Expanding the taxonomy of parenthetical *as*-clauses

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Abstract

Potts (2002a,b) argues that the gap of a parenthetical *as*-clause is invariably of the same semantic type (proposition or property) as the constituent that the *as*-clause adjoins to. I claim that this generalization is overly restrictive, drawing evidence from a case study on conjunction-internal *as*-clauses (i.e., *as*-clauses that premodify the second conjunct of a DP conjunction). It can be shown that, in these cases, the gap necessarily corresponds to a proposition or a property, but the host of adjunction is an individual. Thus, rather than type identity between the gap and the host of adjunction, a successful derivation only requires that the *as*-clause contain a variable over objects of the same type as the host. This, in turn, requires gaps to be modelled as discourse anaphors with an articulate enough semantics that proper subparts of their meaning can be abstracted over.

1 Introduction

Potts (2002a,b) divides parenthetical *as*-clauses into the CP-*as* type (1a) and the Predicate-*as* type (1b). These terms indicate whether the gap inside the *as*-clause is, respectively, clause-sized (notated [$_{CP}$__]) or predicate-sized (notated [$_{Pred}$__]).

(1) a. Ames was a spy, [(just) as the FBI suspected [$_{CP}$__]].
As-clause = the FBI suspected that Ames was a spy.

b. Ames stole important documents, [(just) as the FBI suspected he had [$_{Pred}$__]].
As-clause = the FBI suspected that Ames had stolen important documents.

One of the notable features of Potts's analysis is the requirement that the constituent that the *as*-clause adjoins to (the *host*) be of the same semantic type as the gap. This much can be inferred from (2), which effectively restricts the set of licit hosts to those with the kind of meaning that would fit into the gap —i.e., , CP gaps invariable take a propositional host, and Predicate gaps a property host.

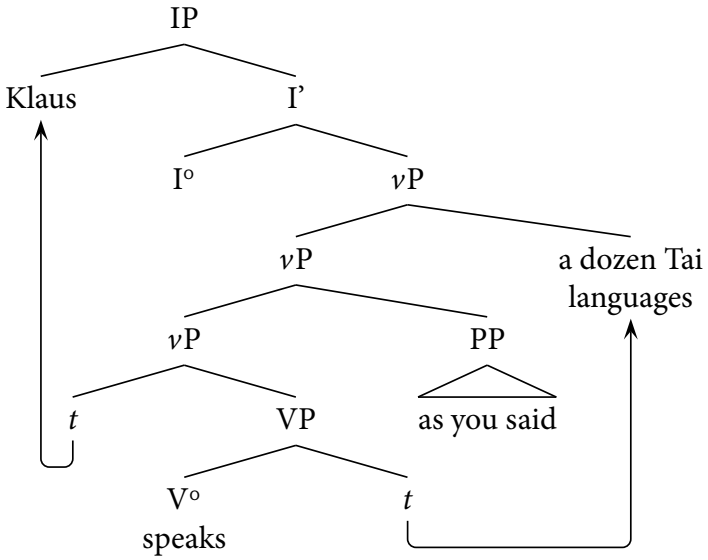
(2) *As*-clauses adjoin directly to the linguistic material from which they obtain their meaning. [Potts 2002b:640]

Given that gaps (in English) may only correspond to propositions and properties (see §3.6 below), it follows that *as*-clauses may not adjoin to constituents of any other type. Potts (2002b:645–647) accepts this prediction as correct, and claims that apparent counterexamples like (3) actually

involve adjunction to a propositional host (namely, *v*P, on the assumption that the predicate-internal trace of the subject suffices to make *v*P a propositional object) plus Heavy NP Shift of *a dozen Tai languages* across the *as*-clause (4). I will return briefly to these examples, and Potts's treatment thereof, in §7.

(3) Klaus speaks, [as you said [$_{CP}$__]], a dozen Tai languages.

(4)



The goal of this article is to argue that the type-identity requirement implicit in (2) is overly restrictive. Specifically, I show that there exist *as*-clauses with CP and Predicate gaps that, contrary to what this requirement predicts, are able to take individual-type hosts. The test case I concentrate on is the class of *as*-clauses that premodify the second conjunct of a DP conjunction, for which I will use the rather unimaginative label *conjunction-internal 'as'-clauses* (in contrast, the type of *as*-clauses that Potts discusses will be *regular 'as'-clauses*). The examples in (5) below illustrate this particular construction. Note that the *as*-clause appears embedded in a coordinate structure because this configuration constitutes a relatively simple way of ensuring that the *as*-clause is adjoining directly to an individual-type constituent, rather than to a larger constituent that properly contains the individual in question (see §4). Other than this, the presence of a coordinate structure is not, in and of itself, a relevant factor in the taxonomy I propose; in fact, as we will briefly see in §6.3.3, relevant examples can be constructed in non-coordinate environments.

(5) a. Ames and, [as the FBI suspected [$_{CP}$__]], Hanssen were spies.
As-clause = the FBI suspected that Hanssen was a spy.

b. Ames and, [as the FBI suspected he had [$_{Pred}$__]], Hanssen stole the documents.
As-clause = the FBI suspected that Hanssen had stolen important documents.

The analysis of (5a) and (5b) that I develop in this article leads us to the partially filled taxonomy in Table 1. The argumentation is based on the confluence of two independent properties of conjunction-internal *as*-clauses. First, in §2 I show that they exhibit the same behavior as regular *as*-clauses with respect to several tests, which suggests that they should be subsumed under the same general analysis; specifically, the most important tests are arguably those showing that, in both types of *as*-clauses, gaps necessarily denote propositions or properties, rather than individuals (§3.6). Second, §4 shows that the coordinate structures in question are DP conjunctions,

		host			
		$\langle st \rangle$	$\langle s\langle et \rangle\rangle$	$\langle e \rangle$	other
gap	$\langle st \rangle$	Potts (2002b)		this paper	
	$\langle s\langle et \rangle\rangle$		Potts (2002b)	this paper	
	other				

Table 1: A partial taxonomy of parenthetical *as*-clauses

rather than clausal conjunctions supplemented with some process of conjunction reduction (ellipsis, Right Node Raising, or some such); from this, it follows that the host is an individual-denoting DP. These two properties taken together entail that gap-host type mismatches must be allowed. To this end, I argue (§6) that gaps should be treated as discourse anaphors with an articulate internal semantics; this makes it possible to abstract over proper subparts of their meaning, which in turn enables composition with an individual-type host.

There are two issues that I will not explore in this paper. The first one is whether the blank cells in Table 1 are actually instantiated, either in English or in some other language. I will only note that there are indications that favor at least a partially affirmative answer. For example, we will see in §6.3.2 that generalized quantifiers are possible hosts of adjunction for conjunction-internal *as*-clauses; unless it turns out it is feasible to make liberal use of type-lowering functions in these cases, such examples suggest that $\langle s\langle\langle et\rangle t\rangle\rangle$ ought to be added as a fourth column in Table 1. Second, crosslinguistically-minded readers should bear in mind that the full taxonomy need not be instantiated in every language. For example, LaCara (2013) notes that Predicate gaps are crosslinguistically less common than CP gaps, and speculates that Predicate gaps are supported only in languages that allow some form of Predicate Ellipsis outside *as*-clauses. One particularly elegant example of this correlation is Dutch, which in the general case allows deletion of the complements of root modals, but not of epistemic modals or *have* and *be* auxiliaries (Aelbrecht 2010). As (6) shows, this asymmetry also holds inside *as*-clauses (Lobke Aelbrecht, p.c.).

(6) a. Jessica gaat werken morgen, [zoals ze zei dat ze moest [$_{Pred}$__]].
Jessica goes work tomorrow as she said that she must
[✓ root / ∗ epistemic]

b. * Jessica is vandaag inderdaad gaan werken [zoals ze zei dat ze was [$_{Pred}$__]].
Jessica is today indeed gone work as she said that she was

Due to this variability, it is conceivable that some languages will have gaps of some type other than $\langle st \rangle$ or $\langle s\langle et \rangle\rangle$; if attested, these languages would fill up the bottom row of Table 1. I leave a systematic exploration of these issues to future work.

2 Background on parenthetical *as*-clauses

Potts's (2002b) analysis highlights two properties of *as*-clauses. First, he points out that there are locality effects internal to the *as*-clause —i.e., the gap may not be contained inside an island. I illustrate this restriction below with relative clause islands, but see Potts (2002b:629–634) for additional examples with other types of islands. The (b) examples, where the gap is contained in the complement of a bridge verb, serve as a control to demonstrate that, in principle, *as*-clauses allow clausal embedding.

(7) *CP-as: relative clause island vs. no island*
   a. * Durians are delicious, [as Nina spoke with a grocer who claimed [$_{CP}$__]].
   b. Durians are delicions, [as Nina said that the grocer claimed [$_{CP}$__]].

(8) *Predicate-as: relative clause island vs. no island*
   a. * Nina quickly bought two durians, [(exactly) as Edna met a chef who did [$_{Pred}$__]].
   b. Nina quickly bought two durians, [(exactly) as Edna says that the chef did [$_{Pred}$__]].

Second, there is a syntactic sisterhood restriction, whereby the meaning of the host is passed down to the gap.[1] Consider (9) as an illustration: given that the *as*-clause adjoins to the main clause rather than to the subject clause, the gap necessarily tracks the meaning of the entire main clause. The same reasoning holds for (10).

(9) That space has four dimensions is widely known, [as they announced [$_{CP}$__]].
   a. *As*-clause = they announced it is widely known that space has four dimensions.
   b. *As*-clause ≠ they announced that space has four dimensions.

(10) The fact that Sue read the map carefully probably means that she stayed on the trails, [as did Chuck [$_{Pred}$__]].
   a. *As* clause = Chuck stayed on the trails.
   b. *As* clause ≠ Chuck read the map carefully.

Compare (9) and (10) with similar examples featuring *it*/*that* anaphora and VP Ellipsis (notated [$_{VPE}$__]). No sisterhood effects obtain here, which Potts takes as an indication that the gap of an *as*-clause cannot be modelled as simple VP Ellipsis or discourse anaphora (though see LaCara 2013 and §3.7 below for discussion of this claim).

(11) That space has four dimensions is widely known. They announced it/that yesterday.
   a. *it*/*that* = they announced that it is widely known that space has four dimensions.
   b. *it*/*that* = they announced that space has four dimensions.

(12) The fact that Sue read the map carefully probably means that she stayed on the trails. But we aren't sure whether Chuck did [$_{VPE}$__].
   a. [$_{VPE}$__] = Chuck stayed on the trails.
   b. [$_{VPE}$__] = Chuck read the map carefully.

Potts accounts for the island sensitivity effects by positing that *as*-clauses contain a null operator (notated ∅ in the representations below) that undergoes A-bar movement from the gap position to the highest SpecCP within the *as*-clause. This movement is supplemented with an application of Predicate Abstraction (PA) at the CP level that creates a variable over either propositions or

[1] Potts (2002b:658–659) explicitly argues that morphosyntax is irrelevant, so long as the host of adjunction has the appropriate semantics. In support of this claim, he cites examples like the following, where the meaning of the gap can be supplied by a proposition-denoting constituent (italicized) that cannot actually appear in the gap position.

(i) This difference between A-binding and variable binding stands in the way of any attempt *to fully generalize A-binding across A'-binding*, [as [$_{CP}$__] is proposed in Aoun's (1985) theory of generalized binding].

(ii) * *To fully generalize A-binding across A'-binding* is proposed in Aoun's (1985) theory of generalized binding.

properties, in the same way as PA creates variables over individuals in relative clauses or variables over degrees in comparatives. With this much in place, *as* is given the lexical entries in (13) below, which derive the sisterhood restriction by requiring that the meaning of the variable be supplied by the host of adjunction of the *as*-clause. As Potts (2002b:654) explains, the notation '$\lambda X \lambda x : X(x)$ is true …' indicates that "the function is *partial* —defined only for those cases in which $X(x)$ expresses a true proposition".

(13) a. $\text{as}_{CP} = \lambda P \in D_{\langle\langle st\rangle t\rangle}[\lambda p \in D_{\langle st\rangle} : P(p) \text{ is true } [p]]$
b. $\text{as}_{Pred} = \lambda F \in D_{\langle\langle s\langle et\rangle\rangle t\rangle}[\lambda f \in D_{\langle s\langle et\rangle\rangle} : F(f) \text{ is true } [f]]$

Note the common pattern behind these two entries: *as* invariably takes as its first argument a constituent containing a variable over some type σ, and as its second argument a constituent that is itself of type σ. This makes it possible to subsubme both entries under (14) below. In other words, parenthetical *as* is a polysemous morpheme, but its range of variation is restricted in a very specific way.

