(12), pronominalization in the second conjunct does not ameliorate the sentence. Clitic pronouns are disallowed *tout court* in ATB constructions (i), whereas no such constraint exists in PG constructions (ii) (Engdahl 1983; Cinque 1990). This speaks against Munn's (1993) attempt to reduce ATB to PG constructions. PGs are undoubtedly chains that allow operator movement (Chomsky 1986; Cinque 1990) and allow for pronominalization (as does relativization) (ii). The latter is not possible with ATB (i), which constitutes a problem for the operator movement analysis of ATB in Munn (1993).

(i) Chi$_j$ hai   vi-sto t_j e   Maria   (*l')   ha   saluta-to?
    who   have.PRS.2SG see-PTS.PTCP   and Maria   CL.ACC   have.PRS.3SG   greet-PTS.PTCP
    'Who did you see and Maria greet?'

(ii) Quale   studente$_j$ ha   ignora-to t_j [dopo aver-(lo)   saluta-to]?
    which   student   have.PRS.3SG   ignore-PTS.PTCP   after have.INF-CL.ACC.M.SG   greet-PTS.PTCP
    'Which student did (s)he ignore after having greeted?'

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be satisfied either by merging a plural DP, e.g., *they*, or two distinct arguments in a "big DP"-type structure (40a). For the binary variant, partial raising[8] of one of the subparts of the big DP in the internal argument position strands the other DP in the complement domain (40b); for the unary variant, the full DP raises (40c).[9]

(40) a.   [$_{VP}$ marry [$_{DP}$ [$_{DP}$ John] [$_{DP}$ Joan]]]
     b. [$_{TP}$ [$_{DP_i}$ John]]   T   [$_{VP}$ marry [$_{DP}$ t_i [$_{DP}$ Joan]]]
     c. [$_{TP}$ [$_{DP}$ [$_{DP_i}$ John] and [$_{DP_j}$ Joan]]]   T   [$_{VP}$ marry t_i t_j [$_{DP}$ Joan]]

van Craenenbroeck & Johnson provide a few arguments for the unaccusative analysis of the unary variants of these structures, and they provide a powerful argument from ellipsis for the idea that the two variants have a common core syntactically. We outline the latter here.

Building on observations in Stockwell (2020), van Craenenbroeck & Johnson (2023a,b) demonstrate that the symmetric predicates involved in the reciprocal alternation allow for cases of so-called participant switch under ellipsis, where distinct binary variants can provide antecedents for ellipsis of each other (41a), and they note that it's also possible for a binary variant to license ellipsis of a unary one (41b). No such mismatches are possible with non-symmetric predicates.

(41) a. John doesn't want to meet Mary, but she does ~~want to meet him~~!
     b. John doesn't want to marry Mary, but they totally should ~~marry~~!

They take this to demonstrate that the two frames must be syntactically equivalent in some way, since it has been established that semantic equivalence is too weak a relation to account for ellipsis identity effects. Merchant (2013) (circulating since 2007) shows that while voice mismatches are possible with VP-ellipsis (42a-b), they are impossible with TP-ellipsis, e.g., sluicing (42c).

(42) a. Actually, I have implemented it with a manager, but it doesn't have to be ~~implemented with a manager~~.
     b. The system can be used by anyone who wants to ~~use it~~.
     c. *Someone murdered Joe, but we don't know by whom he was murdered!

                                                          (Merchant 2013: 79–81)

Such contrasts are difficult to explain if ellipsis only involves semantic equivalence, as this would be satisfied equally well by TP and VP-ellipsis. Merchant (2013) argues that a syntactic account can explain the facts if we assume (along with much previous work) that there is a functional head above the *v*P, VoiceP, which encodes the passive voice alternation, and that ellipsis identity requires identity of such functional heads. Mismatches become possible when the target for ellipsis identity is a subpart of the clause below the VoiceP, hence the possibility of mi matches with VP-ellipsis, while they are impossible with bigger ellipsis processes which encompass the VoiceP layer. The logic of Merchant's argument has been validated in various subsequent works (e.g., Dagnac 2010; Chung 2013; Sailor 2014; Ranero 2021; Overfelt to appear), and van Craenenbroeck & Johnson argue that it strongly diagnoses the kind of syntactic

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[8] We note in passing that if van Craenenbroeck and Johnson's analysis is correct, it would potentially pose a problem for Landau's (2003) argument against the Movement Theory of Control, from the existence of partial control, which is summarized by the plainly put claim "there is no partial raising" (493). See Rodrigues (2007) for an analysis of partial control that has some promise as a place to go next with a potential reanalysis.
[9] van Craenenbroeck & Johnson (2023b) argue there is some process of *and*-insertion to derive the coordinate subject. We do not address the nature of this process here.

equivalence between the unary and binary frames for symmetric predicates that are illustrated in (41).