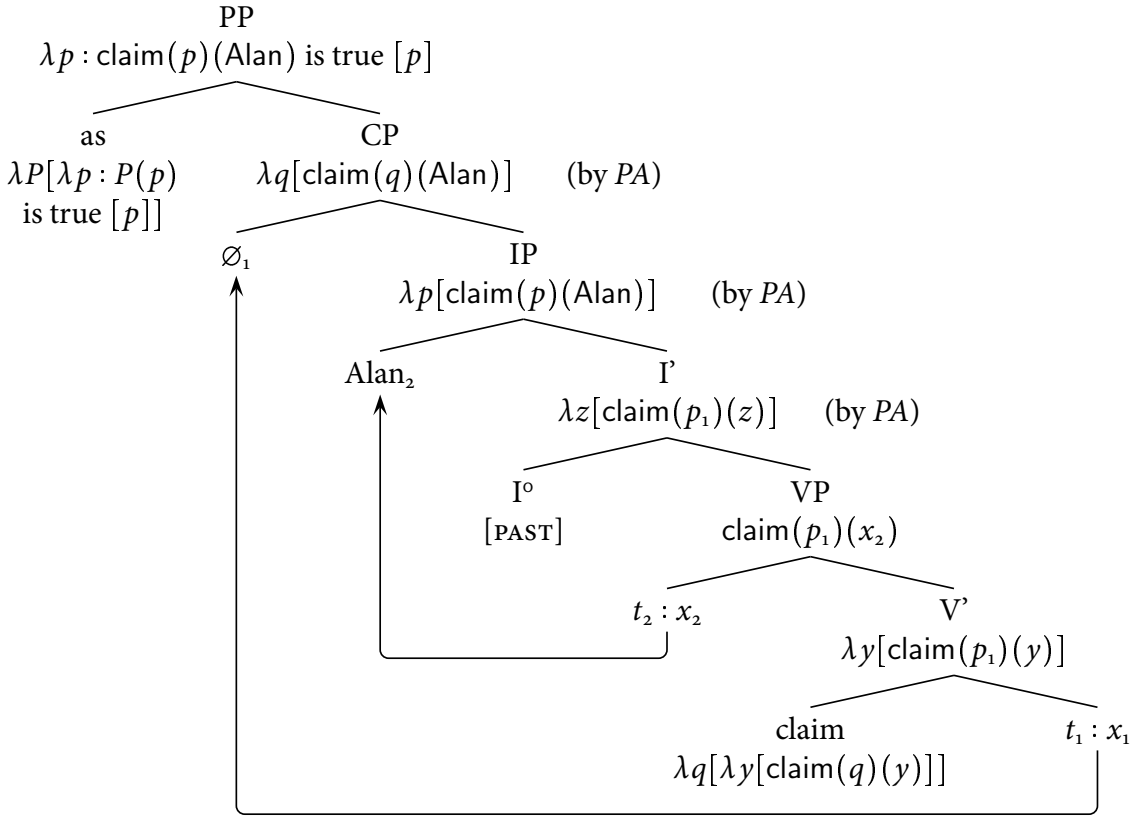
(14) For any $\sigma \in \{\langle st\rangle, \langle s\langle et\rangle\rangle\}$, $\text{as} = \lambda X \in D_{\langle\sigma t\rangle}[\lambda x \in D_{\langle\sigma\rangle} : X(x) \text{ is true } [x]]$

As an illustration of this analysis, consider the derivation of the following example (Potts 2002b:654ff).

(15) Cryptography is a blast, [as Alan claimed [$_{CP}$__]].

The following is the internal syntax and semantics of the *as*-clause, accompanied with Potts's commentary on this part of the derivation. Here I am following Potts (2002b:637–640) in treating *as* is a preposition that selects a CP. Importantly, note that the goal of the uppermost application of PA is exclusively to enable CP to act as the first argument of *as*, and as such is independent of the PA step that handles movement of ∅. This dissociation will be central to the analysis of conjunction-internal *as*-clauses in §6.1.

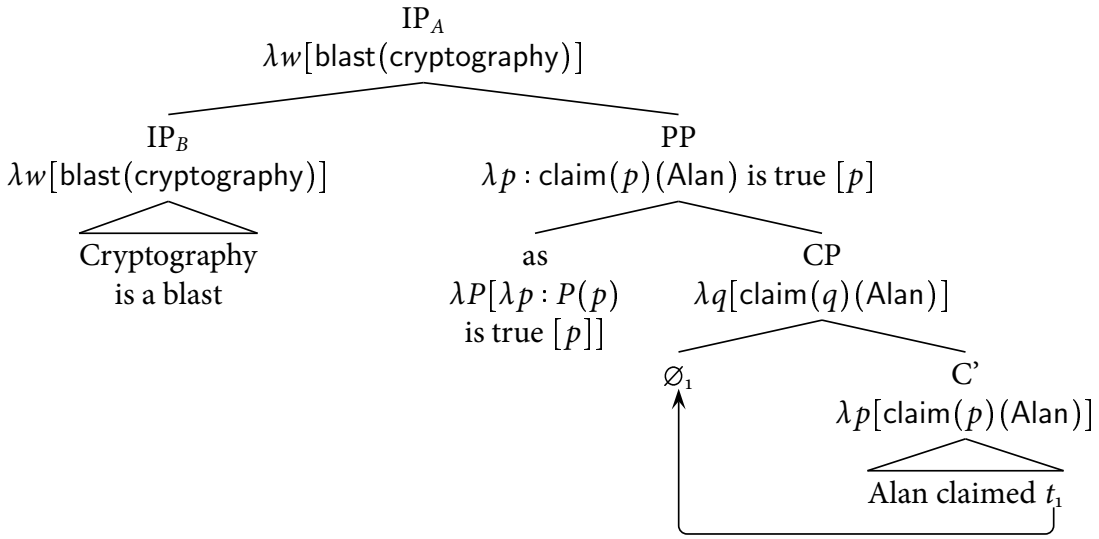
(16)



> "As it stands, CP-*as* clauses denote in $\langle\langle st\rangle,\langle st\rangle\rangle$. Correspondingly, Predicate-*as* clauses denote in $\langle\langle s\langle et\rangle\rangle,\langle s\langle et\rangle\rangle\rangle$. They are, then, partial identity functions on propositions (for CP-*as*) or properties (for Predicate-*as*). This captures formally the dependence of *as*-clauses identified earlier as the syntactic sisterhood restriction: these clauses have an open argument slot; alone, they cannot express a proposition. In the usual situation, then, they must adjoin to an appropriately typed phrase."
> [Potts 2002b:655]

The following tree illustrates the final stage in the derivation, where the *as*-clause adjoins to the host constituent *Cryptography is a blast*. As above, I supplement the tree with Potts's commentary on this part of the derivation.

(17)



> "IP$_A$ asserts only the proposition $[\lambda w[\text{blast}_w(\text{cryptography})]]$. But the conventional implicature associated with *as* means that the calculation cannot proceed to the IP$_A$ unless the *as*-PP applies to a proposition p such that Alan in fact claimed that p. Thus, an *as*-clause-containing CP entails both the content of the declarative and the content of the *as*-clause, but only the former is a proper (strictly truth-functional) entailment. In effect, the *as*-clause is a filter: it applies to a proposition, checks that the result expresses a truth, and then passes the proposition on unmodified."
> [Potts 2002b:657]

3 Parallelisms between regular and conjunction-internal *as*-clauses

3.1 Island sensitivity

In the same way as regular *as*-clauses, the gap of a conjunction-internal *as*-clause may not be contained inside an island. I illustrate this effect with relative clause and adjunct islands. In the same way as in the previous section, the (b) examples provide a control enviroment without island boundaries, in order to show that the ungrammaticality of the (a) examples is in fact due to an island violation.

(18) a. * Durians and, [exactly as Nina spoke with a grocer who claimed [$_{CP}$__]], papayas are delicious.

b. Durians and, [exactly as Nina said that the grocer claimed [$_{CP}$__]], papayas are delicious.

(19) a. * Jim Durrow and, [just as they smiled politely when Edna reported [$_{Pred}$__]], Peter Griffin are blackjack aces.

b. Jim Durrow and, [just as they said that Edna reported [$_{Pred}$__]], Peter Griffin are blackjack aces.

As Potts (2002b) does, I take this effect as an indication that conjunction-internal *as*-clauses feature an A-bar movement chain from the gap position to the highest SpecCP within the *as*-clause.

3.2 Sisterhood restriction

Conjunction-internal *as*-clauses also exhibit a sisterhood restriction, in the sense that the meaning of the host (i.e., the second conjunct) is passed down to the gap. Consider the *as*-clause in (20), which only entails that the FBI is suspicious of Hanssen, rather than Ames or the group formed by Ames and Hanssen. Compare this reading to the one available in (21) under *it*/*that* anaphora.

(20) Ames and, [as the FBI suspected [$_{CP}$__]], Hanssen were spies.

a. *As* clause = the FBI suspected that Hanssen was a spy.

b. *As* clause ≠ the FBI suspected that Ames was a spy.

c. *As* clause ≠ the FBI suspected that Ames and Hanssen were spies.

(21) Ames and Hanssen were spies. The FBI suspected it/that.

a. *As* clause ≠ the FBI suspected that Hanssen was a spy.

b. *As* clause ≠ the FBI suspected that Ames was a spy.

c. *As* clause = the FBI suspected that Ames and Hanssen were spies.

The same restriction obtains with the Predicate-*as* type. The only available reading of (22) is the one where Hanssen was the FBI's only suspect. In contrast, a comparable example with VP ellipsis has a wider range of readings (note that the ambiguity of (23) depends on whether the subject pronoun is interpreted as anaphoric to *Ames* or *Hanssen*).

(22) Ames and, [as the FBI suspected he had [$_{Pred}$__]], Hanssen stole important documents.

a. *As* clause = the FBI suspected that Hanssen had stolen important documents.

b. *As* clause ≠ the FBI suspected that Ames had stolen important documents.

c. *As* clause ≠ the FBI suspected that Ames and Hanssen had stolen important documents.

(23) Ames and Hanssen stole important documents. The FBI suspected he had [$_{VPE}$__].

a. *As* clause = the FBI suspected that Hanssen had stolen important documents.

b. *As* clause = the FBI suspected that Ames had stolen important documents.

c. *As* clause ≠ the FBI suspected that Ames and Hanssen had stolen important documents.

3.3 Opacity

Potts (2002b:663ff) observes that pronouns contained in the *as*-clause cannot be bound by quantifiers external to the *as*-clause. He explains this effect as a consequence of the fact that the semantics of the *as*-clause doesn't contribute to the truth conditions of the host clause. Therefore, a pronoun inside the *as*-clause must either find a binder inside the *as*-clause itself or get a value from the assignment function.

(24) a. * No$_i$ hiker was, [as she$_i$ admitted [$_{CP}$__]], prepared for the freezing temperatures.
b. * Every$_i$ student has, [as he$_i$ promised he$_i$ would [$_{Pred}$__]], turned in a paper on serial verbs.

Conjunction-internal *as*-clauses exhibit the same opacity effect. If these *as*-clauses can be assigned the same analysis as their regular counterparts, then Potts's explanation of the opacity effect carries over directly.[2]

(25) a. * No$_i$ hiker and, [as she$_i$ admitted [$_{CP}$__]], no rescue worker were prepared for the freezing temperatures.
b. * Every$_i$ grad student and, [as he$_i$ knew that they also would [$_{Pred}$__]], every postdoc protested Greg's tenure denial.

3.4 Truth value independence

Potts's semantics treats *as*-clauses as separate propositions, with their own truth value independent of the truth value of the host clause (see specifically Potts 2005 for details of this version of multidimensional semantics). This is meant to cover the fact that it is possible to deny the *as*-clause to the exclusion of the host clause, and vice versa.

(26) A: Ames was a spy, [as the FBI suspected [$_{CP}$__]].
B: It's true that Ames was a spy, but the FBI never actually suspected he was one.
B': Even though Ames wasn't actually a spy, it's true that the FBI suspected he was one.

(27) A: Ames stole important documents, [as the FBI said he had [$_{Pred}$__]].
B: It's true that Ames stole important documents, but the FBI never actually said he had done that.
B: Even though Ames never actually stole important documents, it's true that the FBI said he had.

Similarly, suppose that Edna filed her taxes on April 24. We know that the Internal Revenue Service establishes April 15 as the deadline to file taxes, so the *as*-clause in (28a) expresses a falsity. However, because its truth-value is independent from the truth-value of the host clause, we can

[2] One could argue against this conclusion by assuming that the underlying syntax of (25a) involves clausal conjunction, with some form of conjunction reduction being responsible for the observed surface string (i.e., *No$_i$ hiker was prepared for the freezing temperatures and [as she$_i$ admitted [$_{CP}$__]], no rescue worker was prepared for the freezing temperatures*). If so, then the opacity effect is an illusion stemming from the fact that the *as*-clause is not in the c-command domain of the quantifier. See, however, §4 (and especially subsection 4.6) for evidence that this line of analysis is untenable. In a similar vein, Dennis Ott (p.c.) points out that both opacity effects and truth-conditional independence effects (see §3.4 below) follow from an analysis in which the *as*-clause is interwoven with the host clause, but not syntactically integrated into it, *pace* Haegeman (1991), Haider (2005), and others. Although this approach might be applicable to other kinds of parentheticals, I will not pursue it in this paper: after Potts (2002b), I take sisterhood effects (§3.2) as an indication that *as*-clauses are syntactically integrated into their hosts.

still recover the true proposition that Edna filed her taxes after April 15. The same reasoning holds for (28b)

(28) a. Edna filed her taxes after April 15, [as the IRS requires [$_{CP}$__]].
b. Edna filed her taxes after April 15, [as the IRS requires taxpayers to [$_{Pred}$__]].

Conjunction-internal *as*-clauses exhibit the same range of effects. First, the truth of the *as*-clause can be denied without affecting the truth of the host clause, and vice versa.

(29) A: Ames and, [as the FBI suspected [$_{CP}$__]], Hanssen were spies.
B: It's true that Ames and Hanssen were spies, but the FBI never suspected Hanssen was one.
B': Even though it's true that the FBI suspected that Hanssen was a spy, in reality neither he nor Ames were spies.

(30) A: Ames and, [as the FBI said he had [$_{Pred}$__]], Hanssen stole important documents.
B: It's true that Ames and Hanssen stole important documents, but the FBI never said that Hanssen had done so.
B': Even though it's true that the FBI said that Hanssen had stolen important documents, in reality neither he nor Ames actually did so.

Similarly, Federal Law does not require defendants to be accompanied by a state-appointed lawyer during their trials, so the *as*-clause in (31) expresses a falsity —yet, this falsity doesn't prevent us from recovering the true proposition that Harvey was accompanied by (apart from his wife) a state-appointed lawyer.

(31) a. His wife and, [as Federal Law requires [$_{CP}$__]], his state-appointed lawyer accompanied Harvey into the courtroom.
b. His wife and, [as Federal Law says he must [$_{Pred}$__]], his state-appointed lawyer accompanied Harvey into the courtroom.

3.5 Status as conventional implicatures

Even though *as*-clauses have their own truth value, they are not asserted, and as such they are not felicitous answers to salient QuDs. This holds for both regular (32) and conjunction-internal *as*-clauses (33).

(32) A : What did the FBI suspect?
B : # Ames was a spy, [as the FBI suspected [$_{CP}$__]].
B': # Ames stole important documents, [as the FBI suspected he had [$_{Pred}$__]].

(33) A : What did the FBI suspect?
B : # Ames and, [as the FBI suspected [$_{CP}$__]], Hanssen were spies.
B': # Ames and, [as the FBI suspected he had [$_{Pred}$__]], Hanssen stole important documents.

In Potts (2002b), this property of regular *as*-clauses is a reflection of the status of *as*-clauses as conventional implicatures (see also Potts 2005): although they are assertions (in the sense that they create their own entailments), their content is not at-issue, and as such it may not be used to resolve a QUD. The fact that conjunction-internal *as*-clauses exhibit the same restriction is an indication that they should also be treated as conventional implicatures.

3.6 Category of the gap

3.6.1 CP gaps

Potts (2002a) presents convincing evidence that CP gaps must necessarily be modelled as being of a propositional type (category CP, type $\langle st \rangle$) rather than an individual type (category DP, type $\langle e \rangle$). His argument is based on a number of asymmetries between regular *as*-clauses and appositive *which*-clauses (34), which follow if the gap is of category CP in the former but of category DP in the latter (here I follow Potts in treating *which* as the lexicalization of an $\langle e \rangle$-type operator).

(34) Americans should get cheap oil, [which the whole world knows t].

First, Potts points out that extraction of *which* out of strong islands causes only a mild deviance, just as is the case with extraction of other $\langle e \rangle$-type operators (cf. Cresti 2002). Compare this judgment with the strong ungrammaticality of comparable regular *as*-clauses, already discussed in §3.1 above.

(35) a. ? Aldrich was a spy, [which the investigator balked before admitting (that he knew) [$_{DP}$ __]].
b. * Aldrich was a spy, [as the investigator balked before admitting (that he knew) [$_{CP}$ __]].

(36) a. ? Aldrich was a spy, [which the investigator asked whether the press knew [$_{DP}$ __]].
b. * Aldrich was a spy, [as the investigator asked whether the press knew [$_{DP}$ __]].

As already discussed above, conjunction-internal *as*-clauses whose gap is embedded in an island exhibit a deviance comparable to that of (35b) and (36b), which suggests that the gap is not of type $\langle e \rangle$.

(37) a. * Ames and, [as the investigator balked before admitting (that he knew) [$_{CP}$ __]], Hanssen were spies.
b. * Ames and, [as the investigator asked whether the press knew [$_{CP}$ __]], Hanssen were spies.

Second, the gap in an appositive *which*-clauses can appear in exclusively nominal positions, such as the complement of *be (well) aware of* (39a). Note that both preposition stranding and pied-piping are possible, as one would expect from movement of a nominal constituent. The reverse pattern obtains in regular *as*-clauses (39b), which require their gaps to be in propositional positions (Stowell 1987, Postal 1994). As (40) shows, conjunction-internal *as*-clauses pattern together with their regular counterparts in not allowing gaps to appear in exclusively nominal positions.

(38) a. We are well aware of [$_{DP}$ the roundness of the Earth].
b. * We are well aware of [$_{CP}$ (that) the Earth is round].

(39) a. The Earth is round, [which we are well aware of [$_{DP}$ __]].
b. * The Earth is round, [as we are well aware of [$_{CP}$ __]].

(40) * The Earth and, [as we are well aware of [$_{CP}$ __]], the Moon are round.

The inverse situation obtains with verbs like *boast* and *comment*, which allow propositional complements, but not nominal complements (cf. Postal 1994:72). Once more, conjunction-internal *as*-clauses pattern together with their regular counterparts.[3]

(41) a. * Alfred {boasted/commented} [$_{DP}$ the greatness of the results].
b. Alfred {boasted/commented} [$_{CP}$ that the results were great].

(42) a. * The results were great, [which Alfred {boasted/commented} [$_{DP}$ __]].
b. The results were great, [as Alfred {boasted/commented} [$_{CP}$ __]].

(43) The results and, [as Alfred {boasted/commented} [$_{CP}$ __]], the prospects were great.

3.6.2 Predicate gaps

Potts doesn't investigate the exact category of Predicate gaps, but this issue can be approached through the same line of reasoning as above. First, as already shown in examples (8a) and (19a) above, Predicate gaps are strongly sensitive to island boundaries. This judgment would be surprising if an $\langle e \rangle$-type operator underlied Predicate gaps, as extraction of these operators out of islands only causes a mild deviance. Second, Predicate gaps appear invariably in a set of positions where only verbal predicates are licit, *viz.*, the complement positions of modals, auxiliaries, and infinitival *to* (44). As (45) shows, this position is illicit for DPs,[4] as well as for the gaps of appositive *which*-clauses, which are of category DP (see above). This asymmetry suggests that Predicate gaps are invariable of the same category as verbal predicates.

(44) a. Edna {should / is going to} [$_{Pred}$ buy some durians].
b. Edna has [$_{Pred}$ bought some durians].
c. Edna bought some durians, [(just) as Harvey {should / is going to / has} [$_{Pred}$ __]]

(45) a. * Edna {should / is going to / has} [$_{DP}$ some durians].
b. * Edna bought some durians, [which Harvey {should / is going to / has} [$_{DP}$ __]].

Finally, §3.7 below reviews evidence to the effect that Predicate gaps have the internal syntax of a regular verbal predicate. In conclusion, an analysis where Predicate gaps are categorially DPs is untenable; rather, they should be analyzed as belonging to a category in the extended VP.

[3] Potts (2002a:65) provides an additional argument based on Postal's (1998) claim that *tell*, in the sense of 'determine', rejects weak definite pronouns in its object position (i). If so, the contrast between (ii) and (iii) follows from the assumption that the gap in *which*-clauses, but not in *as*-clauses, qualifies as a weak definite pronoun.

(i) We could tell {*it/that/that Ames was a spy} just by looking in his martini glass.
(ii) * Ames was a spy, [which we could tell [$_{DP}$ __] just by looking in his martini glass].
(iii) Ames was a spy, [as we could tell [$_{CP}$ __] just by looking in his martini glass].

This argument is problematic, though, given that it is unclear to what extent the contrast in (i) holds. Levine (2001:148–149), in his review of Postal (1998), already provides a number of counterexamples; Potts (2002a) himself, in his footnote 9, writes that "the validity of this implication is perhaps in doubt", and provides attested examples (iv) and (v) as suggestive that "some speakers do not deem this site antipronominal".

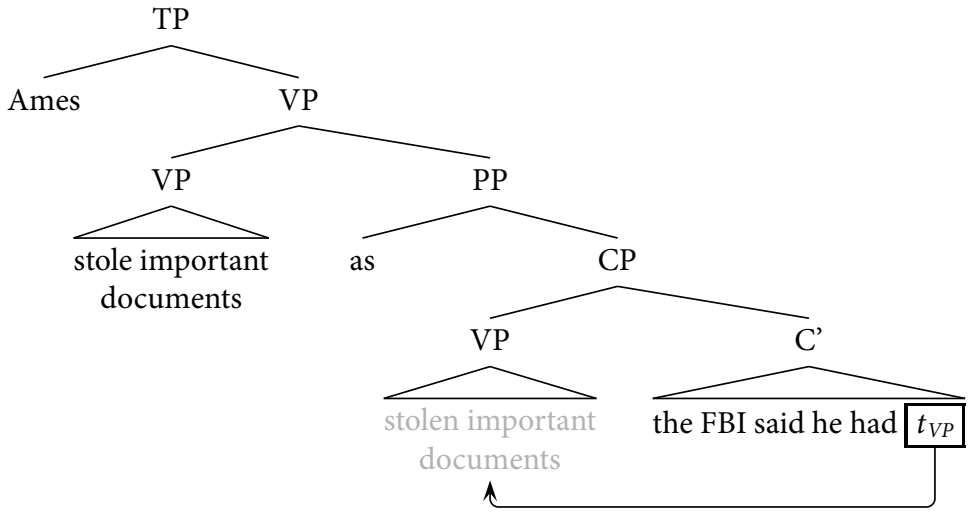
(iv) How far away this goes I can't tell. [from the essay "Accommodations" by Richard Ford]
(v) First editions of today and how to tell them. [title of a book by H.S. Boutell]

[4] The strings in (45a) are acceptable as instances of pseudogapping (e.g., *Harvey has bought some papayas, and Edna should [__] some durians*), and *have* has an additional licit parse as a main verb. Obviously, these parses are irrelevant for the argument I am making here.

3.7 Internal syntax of the gap

Potts (2002b:624ff) assumes that all *as*-clause gaps, irrespective of whether they are CP-sized or Predicate-sized, correspond to a null, flexibly-typed operator (alternatively, one could postulate two separate null operators, $\varnothing_{CP}$ and $\varnothing_{Pred}$, each with a slightly different semantics; the difference between these two options is not important for the purposes of this article). However, LaCara (2013) argues that this is not entirely correct. Specifically, he points out a number of asymmetries that suggest that CP gaps are deep anaphors, whereas Predicate gaps are surface anaphors.[5] Consequently, while Potts's null operator analysis can be maintained for CP gaps, Predicate gaps must be reanalyzed as A-bar movement of an elliptical VP.[6]

(46) *LaCara's (2013) analysis of Predicate-*as *clauses*



LaCara's claim rests on the results of the various tests that Hankamer and Sag (1976) develop to distinguish deep from surface anaphors. Consider, to begin with, the fact that surface anaphors require a linguistic antecedent, whereas deep anaphors do not. Hankamer and Sag (1976:392) illustrate this asymmetry with the following minimal pair, involving VP ellipsis (surface anaphor)

[5] In this article I am going to take this asymmetry as a given, without bothering about why it exists. LaCara simply speculates that "the kinds of anaphora available to the derivation of *as*-clause are somehow derived from or related to the kinds of anaphora available outside of *as*-clauses. Since there does not appear to be any process that deletes CPs, the grammar must use a deep anaphor like NCA to derive *as*-clauses".