4.2. "DISAPPEARING" PREPOSITIONS. An important detail of their derivational analysis of the reciprocal alternation, which van Craenenbroeck & Johnson do not delve into but which has a pivotal role to play in our analysis, is the fact that with predicates such as *argue*, the preposition *with* appears in the binary variant but not the unary variant, as (ii) in footnote 8 shows. This holds with Italian too, with *con* and *di* for verbs like *innamorarsi* 'to fall in love', and the (b) examples are just as acceptable with a plural subject as the English counterparts (*they argued*).

(43) a. Mario ha   litiga-to   con   Luigi.
        Mario have.PRS.3SG argue-PST.PTCP   with Luigi
        'Mario argued with Luigi.'
     b. Mario e   Luigi   ha-nno   litiga-to.
        Mario and Luigi   have-PRS.3PL   argue-PST.PTCP
        'Mario and Luigi argued.'

(44) a. Mario si   è   innamorat-o   di Luigi.
        Mario CL.REFL.3   be-PRS.3SG fallen.for-PST.PTCP.M.SG of Luigi
        'Mario fell in love with Luigi.'
     b. Mario e   Luigi   si   sono   innamorat-i.
        Maria and Luigi   CL.REFL.E   be-PRS.3PL   fallen.for-PST.PTCP.PL
        'Mario and Luigi fell in love.'

If the binary structure is derived by the application of A-movement to the same base as the unary structure, then the Ps, *con* and *di*, can be said to "disappear" when A-movement applies to the argument on which they are dependent. This is also what we seemed to see with the PP PG mismatches in Italian discussed in section 2, where we saw that they are only possible when the *wh*-word is a PP and the PG is either a *con*PP or a *di*PP (Table 1). The verbs that take these PP arguments are *together* reciprocals and symmetric predicates that plausibly have the underlying structure in (40), or something very similar.[10] Our idea, then, is that whatever allows for *con/di* to disappear under A-movement as in (40) will also allow the same Ps to disappear under the step of A-movement at the adjunct's edge that is facilitated by Hicks-style operator movement.

The "disappearing preposition" effect with symmetric predicates can be captured in a few different ways. On one analysis, the Ps are not selected in the base structure, but rather "inserted" post-syntactically under certain conditions, and those conditions are bled by the application of A-movement (cf. Bruening 2010). On another approach, the Ps are always syntactically selected and thus present, but they are only realized overtly under certain conditions, and it is A-movement that bleeds those conditions in the case of symmetric predicates. We opt for the latter approach here, adopting a version of a proposal in Adger (2022). We propose that oblique phrases are selected in the VP, but their heads are only realized overtly if they enter into a feature-sharing relationship with certain functional heads that license their appearance. In the case of *con/di*, we can take these to be KPs that are licensed by Agree with a flavor of *v* that is

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[10] Space limitations prevent us from delving into fine-grained questions about the base structures, for instance whether there is an underlying "big DP" that is embedded under the prepositions in these structures. Similarly, we must leave to one side discussion of why some of these predicates, but not all, require the reflexive clitic *si*, which is a well-known signal of unaccusative syntax. For now we simply note that "(un)accusativity" is at best a cluster of properties. Choosing between analyses is an empirical matter to which the present study may ultimately contribute.

specific to these predicates. The features on *v* determine the overt form of K, meaning that it is realized as *con* when it Agrees with the *v* that forms a subpart of *litigare*-type predicates, and it is realized as *di* with *innamorarsi*-type predicates.

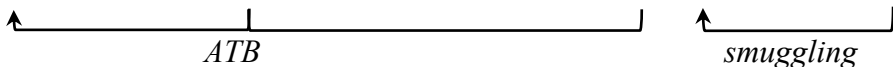(45) [$_{vP}$ *v* [$_{VP}$ *litigato* [$_{KP}$ K = *con* DP]]]

There are various details and potential nuances of this account that we must put to one side in this short paper, but what is crucial is that case assignment by *v* does not apply when A-movement to SpecTP evacuates the VP of arguments, as in the unary variant, and case assignment is also be bled by Hicks-style operator movement of the KP to the edge of PG adjunct clauses. In short, what is crucial for us is that whatever explains disappearing Ps in the A-movement context will explain their "disappearance" under Hicks-style operator movement.