[6] One of Potts's (2002b) reasons to dismiss an ellipsis analysis for Predicate gaps on is that it would require ellipsis to be obligatory (i), contrary to what is the case for other instances of VP ellipsis. In contrast, a null operator analysis directly captures the obligatoriness of the gap.

(i) a. Ames stole important documents, [as the FBI said he had [$_{Pred}$___]].
b. * Ames stole important documents, [as the FBI said he had stolen important documents].

LaCara (2013), however, notes that comparative deletion can also obligatory in certain cases (ii) —see Lechner (2004) for evidence that (iia) is an actual case of VP Ellipsis. This is relevant because obligatory VP ellipsis in comparatives is tied to A-bar movement of VP, just as is the case in *as*-clauses. On the basis of this parallelism, LaCara speculates that there is a connection between operator-like movement of VPs and obligatory VP deletion, the former causing the latter. See his work for more details.

(ii) a. Ed built more canoes than his wife did [$_{VPE}$___].
b. * Ed built more canoes than his wife built canoes.

and *do it* anaphora (deep anaphor). The examples in (48) show that Null Complement Anaphora (NCA), also a case of deep anaphora, doesn't require a linguistic antecedent either.

(47) *Context: Hankamer attempts to stuff a 9-inch ball through a 6-inch hoop.*
Sag: # It's not clear that you'll be able to [$_{VPE}$ __].
Sag: It's not clear that you'll be able to do it.

(48) a. *Context: an indulgent father feeds his baby a chocolate bar for dinner*
Mother: I don't approve [$_{NCA}$ __].
b. *Context: Two people are disturbed by loud noises in an adjacent room*
One to the other: Don't you think we should complain [$_{NCA}$ __]?

As LaCara points out, the same asymmetry obtains with CP-gaps and Predicate gaps in regular *as*-clauses (49), suggesting that only the former should be modelled as deep anaphors.

(49) *Context: a suspecting wife goes home early and discovers her husband in bed with another woman.*
a. Aha! Just as I thought [$_{CP}$ __]!
b. # Aha! Just as I thought you would [$_{Pred}$ __]!

Example (50), provided by Craig Thiersch (p.c.), shows that conjunction-internal *as*-clauses exhibit the same distinction —i.e., only CP gaps are acceptable in the absence of a salient linguistic antecedent.

(50) *Context: the World Health Organization has recently released a report praising the benefits of Mediterranean cuisines. As we walk into a Lebanese restaurant, I point at all the hummus platters being served and say:*
a. This simple and, [as the WHO claims [$_{CP}$ __]], healthy dip is their specialty!
b. # This simple and, [as the WHO claims (that) it is [$_{Pred}$ __]], healthy dip is their specialty!

Additionally, surface anaphors allow extraction from within the gap, but deep anaphors do not (cf. also Depiante 2000 and van Craenenbroeck 2004). LaCara illustrates this possibility in (51) with A-movement out of a Predicate gap. The parallel examples in (52) show that the same possibility exists in conjunction-internal *as*-clauses.[7]

(51) a. The ship sank, [as I thought it would [$_{Pred}$ __]].
b. The ship was sunk, [as I think the barge also was [$_{Pred}$ __]].
c. Mary seems to be happy, [as she should [$_{Pred}$ __]].

(52) a. The ship and, [as I thought it would [$_{Pred}$ __]], the barge sank.

[7] LaCara further shows that British and Irish dialects, which allow possessive *have* to undergo movement to T and C, also allow head movement out of a VP gap. As an illustration, he provides the following examples from the British National Corpus.

(i) a. The FAA has a similar duty in the USA, [as have equivalent organisations in almost every country throughout the world [$_{Pred}$ __]].
b. He has experience of leadership at all levels, [as has his possible successor Ashley Metcalfe [$_{Pred}$ __]].

I still haven't had the possibility to check whether speakers of the relevant dialects admit this configuration in conjunction-internal *as*-clauses, but the prediction clearly is that they do.

b. The ship and, [as I think it also was [$_{Pred}$ __]], the barge were sunk.
c. Mary and, [as she should [$_{Pred}$ __]], Nancy seem to be happy.

The second part of the argument (i.e., that CP gaps disallow subextraction) is unfortunately untestable in English. The tests in (51) and (52) do not apply here, given that both head movement and A-movement are strictly finite-clause-bound. Tests based on long-distance A-bar movement do not represent an improvement either: examples testing wh- extraction out of the gap are predicted to be invariably ungrammatical, given that the wh- word creates an island for subsequent movement of either ∅ or *v*P. The examples in (53) are modifications of those in Potts (2002b:632); (54) is offered as a control to show that the relevant type of wh- extraction is licit under regular VP ellipsis.

(53) a. * Chuck borrowed this unicycle, [(just) as Edna asked me which one I had [$_{Pred}$ __]].
b. * Chuck borrowed this unicycle, [(just) as Edna asked me which one I thought [$_{CP}$ __]].

(54) Chuck borrowed this unicycle. Then, Edna asked me which one I had [$_{VPE}$ __].

The conclusion we can finish this section with is that, as far as LaCara's test can be applied, his analysis of Predicate gaps as surface anaphors and CP gaps as deep anaphors can be plausibly extended to conjunction-internal *as*-clauses.[8]

3.8 Interim summary

We have seen that conjunction-internal and regular *as*-clauses pattern together in several aspects (see Table 2 for a summary). Crucially, and with the exception only of the data in 3.7, the effects I have discussed above can be directly traced to the analysis that Potts (2002a,b) proposes for the regular cases. Consequently, it is reasonable to assume that the conjunction-internal cases should also receive the same analysis.

4 Genuine DP-level coordination

The goal of this subsection is to provide arguments to the effect that examples containing a conjunction-internal *as*-clause are best analyzed as involving genuine DP-level conjunction, rather than clause-level conjunction that has undergone some process of conjunction reduction (e.g.,

[8] But note that this characterization of CP gaps is based on the assumption that the ability to take non-linguistic antecedents necessarily correlates with an atomic syntax. It is at least questionable whether this is true: specifically, Thompson (2014) mounts an extended argument to the effect that (contrary to the conclusions in Hankamer and Sag 1976), the ability to take a non-linguistic antecedent does not entail an atomic internal syntax. If so, it follows that there exist a class of deep anaphors with an articulate internal structure. Thompson argues that definite descriptions are one member of this class. At present, I do not know whether CP gaps fall into the same class as definite descriptions. The strongest assertion I can make here is that CP gaps cannot be assimilated to NCA (*qua* a specific type of "classical" deep anaphora), given that there are many verbs that support CP gaps but not NCA (i). I will keep on treating CP gaps as classical deep anaphors, as the analysis I propose in §6 will not be negatively affected if CP gaps turn out to have an articulate internal syntax.

(i) A: CNN just announced that Ames was a spy.
B: * Yeah, the FBI suspected [$_{NCA}$ __].

	Regular	Conj-int
Locality effects	✓	✓
Sisterhood effects	✓	✓
Opacity effects	✓	✓
Truth-conditional independence	✓	✓
Status as conventional implicatures	✓	✓
Gaps are never DPs	✓	✓
CP gaps are deep anaphors	✓	✓
VP gaps are surface anaphors	✓	✓

Table 2: Comparison of regular and conjunction-internal *as*-clauses

ellipsis, Right Node Raising, or some other). The argumentation is straightforward: I identify a series of environments where DP-level and clause-level conjunctions behave differently, and then I show that conjunctions containing an *as*-clause invariably pattern together with DP-level conjunctions.

4.1 Distribution

Coordinate structures containing an *as*-clause exhibit the same distribution as regular DP coordinations, which is turn is the same distribution as regular uncoordinated DPs. This includes not only the preverbal subject position, of which several examples have already been given, but also the associate position of expletive *there* (55a), the direct object position (55b), the indirect object position (55c), the subject position of raising predicates (55d), the subject position of passivized predicates (55e), the object position of ECM predicates (55f), the complement position of a preposition (55g), and the possessor position of a genitive DP (55h). The examples in (56) illustrate the same distribution with Predicate gaps. The fact that we observe this particular distribution is very suggestive and fully consistent with the hypothesis that the conjuncts are bare DPs.

(55) a. There is a pigeon and, [as Edna just pointed out [$_{CP}$ __]], a sparrow in the tree.
b. Ames learned to speak Russian and, [as the New York Times reported [$_{CP}$ __]], Chinese.
c. Ames sold the Soviets and, [as some have speculated [$_{CP}$ __]], the Chinese many important documents.
d. Ames and, [as Edna just told me [$_{CP}$ __]], Hanssen are both likely to be KGB double agents.
e. Ames and, [as the New York Times reported [$_{CP}$ __]], Hanssen, have both been accused of being KGB double agents.
f. Edna believes both Ames and, [as Harvey suspected [$_{CP}$ __]], Hanssen to be KGB double agents.
g. The FBI gathered detailed information about both Ames and, [as Edna just confirmed [$_{CP}$ __]], Hanssen.
h. The FBI tapped Ames and, [as the New York Times reported [$_{CP}$ __]], Hanssen's phone line.

(56) a. There is a pigeon and, [as Edna predicte there would be [$_{CP}$ __]], a sparrow in the tree.

b. Ames learned to speak Russian and, [as Edna claimed she also had [$_{CP}$__]], Chinese.
c. Ames sold the Soviets and, [as some predicted he would [$_{CP}$__]], the Chinese many important documents.
d. Ames and, [as Edna thought he could be [$_{CP}$__]], Hanssen are both likely to be KGB double agents.
e. Ames and, [as the New York Times anticipated he would be [$_{CP}$__]], Hanssen, have both been accused of being KGB double agents.
f. Edna believes both Ames and, [as Harvey suspected he could be [$_{CP}$__]], Hanssen to be KGB double agents.
g. The FBI gathered detailed information about both Ames and, [as Edna just confirmed they have [$_{CP}$__]], Hanssen.
h. The FBI tapped Ames and, [as the New York Times reported they have [$_{CP}$__]], Hanssen's phone line.

I appreciate that some of the examples above could in principle be given an alternative parse in terms of clausal conjunction supplemented with Right Node Raising and/or ellipsis. Consider, for example, a potential such derivation for (55a). Note that both Right Node Raising and ellipsis are independently possible in this particular case (58)/(59), which legitimates a derivation along these lines.

(57) a. *Base structure*
There is a pigeon in the tree and, [as Edna just pointed out [$_{CP}$__]], there is a sparrow in the tree.
b. *Right Node Raising of 'in the tree'*
There is a pigeon and, [as Edna just pointed out [$_{CP}$__]], there is a sparrow in the tree.
c. *Ellipsis of 'there are'*
There is a pigeon and, [as Edna just pointed out [$_{CP}$__]], a sparrow in the tree.

(58) *Right Node Raising of 'in the tree' without ellipsis of 'there are'*
There is a pigeon and, [as Edna pointed out [$_{CP}$__]], there is a sparrow in the tree.

(59) *Ellipsis of 'there are' without Right Node Raising of 'in the tree'*
There is a pigeon in the tree and, [as Edna pointed out [$_{CP}$__]], a sparrow on the ground.

However, we will see in the following subsections that this analysis cannot be generalized to all cases of conjunction-internal *as*-clauses. Therefore, it becomes necessary to acknowledge that a non-trivial subset of these class of clauses actually require a DP-coordination analysis.

4.2 Multiple *as*-clauses

The first hurdle that a conjunction reduction alternative has to overcome is the fact that, as (60) illustrates, each separate DP conjunction in a single sentence may have its own conjunction-internal *as*-clause.

(60) Ames and, [as the New York Times reported [$_{CP}$__]], Hanssen learned to speak Russian and, [as Edna always says she should have [$_{Pred}$__]], Chinese.

a. Main clause = Ames and Hanssen learned to speak Russian and Chinese.

b. i. Subject *as*-clause = the New York Times reported that Hanssen learned to speak Russian and Chinese.

ii. Subject *as*-clause ≠ the New York Times reported that Ames and Hanssen learned to speak Russian and Chinese.

c. i. Object *as*-clause = Edna always says that she should have learned to speak Chinese.

ii. Object *as*-clause ≠ Edna always says that she should have learned to speak Russian and Chinese.

In order to maintain an analysis in terms of clausal conjunction, (60) would have to be derived from a base along the lines of (61). Note that the three separate clausal conjunctions in (61) are necessary to ensure that each *as*-clause is scopally independent from the other and from the main clause (cf. the paraphrases of (60).

(61) [$_{CP_1}$ Ames learned to speak Russian and Chinese], and [$_{CP_2}$ [as the New York Times reported [$_{CP}$__]], Hanssen learned to speak Russian and Chinese], and [$_{CP_3}$ [as Edna always says she should have [$_{Pred}$__]], Edna learned to speak Chinese].

One can potentially define a set of ellipsis and/or RNR processes that derive (60) from (61) without overgenerating illicit surface strings. While a solution along these lines might be technically feasible, I hope that readers will appreciate its linguistic implausibility.

4.3 Collective readings

A coordination of two singular DPs is ambiguous between a distributive and a collective reading (62), but the collective reading disappears under clausal coordination (63a), including cases where clausal coordination is combined with VP ellipsis (63b), *do it* or *do so* anaphora (63c) or Right Node Raising (63d).

(62) Alan and Edna have lifted a piano. *[✓ distr./✓ coll.]*

(63) a. Alan has lifted a piano, and Edna has lifted a piano too. *[✓ distr./* coll.]*

b. Alan has lifted a piano, and Edna has too. *[✓ distr./* coll.]*

c. Alan has lifted a piano, and Edna has done {it / so} too. *[✓ distr./* coll.]*

d. Alan has, and Edna also has lifted a piano. *[✓ distr./* coll.]*

If conjunction-internal *as*-clauses involved a reduced clausal coordination, we would expect them to pattern with the examples in (63) in lacking a collective reading. In reality, they pattern with (62) in being ambiguous between the collective and the distributive reading. Note that the ambiguity is independent of whether the gap is CP-sized or Predicate-sized. This suggests that conjunction-internal *as*-clauses involve DP-level coordination in their host clause.

(64) a. Alan and, [as Harvey predicted [$_{CP}$__]], Edna have lifted a piano.
[✓ distr./ ✓ coll.]

b. Alan and, [as Harvey predicted she would [$_{Pred}$__]], Edna have lifted a piano.
[✓ distr./ ✓ coll.]

4.4 Agreement

As already illustrated in (5a) and (5b), repeated below, the second conjunct of the coordinate structure can, in combination with the first conjunct, produce cumulative plural agreement on the verb. Non-cumulative singular agreement is highly degraded. This pattern follows straightforwardly from an analysis where coordination happens at the DP level. On the other hand, a clausal-coordination-plus-conjunction-reduction analysis predicts the opposite pattern: given that the first DP would be properly contained in a clausal conjunct separate from the conjunct the overt verb appears in, it would be unable to combine with the second DP to produce cumulative plural agreement.

(65) a. Ames and, [as the FBI suspected [$_{CP}$ __]], Hanssen were spies.
b. * Ames and, [as the FBI suspected [$_{CP}$ __]], Hanssen was a spy.

(66) a. Ames and, [as the FBI believed he had [$_{CP}$ __]], Hanssen have stolen important documents.
b. * Ames and, [as the FBI believed he had [$_{CP}$ __]], Hanssen has stolen important documents.

Importantly, agreement idiosyncracies in regular DP conjunctions hold also in conjunctions containing an *as*-clause. The triplet below illustrates this effect with a coordinate associate of expletive *there*, with disallows plural agreement (67a). As (67b) and (67c) illustrate, insertion of a conjunction-internal *as*-clause doesn't disrupt this pattern. This makes it difficult to treat plural agreement in (65) and (66) above as default agreement with coordinate structures, as agreement attraction, or as a speech error.

(67) a. There { ✓ is / *? are } a pigeon and a sparrow in the tree.
b. There { ✓ is / *? are } a pigeon and, [(just) as Edna predicted [$_{CP}$ __]], a sparrow in the tree.
c. There { ✓ is / *? are } a pigeon and, [(just) as Edna predicted there would be [$_{Pred}$ __]] a sparrow in the tree.

The same argument can be made with the German long passive, which (for speakers who accept it) triggers cumulative plural agreement with nominative subjects and default singular agreement with accusative subjects (68). As expected under a DP conjunction analysis, insertion of a conjunction-internal *as*-clause doesn't disrupt this asymmetry (69). I only provide examples with CP gaps, as German is one of the languages where Predicate gaps are generally not possible.

(68) a. Der Traktor und der Wagen { ✓ wurden / * wurde } zu verkaufen
the.NOM tractor and the.NOM car were was to sell
versucht.
tried
"Someone tried to sell the tractor and the car"
b. Den Traktor und den Wagen { * wurden / ✓ wurde } zu verkaufen
the.ACC tractor and the.ACC car were was to sell
versucht.
tried
"Someone tried to sell the tractor and the car"

(69) a. Der Traktor und, [wie Oskar gerade herausgefunden hat [$_{CP}$__]], der
the.NOM tractor and as Oskar just found.out has the.NOM
Wagen { ✓ wurden / * wurde } zu verkaufen versucht.
car were was to sell tried
"Someone tried to sell the tractor and, as Oskar just found out, the car"

b. Den Traktor und, [wie Oskar gerade herausgefunden hat [$_{CP}$__]], den
the.ACC tractor and as Oskar just found.out has the.ACC
Wagen { ✓ wurden / * wurde } zu verkaufen versucht.
car were was to sell tried
"Someone tried to sell the tractor and, as Oskar just found out, the car"

To complete this particular argument against a clausal conjunction analysis, we must take into account the fact that Right Node Raising also exhibits cumulative agreement with singular conjuncts, despite the fact that here we are arguably dealing with clause-level coordination. Grosz (2009) offers the following pair as an illustration.[9]

(70) Annie is happy that Bob, and Claire is proud that Daniel, {✓ have / ?? has} travelled to Cameroon.

Importantly, Grosz (2009) argues that cumulative agreement follows from a specific implementation of the multidominance theory of RNR on the condition that (i) the agreement target is located inside the RNRed constituent, and (ii) the agreement controllers are located outside. The reverse configuration fails to produce cumulative agreement. This prediction can be easily tested in languages that have some type of object agreement. Here I will use Spanish dative objects, which are necessarily doubled by a clitic that displays number agreement. If an *as*-clause is inserted inside a coordinated dative object, clitic number agreement remains necessarily plural, contrary to the predictions of a RNR analysis. In contrast, a DP-coordination analysis predicts the correct type of agreement unproblematically. Given that Spanish doesn't generally allow Predicate gaps, I only present examples with CP gaps.

(71) a. Alicia { ✓ le / * les } ha traído un regalo a Beatriz.
Alicia CL.SG CL.PL has brought a present to Beatriz

b. Alicia { * le / ✓ les } ha traído un regalo a Beatriz y a Carla.
Alicia CL.SG CL.PL has brought a present to Beatriz and to Carla

(72) Alicia { * le / ✓ les } ha traído un regalo a Beatriz y, [como había
Alicia CL.SG CL.PL has brought a present to Beatriz and as had
sugerido Diana [$_{CP}$__]], a Carla.
suggested Diana to Carla

4.5 Scope of coordination

Example (73) below is based on the fact that the Old Testament forbids garments that combine wool and linen, even though garments made of wool alone or linen alone are allowed (Deuteronomy 22:11: "Do not wear clothes of wool and linen woven together"). The reading of (73) that is consistent with this ban is the one where *and* takes scope below *can't* —i.e., coordination at the DP level, embedded below negation and the modal.

[9] The judgments that Grosz offers for English are idealized. As Yatabe (2003) reports, there is considerable idiolectal variation in this phenomenon, with a non-trivial number of speakers exhibiting a preference for singular over cumulative agreement. As far as I know, this pattern doesn't hold for (65) and (66).

(73) Jews can't wear garments made of wool and linen.
[✓ *can't* > *and* / # *and* > *can't*]

In (74), Alan's final utterance is an acceptable answer to Rudy's question, which suggests that the availability of the [*can't* > *and*] reading is not affected by the insertion of an *as*-clause inside the coordinate structure.

(74) *Context: Rudy and Alan are playing Trivial Pursuit. Edna, who is just walking by, overhears this part of the game.*
R: According to Deuteronomy, Jews aren't allowed to wear garments that combine which two fabrics?
A: I know that one of them is wool, but I can't remember the other.
E: *(Leans closer to Alan and whispers:)* Psst! The other fabric is linen.
A: That's the answer! Jews can't wear garments made of wool and, [as Edna just reminded me [$_{CP}$ __]], linen!
[✓ *can't* > *and* / # *and* > *can't*]

If one were to analyze (74) as a case of clausal coordination, the [*can't* > *and*] reading would require covert ATB extraction of *can't* to some position outside the coordinate structure. There are number of factors that contraindicate an analysis along these lines, among them the fact that modals do not seem to be able to undergo this type of QR (Lechner 2007), or that covert ATB extraction seems to be generally disallowed (Citko 2003). On the other hand, under a DP-coordination analysis, the availability of the [*can't* > *and*] reading follows without stipulation.

4.6 Variable binding

In regular DP coordinations, a quantifier heading the first conjunct can bind a pronoun the second, but the reverse relation doesn't hold. This much follows from a structure for coordination along the lines of Munn (1993) *et seq*, where the first conjunct asymmetrically c-commands the second. Additionally, a quantifier in the second conjunct cannot bind pronouns outside the coordinate structure, suggesting that *the race director and every runner* should be analyzed as a DP-level coordination.

(75) a. Every$_i$ runner and his$_i$ coach have to attend the race information meeting at 8pm tonight.
b. * His$_i$ coach and every$_i$ runner have to attend the race information meeting at 8pm tonight.
c. * The race director and every$_i$ runner have informed his$_i$ coach about the new race rules.

This pattern remains unaltered if an *as*-clause is inserted in a conjunction-internal position, irrespective of whether the *as*-clause contains a CP gap (76) or a Predicate gap (77). This parallelism follows if these examples feature DP-level coordination. If, on the other hand, they featured reduced clausal coordination, (76a) and (77a) would be predicted to be ungrammatical, because *every runner* would be embedded within a clausal first conjunct and wouldn't be able to bind *his coach* in the second conjunct. Similarly, (76b) and (77b) would be predicted to be grammatical, because *every runner* and *his coach* would be members of the same clausal conjunct, and the appropriate binding configuration would obtain.

(76) a. Every$_i$ runner and, [as Edna just announced [$_{CP}$ __]], his$_i$ coach have to attend the race information meeting at 8pm tonight.

b. * His$_i$ coach and, [as Edna just announced [$_{CP}$ __]], every$_i$ runner have to attend the race information meeting at 8pm tonight.

c. * The race director and, [as Edna predicted [$_{CP}$ __]], every$_i$ runner have informed his$_i$ coach about the new race rules.

(77) a. Every$_i$ runner and, [as Edna announced he would have to [$_{Pred}$ __]], his$_i$ coach have to attend the race information meeting at 8pm tonight.

b. * His$_i$ coach and, [as Edna announced he would have to [$_{Pred}$ __]], every$_i$ runner have to attend the race information meeting at 8pm tonight.

c. * The race director and, [as Edna predicted he would have to [$_{Pred}$ __]], every$_i$ runner have informed his$_i$ coach about the new race rules.

4.7 Generalized quantifiers

Barwise and Cooper (1981:194ff) note that "it seems difficult" to use *and* to conjoin two generalized quantifiers if their monotonicity differs. They offer the following examples as illustration.

(78) a. [Several men and a few women] arrived on time. *[both increasing]*

b. [No man and few women] arrived on time. *[both decreasing]*

c. * [Few men and a few women] arrived on time. *[mixed]*

Importantly, they also point out that this restriction only holds of DP-level conjunctions. Clausal conjunctions may contain generalized quantifiers of different monotonicity. The following pairs illustrate this asymmetry.

(79) a. John was invited and no woman was, so he went home alone.

b. * John and no woman was invited, so he went home alone.

(80) a. Few mathematicians have worked on natural language conjunction and few linguists have, so I don't think you have the right to make these unfounded statements.

b. * Few mathematicians and a few linguists have worked on natural language conjunction, so I don't think you have the right to make these unfounded statements.

This asymmetry can be employed to determine if conjunction-internal *as*-clauses feature DP-level or clausal conjunction. Specifically, if they former is the case, then examples with generalized quantifiers of mixed monotonicity are predicted to be ungrammatical. As the following examples show, this is correct, both for CP gaps (81) and Predicate gaps (82).