4.3. PUTTING THE PIECES TOGETHER. Let us spell out our final analysis of the P-mismatch data. First, consider again a case where a mismatch is possible, such as (15a), repeated below as (46), where the main clause extractee is an *a*-PP and the PG corresponds to a *con*-PP.

(46) A   chi$_j$ ha   racconta-to   i   suo-i   segret-i   t$_j$ [dopo
      to who   have.PRS.3SG tell-PST.PTCP the POSS.3SG-PL secret.PL   after
      ave-r   litiga-to   *pg*$_{CON}$]?
      have-INF   argue-PST.PTCP
      'To whom did (s)he tell her secrets after having argued with them?'   ***a→con***

This would be derived as follows. First, the KP internal argument of the verb (in its binary form) is smuggled to the adjunct's edge by Hicks-style operator movement. Since the smuggling vessel (which we take to be a KP here as well) shields the embedded KP from case relations in the lower position, it gets to this peripheral position with no featural specification, and hence its form is underdetermined. After this, everything else proceeds as outlined in the previous section for case mismatches in Polish PG configurations, which we reanalyzed as involving ATB movement of the Parallel Merge type (47). That is, the same KP is merged into a thematic position in the main clause ("parallel" to merging it into the adjunct clause), perhaps SpecAPPLP in the case of (46), and in this position the KP necessarily Agrees and is assigned a case value that determines its form. Finally, the KP is merged into SpecCP, where it c-commands the lower positions, and it is this higher position where the KP is ultimately linearized.

(47) [$_{CP}$ KP=*a* … [$_{APPLP}$ ~~KP=*a*~~ [$_{VP}$ …]] [$_{ADJUNCT}$ [$_{DP}$ [$_{NP}$ Op [K ~~KP2~~]]] [$_{TP}$ … ~~[$_{DP}$[$_{NP}$Op [K KP2]~~ …]

                ATB   smuggling

Crucial here is the fact that KP1 does not enter into case relations in the adjunct clause, in which the KP is an argument of one of the symmetric predicates that shows the disappearing P effect under A-movement. This means that merging the same KP into the main clause will not lead to a feature clash. The KP in the matrix clause will be remerged to Spec*v*P in accordance with standard successive-cyclicity practices, and when the matrix interrogative C probes, it will find the KP in Spec*v*P, and so merging this with the matrix SpecCP will get the result where KP, which is featurally specified to spell out as an *a*-PP, is spelled out in the initial position.

   The derivation just sketched will work for various other situations where the PG corresponds to a *con*-PP or a *di*-PP and the main clause extractee is also an extractee that can plausibly be analyzed as a KP. We take this to pick out a range of "functional" prepositions, such as *per* "for"

and *su* "on" in its non-locative form. It will also work straightforwardly for PG constructions where the PPs in the main clause and the adjunct clause are the same. As for the question of why the PG cannot be an *a*-PP, or indeed a *per*-PP, when the antecedent is any other PP, we claim that this will follow from whatever it is that prevents *a/per* from disappearing under A-movement. Italian differs from English in that it lacks anything corresponding to the dative alternation, so in terms of the present analysis we can say that it is a characteristic of the introduction of dative arguments in this language that they are always licensed as *a/con*-PPs in their first-merge position, and there is no possibility of bleeding this via A-movement. Datives may be different as they constitute an instance of so-called inherent case, where there is a tie between the thematic role and the K head involved; by contrast, *con/di* seem to be more lexically specific, since not all predicates that participate in the reciprocal alternation involve adpositional marking.

4.4. SOME REMAINING ISSUES. There are a handful of remaining mismatch cases that we have not yet addressed. One case, which is in Table 1, is the fact that *su*-PPs license *con/di*-PP PGs only in their non-locative use, while locative *su*-PPs fail to license anything other than identical locative PP PGs (19) (see Table 2). On our analysis, this requires saying that locative PPs are featurally distinct from the functional Ps we have discussed, i.e., they cannot be analyzed as KPs, and in fact they may be better analyzed as locative predicates rather than oblique arguments. This might sound straightforward, but it is important for our analysis that the locative PPs should not have KPs as a subpart, because if they did, our analysis may struggle to rule them out.

Another empirical issue, which we have not discussed so far, is the fact that DP extraction in the main clause never licenses a PP PG (48), but PP-extraction in the main clause can license a DP PG in at least two cases: with a non-locative *su*-PP and with at least some *di*-PPs. One example demonstrating these results is given in (49), and Table 2 summarizes the pattern.