	Reduced clausal conjunction	DP-level conjunction	Conjunction-internal *as*-clauses
DP-like distribution	??	yes	yes
multiple instances	??	yes	yes
collective readings	no	yes	yes
cumulative agreement	no	yes	yes
low scope of coordination	no	yes	yes
cross-conjunct binding	no	yes	yes
monotonicity restrictions on GQs	no	yes	yes

Table 3: properties of conjunctions

(81) a. Several men and, [as Edna pointed out [$_{CP}$ __]] a few women arrived on time. *[both increasing]*

b. No man and, [as Edna pointed out [$_{CP}$ __]] few women arrived on time. *[both decreasing]*

c. * Few men and, [as Edna pointed out [$_{CP}$ __]] a few women arrived on time. *[mixed]*

(82) a. Several men and, [as Edna predicted they would [$_{CP}$ __]] a few women arrived on time. *[both increasing]*

b. No man and, [as Edna predicted they would [$_{CP}$ __]] few women arrived on time. *[both decreasing]*

c. * Few men and, [as Edna predicted they would [$_{CP}$ __]] a few women arrived on time. *[mixed]*

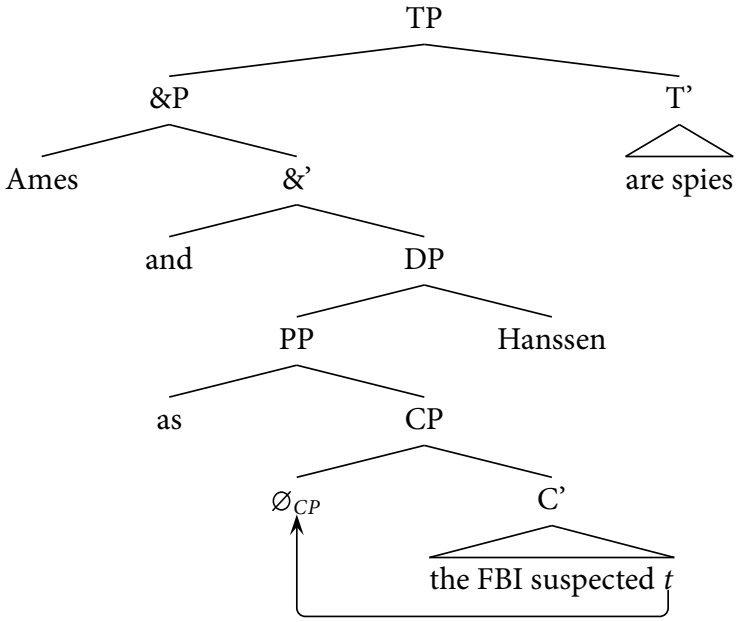
4.8 Interim summary

The data presented in the previous pages indicate that conjunction-internal *as*-clauses feature genuine coordination at the DP level, rather than a reduced clausal conjunction (see Table 3 for a summary). Therefore, we can safely conclude that the tree in (83) represents the correct syntax for (5a), which contains a CP gap. Example (5b), which contains a Predicate gap, can be represented as in (84). As can be seen, the two representations differ exclusively on (i) the size of the gap; and (ii) whether the gap is a surface or a deep anaphor.

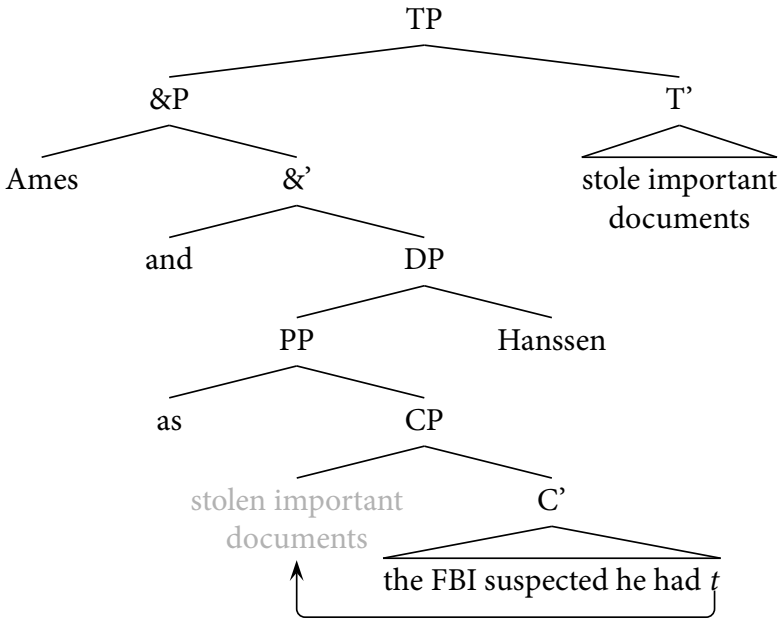
(5) a. Ames and, [as the FBI suspected [$_{CP}$ __]], Hanssen were spies.

b. Ames and, [as the FBI suspected he had [$_{Pred}$ __]], Hanssen stole important documents.

(83) *A syntax for (5a)*



(84) *A syntax for (5b)*



5 An apparent compositionality failure

When taken together, the results of sections 3 and 4 lead to an analytical conflict. On the one hand, the data in §3 show that conjunction-internal *as*-clauses share a number of non-trivial properties with regular *as*-clauses, which can be traced to Potts's (2002b) original analysis of regular *as*-clauses as partial identity functions. These parallelisms support extending this analysis to the conjunction-internal cases. On the other hand, the data in §4 show that conjunction-internal *as*-clauses feature genuine DP-level coordination, rather than a combination of clausal coordination plus some process of conjunction reduction. Notably, Potts's semantics fails when

confronted with this syntax. Consider example (5a) again, for which a Pottsian analysis provides the semantics in (85).

(5a) Ames and, [as the FBI suspected [$_{CP}$__]], Hanssen were spies.

(85) [as the FBI suspected [$_{CP}$__]] = $\lambda p : \mathsf{suspect}(p)(\mathsf{FBI})$ is true $[p]$

Note that this *as*-clause denotes in $\langle st\rangle, \langle st\rangle$: in order for (5a) to have a defined meaning, the *as*-clause must apply to a proposition p such that the FBI suspected that p. By the lexical semantics of *as*, this proposition must be supplied by the host of adjunction of the *as*-clause. Similarly, (5b) requires the *as*-clause to apply to a property f such that the FBI said that Hanssen had done f (86).

(5b) Ames and, [as the FBI said he had [$_{Pred}$__]], Hanssen stole important documents.

(86) [as the FBI said he had [$_{Pred}$__]] = $\lambda f : \mathsf{say}(f(\mathsf{he}))(\mathsf{FBI})$ is true $[f]$

However, in neither case is the host of adjunction a proposition or a property, but rather, an individual (namely, *Hanssen*). As a consequence, a compositionality failure arises, which indicates that one of the assumptions underlying Potts's analysis is incorrect. In §6 below, I propose that the problematic assumption is the type-identity requirement (2) discussed in §1. Before getting there, however, I want to discard various technically possible but eventually incorrect solutions.

5.1 Non-solution #1: a more complex lexical semantics for *as*

The first possibility I examine assumes that the category/type mismatch between the gap and the host can be bridged by defining more complex lexical entries for *as*. Consider example (5a) again: in order to enable composition, the entry of *as* is augmented with an additional lambda term $\lambda f \in D_{\langle s\langle et\rangle\rangle}$, so that an appropriate propositional meaning for the gap can be reconstructed piecewise from the main clause (87). In prose, *as* takes a constituent P containing a variable over propositions as its first argument, an individual x (the host DP) as its second argument, and a property f as its third, where f is the main clause minus the coordinate structure that the *as*-clause is embedded in. If $P(f(x))$ is true, then the *as*-clause returns x unmodified. This maintains Potts's (2002b) conjecture that *as*-clauses are partial identity functions —in this case, partial identity functions on individuals.

(87) as = $\lambda P \in D_{\langle\langle st\rangle t\rangle}[\lambda x \in D_{\langle e\rangle}[\lambda f \in D_{\langle s\langle et\rangle\rangle} : P(f(x)) \text{ is true } [x]]]$

There are reasons to doubt that this particular analysis is correct, though. The first one is obvious: given the entry in (87), Functional Application must necessarily ignore the first conjunct of the coordinate structure. Otherwise, composition would fail, given that the first conjunct is also an individual, and not a property as required by $\lambda f \in D_{\langle s\langle et\rangle\rangle}$.[10] But this is arguably not how Func-

[10] In fact, the problem is deeper, given that *as*-clauses are not restricted to modify only the second conjunct of a DP coordination. As the following examples show, in a coordinate structure with n conjuncts, and *as*-clause can always premodify the last one. Note that the sisterhood effect is not suspended here: in all these cases, the meaning of the *as*-clause is that the FBI discovered that the referent of the last conjunct was a spy. This means that, after encountering the host DP, the *as*-clause has to be able to skip over an arbitrary number of conjuncts until encountering the requisite property.

(i) Ames, Hanssen, and, [as the FBI just discovered [___]], Cohen were spies.

(ii) Ames, Hanssen, Cohen, and, [as the FBI just discovered [___]], Fuchs were spies.

(iii) Ames, Hanssen, Cohen, Fuchs, and, [as the FBI just discovered [___]], Hall were spies.

(iv) …

tional Application works. If satisfaction of a lambda term could be delayed, then (88b) would be incorrectly predicted to be a possible reading of (88). Consider the reasoning: the *as*-clause would have the meaning: $\lambda p_{\langle st\rangle}$: suspect(p)(you) is true $[p]$ (cf. §2). In the normal course of events (i.e., Functional Application can't be delayed), then p corresponds to the embedded clause *Ames was a spy*. This results in the available reading (88a). However, if Functional Application could be delayed, one could potentially skip the embedded clause and take the root clause as the source of meaning for p: as a consequence, (88b) should be an acceptable reading, contrary to fact.

(88) The FBI believed that, [as you suspected [__]], Ames was a spy.
   a. *as*-clause = you suspected that Ames was a spy.
   b. *as*-clause ≠ you suspected that the FBI believed that Ames was a spy.

Additionally, note that the lexical entry in (87) is valid only for *as*-clauses inside a DP conjunction that acts as the subject of the main clause. Consider a standard example in which the conjunction acts as the object of the main clause.

(89) Ames learned to speak Russian and, [as the New York Times reported [__]], Chinese.

The entry in (87) would predict the incorrect reading for this example. After Functional Application skips over the first conjunct (however this is to be achieved), the only constituent of type $\langle s\langle et\rangle\rangle$ that can satisfy $\lambda f \in D_{\langle s\langle et\rangle\rangle}$ is T' —that is, the main clause minus the subject *Ames*. This would predict (89) to receive the non-sensical meaning *The New York Times reported that Chinese learned to speak Russian and Chinese*. In order to derive the correct reading, it would be necessary to augment (87) with an additional lambda term over individuals to accommodate the main clause subject (90).

(90) as = $\lambda P \in D_{\langle\langle st\rangle t\rangle}[\lambda x \in D_{\langle e\rangle}[\lambda f \in D_{\langle s\langle e,et\rangle\rangle}[\lambda y \in D_{\langle e\rangle} : P(f(x)(y)) \text{ is true } [x]]]]$

Arguably, additional lexical entries would have to be written to cover other the variety of positions where conjunctions containing and *as*-clause can appear (see §4.1), as well as *as*-clauses whose host is not a full DP, but rather an attributive adjective, a VP, or a PP (see §6.3.2 below). In short, this approach amounts to admitting that *as* is a highly polysemous morpheme, well beyond the range of variability originally envisioned in Potts (2002b). This seems unwarranted, especially if, as I argue below, a significantly less drastic modification of Potts's analysis suffices to cover both the regular and the conjunction-internal cases.

5.2 Non-solution #2: raising of the host to a propositional type

As an alternative approach, one could retain Potts's original lexical entries for *as*, and then assign the host DP a propositional semantics, so as to enable composition. This line of attack is not unprecedented: Schein (1992) notes a similar compositionality problem with the following example.

(91) The Columbia students and possibly the Harvard students formed an unbroken chain around the Pentagon.

Schein claims that *possibly* and other speaker-oriented adverbs (*perhaps*, *fortunately*, *allegedly*…) are exclusively propositional modifiers: if *possibly* could optionally function as a modifier of individuals, then *possibly the Harvard students* would be a modalized version (epistemic possibility) of *the Harvard students* —that is, those people who, for all the speaker knows, could be Harvard

students, irrespective of whether they are actual Harvard students. If this meaning was available, (91) could be felicitously used to describe a event in which Columbia students and Yale students formed a chain around the Pentagon, so long as the people in the latter group look sufficiently Harvard-student-like to the speaker. As this is not a possible use of (91), Schein concludes, by reduction to the absurd, that *possibly* cannot be a modifier of individuals. However, in (91), *possibly* appears to be modifying an individual. To circumvent this problem, Schein (1992) proposes to augment the semantics of DPs with thematic and event information, effectively turning them into propositional objects. That is, the phrase *the Harvard students* in (91) receives a semantics along the following lines.

(92) $[\![\text{ the Harvard students }]\!] = \exists e \left[\begin{array}{ll} & \mathsf{form}(e) \\ \wedge & \mathit{Agent}(e)(\text{Harvard students}) \\ \wedge & \mathit{Theme}(e)(\text{unbroken chain}) \\ \wedge & \ldots \end{array} \right]$

Given this semantics, modification by *possibly* and similar adverbs becomes possible, creating a meaning along the lines of "it is possible that the Harvard students are among those people who formed an unbroken chain around the Pentagon". Extrapolating this result to *as*-clauses, one could take the host DP *Hanssen* in (5a) to have the semantics in (93), which would provide the correct meaning for the *as*-clause.

(93) $[\![\text{ Hanssen }]\!] = \exists e \left[\begin{array}{ll} & \mathsf{spy}(e) \\ \wedge & \mathit{Pred}(e)(\text{Hanssen}) \\ \wedge & \ldots \end{array} \right]$

Note, however, that this result is attained by brute force; Schein simply asserts that DPs have such meanings, but offers no indication of how they arise. Winter (2001:44) expresses a similar concern:

> "Schein's work embodies a radical representational approach to meaning that marks a complete departure from compositionality. Unfortunately, no alternative hypothesis about the syntax-semantics interface is proposed; an unrestricted arsenal of syntactic rules is allowed to map surface structures to some notation of "logical form"."

Additionally, Schein's analysis would also require a cascade of important changes in the semantics of many other lexical items. If DPs are propositions, unaccusative verbs could no longer be treated as predicates of individuals, nor could *v* be treated as a function into such predicates. Similar modifications would be required for adjectives, determiners, and quantifiers. As Winter correctly points out, Schein doesn't explore the plausibility or implications of these modifications, and this paper is not the place to do so either. Therefore, I will not consider this particular line of analysis any further.

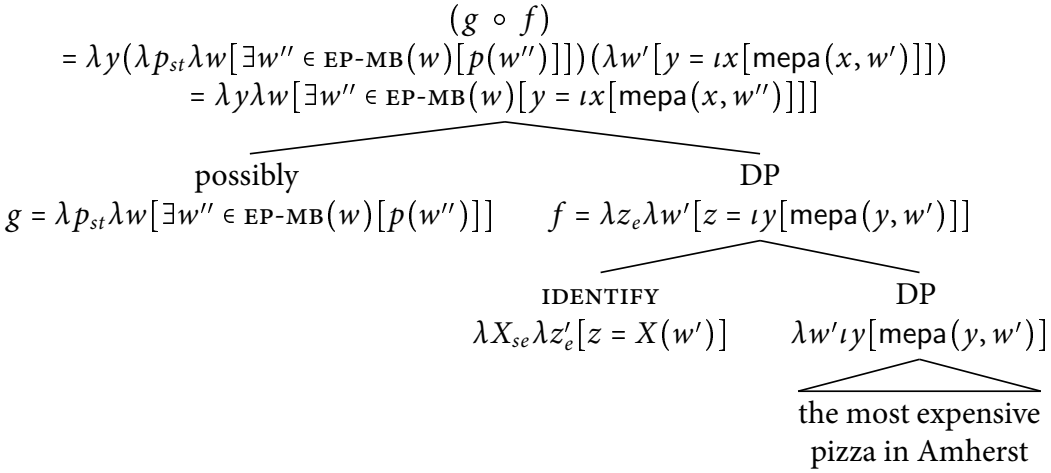
A less *ad hoc* solution would be based on Bogal-Allbritten's (2013) observation that Schein's reasoning does not hold without exception. She notes that the scope of *possibly* in (94) is restricted to its host DP, which gives rise to a genuine epistemically-modalized-individual reading. I take this as an indication that Schein's observation holds in coordinate structures, but not elsewhere. I have nothing interesting to say as to why this is so.

(94) Mary ate [possibly [$_{DP}$ the most expensive pizza in Amherst]] .

Bogal-Allbritten proposes a type-shifting operator IDENTIFY (Frana 2010) that raises the host DP to type $\langle st\rangle\langle\langle e\rangle st\rangle$; after type shifting, the host DP can then combine with *possibly* via function

composition (95). As the reader can confirm, the final reading is the correct one for *possibly the most expensive pizza in Amherst* (further composition of this expression with the rest of the clause requires either a combination of Predicate Modification plus Existential Closure or an $\langle\langle e\rangle st\rangle\langle e\rangle$ choice function; see Bogal-Allbritten 2013:55ff for discussion of these options).

(95)



Unfortunately, this approach cannot be extended to conjunction-internal *as*-clauses either. One could in principle define a similar sequence of operations —i.e., a type shifter raises the host DP to type $\langle st\rangle$ so as to enable composition with a propositional gap, and then a choice function lowers it back to type $\langle e\rangle$. The problem lies on the fact that, unlike what is the case in Schein's approach, IDENTIFY (and, by extension, similar type shifters) doesn't add anything to the meaning of the host DP. Under this analysis, the *as*-clause in the baseline example (5a) would receive a reading roughly paraphraseable as "as far as the FBI is concerned, Hanssen was a suspect", but without any specification as to what Hanssen was a suspect of. This problem generalizes, perhaps even more seriously, to examples with Predicate gaps. One can circumvent this problem by modelling the gap as an anaphor that retrieves the missing meaning from the surrounding context; in fact, the analysis that I propose in §6 does just this. However, once we accept that gaps can be modelled in this particular way, composition with an individual-type host can be achieved without resorting to this kind of back-and-forth type shifting.

5.3 Non-solution #3: extraction of an $\langle e\rangle$-type operator from the gap

Given that gaps are demonstrably invariably of category CP or VP (§3.6), it is not possible to circumvent the compositionality problem by treating the gap as corresponding to a DP constituent. There is, however, a somewhat more complex version of this approach, which takes the gaps to be either CPs or VPs from which a $\langle e\rangle$-type operator (represented as $\varnothing_{DP}$) is subextracted (96) If so, one can take movement of this operator to trigger the creation of the required variable over individuals. Note that this analysis requires two additional assumptions. First, that ellipsis applies obligatorily within the *as*-clause: I refer the reader to footnote 6 and especially LaCara 2013 for discussion of this point. Second, that *as* can be assigned the lexical entry in (97). I assume that this is possible, given that (97) falls within the bounds of *as*-polysemy discussed in §2 —i.e., *as* takes a constituent Q containing a variable over some type σ (in this case, individuals) as its first argument, a constituent q that is itself of type σ as its second argument, and if $Q(q)$ expresses a truth, then the meaning of q is passed on unmodified.

(96) Ames and, [as $\varnothing_{DP}$ the FBI suspected [$_{CP}$ (that) t was a spy]], Hanssen were spies.

(97) $\text{as}_{DP} = \lambda Q \in D_{\langle et \rangle} [\lambda q \in D_{\langle e \rangle} : Q(q) \text{ is true } [q]]$

However attractive, this analysis has to circumvent three major difficulties. The first one is that (96) effectively amounts to treating both CP gaps and Predicate gaps as surface anaphors. This contradicts the results of §3.7 and LaCara (2013), which show that a surface anaphor analysis is appropriate only for Predicate gaps. CP gaps, *qua* deep anaphors, lack an articulate internal syntax, and therefore do not allow subextraction from within them (though see footnote 8). Second, the characterization of $\varnothing_{DP}$ as an $\langle e \rangle$-type operator predicts that conjunction-internal *as*-clauses will have a degree of island sensitivity comparable to that of *which*-appositives, rather than that of regular *as*-clauses; as already discussed in sections 3.1 and 3.6, this is not so. Finally, some cases of conjunction-internal *as*-clauses with a Predicate gap (i.e., those that are embedded in a subject coordination) lack an obvious source position for the operator. Consider again example (5b), repeated here.

(5b) Ames and, [as the FBI said he had stolen important documents], Hanssen stole important documents.

Clearly, the operator cannot originate from within the elided VP, as that would create the incorrect meaning. The *as*-clause would contain a variable in the object position; upon adjunction to *Hanssen*, the derived meaning of the *as*-clause would be *The FBI said that he had stolen Hanssen*, contrary to fact. If the derivation of (5b) is going to involve movement of an $\langle e \rangle$-type operator, then this operator has to originate from the subject position of the *as*-clause. However, this position is already occupied by *he*. In order to create a variable in the subject position, one would have to say that *he* undergoes covert A-bar movement. This is unlikely, though, given that covert A-bar movement is otherwise unattested in English.

5.4 Interim summary

As we have seen, the problem with conjunction-internal *as*-clauses boils down to the fact that Potts requires type-identity between the gap and the host. If the gap corresponds to a proposition (cf. §3.6), then the host also has to be a proposition (similarly, if the gap corresponds to a property, then the host has to be a property). However, in reality, the host is invariably an individual (cf. §4), so in neither case can it provide a suitable meaning for the gap. This much should cause a compositionality failure. The fact that conjunction-internal *as*-clauses are actually grammatical entails that the type-identity requirement doesn't hold, and should therefore be dismissed.

6 Analysis

6.1 Gaps as discourse anaphors

The analysis I am going to propose is based on the hypothesis that gaps are anaphors whose meaning is retrieved from some suitably salient antecedent.[11] There are a number of indications

[11] Here, "antecedent" must be understood as "material from which the gap retrieves its meaning", without any implication of linear/temporal precedence. This much is necessary to account for the fact that, in examples like (5), the antecedent linearly follows the gap. I don't take this to be a problem, given that other discourse anaphors (most prominently, sluicing and VP ellipsis sites) may also precede their antecedents. I assume that whatever theory of anaphora licenses cataphoric uses of sluicing and VP ellipsis can apply also to *as*-clause gaps. I am grateful to Todor Koev (p.c.) for raising this issue.

(i) a. If the doctor tells you to [$_{VPE}$___], you should quit smoking immediately.

that this must be so, even within the domain of regular *as*-clauses. As discussed in §3.7 above, *as*-clauses with a CP gap can appear without a host, their meaning being retrieved from a salient non-linguistic antecedent. The relevant examples are repeated here for reference.

(49) *Context: a suspecting wife goes home early and discovers her husband in bed with another woman.*
   a. Aha! Just as I thought [$_{CP}$__]!

One potential way of accounting for this example without committing to the idea that gaps are discourse-anaphoric is by assuming that actual discourse anaphor is the missing host clause. Assume, for concreteness, that (49a) can be represented as in (98), where [$_{NCA}$__] represents a deep anaphor that retrieves the meaning *you are cheating on me* from the non-linguistic context. If so, then it could be argued that the meaning of the gap is retrieved from [$_{NCA}$__] under sisterhood, exactly as it would if the host clause were overt.

(98) Aha! [$_{NCA}$__] [just as I thought [$_{CP}$__]]!

Consider, however, (99), where the *as*-clause is intended to adjoin to an actual deep anaphor (i.e., the NCA complement of *thought*). The only possible meaning of this *as*-clause is that Harvey warned Edna and Alan that they should complain; the intended meaning (i.e., that Harvey warned Edna and Alan that the neighbors would be loud) is distinctly infelicitous. Note that this meaning becomes available if the host clause is overt (100), which suggests that gaps cannot retrieve their meaning from deep anaphoric hosts; rather it is the gaps themselves that need to be anaphoric.

(99) *Scenario: Edna and Alan's neighbors are throwing a party and playing loud music late into the night. Edna turns to Alan and says:*
You should complain [$_{NCA}$__], [as Harvey warned us [$_{CP}$__]].
As-clause = Harvey warned us that you should complain.
As-clause ≠ Harvey warned us that the neigbors would be loud.

(100) *Scenario: same as above*
You should complain that they are being so loud, [as Harvey warned us [$_{CP}$__]].
As-clause = Harvey warned us that you should complain.
As-clause = Harvey warned us that the neighbors would be loud.

The necessity to model gaps as anaphors to a salient discourse antecedent is even more apparent in conjunction-internal *as*-clauses. Consider first (50), the conjunction-internal equivalent of (49), repeated below. It is obvious that the meaning of the gap cannot be retrieved from the available overt linguistic material, suggesting that the gap itself must be treated as a deep anaphor.

(50) *Context: the World Health Organization has recently released a report praising the benefits of Mediterranean cuisines. As we walk into a Lebanese restaurant, I point at all the hummus platters being served and say:*
   a. This simple and, [as the WHO claims [$_{CP}$__]], healthy dip is their specialty!

   b. She doesn't want to tell me who [$_{SL}$__], but I know that Sally is dating someone.

Similarly consider the meaning of the *as*-clause in Alan's final reply in (74), also repeated here. It cannot be *Edna reminded me that Jews can't wear garments woven of wool and linen*, because that is not what Edna did: she only mentioned linen. It cannot be *Edna reminded me that Jews can't wear garments woven of linen* either, because that is factually false: garments woven of linen alone are licit under Old Testament law. Rather, the meaning must be *Edna reminded me that the other fabric is linen*, which requires the gap to be anaphoric to a salient utterance in the previous discourse.