(48) *Chi$_j$ ha bacia-to t_j [dopo ave-r litiga-to pg_{CON}]?
who have.3SG kiss-PST.PTCP after have-INF argue-PST.PTCP
Intended: 'Who did he kiss after having argued with?' ***DP→con**

(49) a. Su chi$_j$ ha capi-to di non pote-r fa-re
on who have.3SG understand-PST.PTCP to NEG can-INF do-INF
affidamento t_j [solo dopo ave-r assun-to pg_{DP}]?
reliance only after have-INF hire-PST.PTCP
'Whom did (s)he realize he could not rely on only after having hired?'

b. Ha capi-to di non pote-r fa-re affidamento su Gianni
have.3SG understand-PST.PTCP to NEG can-INF do-INF reliance on Gianni
[solo dopo ave-r*(lo) assun-to].
only after have-INF-CL.3.M.SG hire-PST.PTCP
'(S)he realized (s)he could not rely on Gianni only after having hired him.' ***su→DP**

The fact that a DP main clause extractee does not serve to license a *con/di*-PP in the adjunct clause should follow from an analysis where the KP is specified for obliqueness in a way that a DP is not; that is, the difference between an accusative DP and a KP is not just a matter of the K's form at spellout. The cases where a DP PG is licensed by the PPs in the antecedent are much trickier, so we must leave them for future work.[11]

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[11] One matter to mention regarding non-locative *su*-PPs, which involve predicates such as *fare affidamento* 'rely (on)', is the fact that their English counterparts have been shown by Postal (2004) to have some intriguing properties

wh/PG	DP	a-PP	con-PP	di-PP	per-PP	su-PP	su(loc)-PP
DP	ok	*	*	*	*	*	*
a-PP	*	ok	ok	ok	*	*	*
con-PP	*	*	ok	ok	*	*	*
di-PP	ok	*	ok	ok	*	*	*
per-PP	*	*	ok	ok	ok	*	*
su-PP	ok	*	ok	ok	*	ok	*
su(loc)-PP	*	*	*	*	*	*	ok

Table 2. Updated mismatches in Italian PG constructions

5. Conclusion. In In the present article, we presented novel data from Italian that enriches the longstanding debate on the possible unification of ATB and PG constructions. First, we have shown that PP PGs are indeed possible in Italian, which is counterevidence for the pronominal analysis proposed by Cinque (1990), but speaks in favor of a unification account of PGs and ATB movement (Haïk 1985; Williams 1990). Second, we have shown that a wide range of P-mismatches between the two gaps are allowed in certain PG constructions (section 2), while they are altogether impossible with ATB. This bulk of evidence, discussed in section 2, seems prima facie evidence *against* a unification account of PGs and ATB, but we have turned the argument around and shown that it actually further strengthens the case for unification. As shown in section 4, P-mismatches are only possible with certain types of reciprocal verbs of the *argue* type. These predicates are special in that have an underlying unaccusative structure (van Cranenbroeck & Johnson 2023b) and their preposition, e.g., *con* 'with', does not get overtly realized in certain argument structure alternations. Finally, we reconcile the derivation of PGs with ATB movement by adopting Hicks's (2009) smuggling analysis of *tough* constructions. A null operator smuggles the "parasitic" extractee, which is underspecified for case, to the edge of the adjunct clause, from which it can then undergo ATB movement under identity with the main clause extractee. Combining these analytical ingredients with an analysis of "disappearing" prepositions, we were able to provide an explanatory account of the range of possible P-mismatches in PG configurations, as well as further support the claim that PGs can, in fact, be reduced to ATB (Haïk 1985; Williams 1990). A few questions still remain unanswered, including ones about the nature of cross-linguistic variation in allowing case or P-mismatches in PG constructions. In section 3, we hinted that the feature responsible for smuggling might not be universal: some languages simply lack it, whereas in others, e.g., Polish and Italian, it is only present in specific environments, like PG constructions but not ATB. It is not yet clear, however, what is responsible for this variation both across and within languages and whether it stems from other language-specific properties. We hope future research will investigate the matter further.

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that suggest that the P and the nominal come to form a constituent derivationally, by raising to the P's complement position. If Postal is correct, and a similar analysis generalizes to Italian, the PG facts may follow from an analysis where the DP PG is parallel merged into a DP-argument position, which would in turn open up an analysis in terms of what we proposed above.

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