(74) *Context: Rudy and Alan are playing Trivial Pursuit. Edna, who is just walking by, overhears this part of the game.*

R: According to Deuteronomy, Jews aren't allowed to wear garments that combine which two fabrics?

A: I know that one of them is wool, but I can't remember the other.

E: *(Leans closer to Alan and whispers:)* Psst! The other fabric is linen.

A: That's the answer! Jews can't wear garments made of wool and, [as Edna just reminded me [$_{CP}$ __]], linen!

6.2 A sample derivation

In brief, the analysis I develop here differs from Potts in that the meaning of the gap is not entirely retrieved from the host of adjunction; rather, the meaning of the gap is anaphorically retrieved from the surrounding discourse, then either part or all of this meaning is abstracted over, and the resulting variable is satisfied by the host of adjunction. Let us run through the derivation of our baseline example (5a) as an illustration. The first step consists on constructing a TP containing a CP gap, notated $\varnothing_{CP}$ as usual. Note that the meaning of this TP already contains the meaning that $\varnothing_{CP}$ has retrieved from discourse.

(101) $\mathsf{suspect(spy(Ames))(FBI)}$

the FBI suspected $\varnothing_{CP}$

Predicate Abstraction applies to (101) to enable A-bar movement of $\varnothing_{CP}$ (in the interest of explicitness, I follow Heim and Kratzer 1998 *et seq* in representing PA as an independent branch dominating only a numerical index).

(102) $\mathsf{suspect(spy(Ames))(FBI)}$

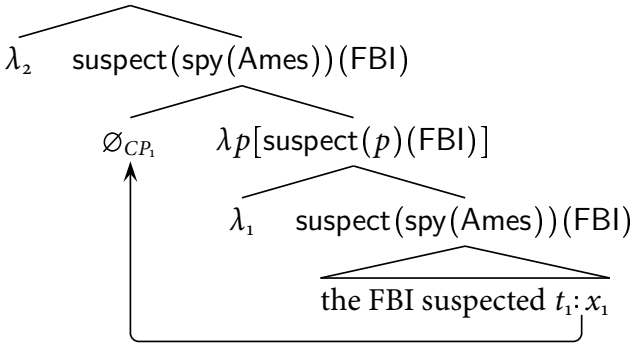
$\varnothing_{CP_1}$ $\quad \lambda p[\mathsf{suspect}(p)(\mathsf{FBI})]$

λ_1 $\quad \mathsf{suspect(spy(Ames))(FBI)}$

the FBI suspected t_1:x_1

A second application of PA is necessary to create a variable, so that (102) can compose as the first argument of *as*. Importantly, the target of PA cannot be the entire proposition $\mathsf{spy(Ames)}$, as that would reproduce the compositionality problem noted in §5. Rather, it only targets Ames, producing a constituent containing a variable over individuals.

(103) $\lambda z[\text{suspect}(\text{spy}(z))(\text{FBI})]$



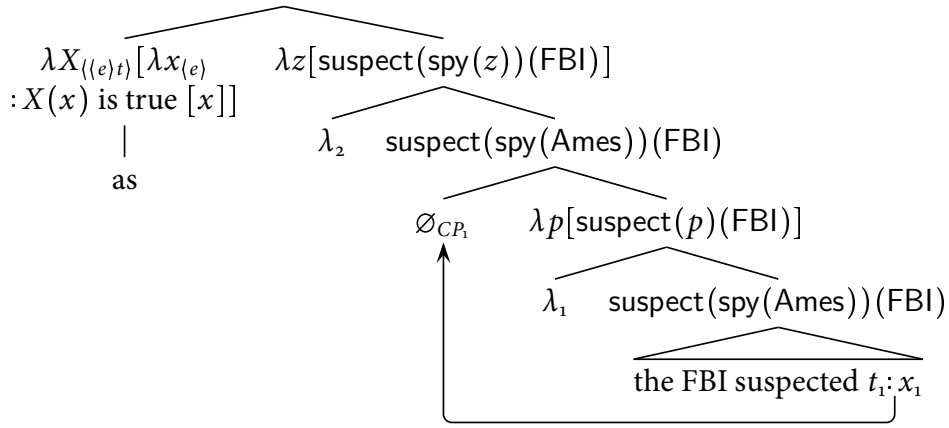
Before finishing the derivation, it is necessary to take a detour into the lexical semantics of *as*. As discussed in §2, the different lexical entries proposed by Potts (2002b) can be subsumed under (14), where the metatype σ ranges over the types of propositions and properties. Obviously, (14) is not enough for our purposes, as it doesn't allow for arguments that contain variables over individuals. This problem can be circumvented by augmenting (14) to (104), where the type of individuals is added to the list of types that σ ranges over. Note that this new entry still falls within the range of polysemy that Potts originally envisioned for *as*.

(14) For any $\sigma \in \{\langle st\rangle, \langle s\langle et\rangle\rangle\}$, as = $\lambda X \in D_{\langle\sigma t\rangle}[\lambda x \in D_{\langle\sigma\rangle} : X(x)$ is true $[x]]$

(104) For any $\sigma \in \{\langle st\rangle, \langle s\langle et\rangle\rangle, \langle e\rangle\}$, as = $\lambda X \in D_{\langle\sigma t\rangle}[\lambda x \in D_{\langle\sigma\rangle} : X(x)$ is true $[x]]$

Given (104), the derivation of the *as*-clause finishes as follows. Note that this constituent denotes in $\langle e\rangle, \langle e\rangle$, and as such can adjoin to an individual-type host.

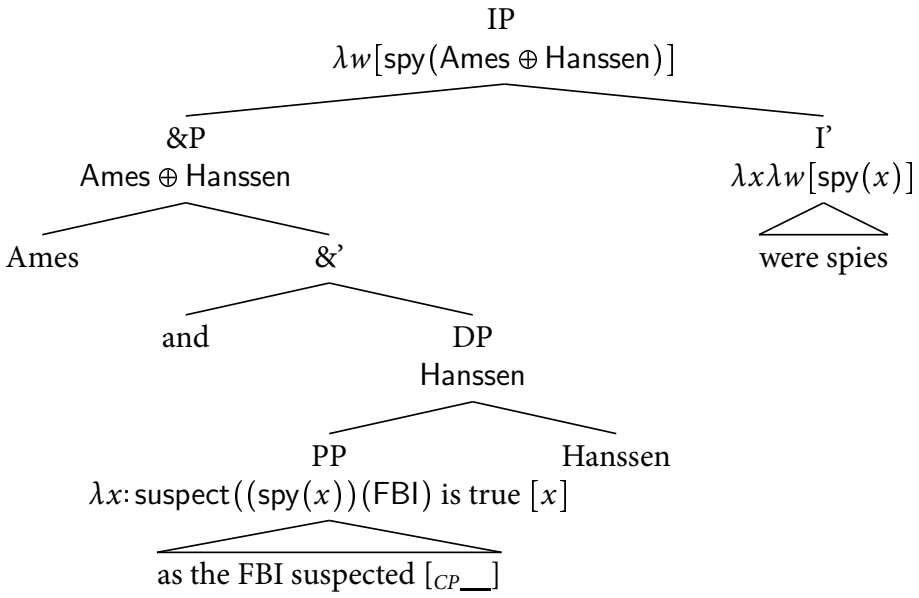
(105) λx: suspect((spy(x))(FBI) is true $[x]$



Finally, tree (106) depicts the composition of the *as*-clause with the main clause.[12] As desired, we obtain *Ames and Hanssen were spies* as an at-issue assertion and *the FBI suspected that Hanssen was a spy* as a conventional implicature. Examples with Predicate gaps (5b) receive, *mutatis mutandi*, an analogous derivation, which is left as an exercise for the reader.

[12] Here I am being deliberately vague about the semantics of subclausal conjunction, as this is not directly relevant to the analysis. Readers are welcome to plug in their favorite semantics for *and* in this tree.

(106)



Note that this line of analysis generalizes easily to regular *as*-clauses. Specifically, under this approach, regular and conjunction-internal *as*-clauses differ exclusively on the target of the topmost application of PA. Targetting a proper subpart of the meaning of $\varnothing_{CP}$ creates a variable over the type of that subpart (in the cases we have examined, individuals, but see §6.3.2 below), allowing attachment of the *as*-clause to a host of the relevant sub-propositional type; in contrast, if PA targets the entire meaning of $_{CP}$, it creates a variable over propositions, forcing attachment to a propositional host. The same reasoning holds for regular and conjunction-internal *as*-clauses with a Predicate gap. The latter derivations would be effectively identical to those in Potts (2002b).

To sum up, the two crucial features of the analysis I have proposed are (i) that the gap is best modelled as a discourse anaphor (see §6.1 above), and (ii) that PA might target a proper subpart of the meaning of the gap. This last idea is unproblematic in the case of Predicate gaps, under the assumption that Predicate gaps have a regularly articulate internal syntax (see §3.7 and LaCara 2013). The question is whether this is also possible for CP gaps, which are arguably deep anaphors. Arguably, an affirmative answer to this question is possible under a strict reading of Heim and Kratzer's (1998) formulation of PA (107), which makes no reference to whether the meaning of γ is associated to an articulate or atomic internal structure. I will assume that this particular way of applying PA is licit.

(107) *Predicate Abstraction (Heim and Kratzer 1998:186)*
Let α be a branching node with daughters β and γ, where β dominates only a numerical index i. Then, for any variable assignment a, $[\![\alpha]\!]^a = \lambda x \in D.[\![\gamma]\!]^{a^{x/i}}$.

Importantly, it is not enough to allow PA to target a proper subpart of the meaning of the gap; it also has to be prevented from targeting material outside the gap. This restriction is necessary to rule out certain impossible readings of both regular and conjunction-internal *as*-clauses. Consider, for illustration, the possible and impossible readings of (108), which has the semantics in (109) prior to the last application of PA (where spy(Ames), the meaning of the gap, is anaphorically retrieved from the surrounding discourse).

(108) Ames was a spy, [as CNN reported [$_{CP}$ that the FBI suspected [$_{CP}$__]]].
As-clause = CNN reported that the FBI suspected that Ames was a spy.
As-clause ≠ CNN reported that Ames was a spy.

(109) report(suspect(spy(Ames))(FBI))(CNN).

Assume that PA targets spy(Ames). Composition of the result with *as* yields (110), where p is the meaning of the host clause. As the reader can confirm, this much derives the licit reading of (108).

(110) λp: report(suspect(p)(FBI))(CNN) is true [p]

Suppose now that PA were allowed to target not just spy(Ames), but rather the proper super-meaning suspect(spy(Ames))(FBI). This would yield (111) upon composition with *as*, and the illicit reading of (108) as a final result. In order to block this reading, it is necessary to prevent PA to target constituents that properly contain the gap.

(111) λp: report(p)(CNN) is true [p]

Example (112) shows that similar considerations apply to conjunction-internal *as*-clauses. The semantics of the *as*-clause prior to the last application of PA are given in (113).

(112) Ames and, [as the FBI admitted [$_{CP}$__]], Hanssen stole important documents.
As-clause = the FBI admitted that Hanssen stole important documents.
As-clause ≠ Hanssen admitted that he stole important documents.

(113) admit(spy(Hanssen))(FBI)

The licit reading of (112) is derived by letting PA target a proper subpart of the meaning of the gap, namely, *Hanssen*. Further composition with *as* yields the following.

(114) λx: admit(spy(x))(FBI) is true [x]

In contrast, if PA were allowed to apply to an individual outside the gap (namely, *the FBI*), the final semantics for the *as*-clause would be as in (115). As this semantics derives the illicit reading of (112), it must be the case that, on top of constituents that properly contain the gap, PA may not apply to constituents completely outside the gap. For ease of reference, I encode it as (116).

(115) λx: admit(spy(Hanssen))(x) is true [x]

(116) The last application of PA must target either the gap or a proper subpart of the meaning of the gap.

We will see in §6.3.4 that (116) can also help explain certain correference restrictions between the host and certain pronouns internal to the *as*-clause. Unfortunately, I do not know how to derive this restriction from independently required factors, so for the purposes of this paper it will remain a stipulation.

6.3 Virtues of the analysis

6.3.1 Theoretical parsimony

The immediate theoretical appeal of this analysis is that it preserves Potts's (2002b) hypothesis that *as*-clauses are invariably partial identity functions. By extension, it also preserves all the properties that are associated to this status, such as the sisterhood restriction, truth-conditional independence, conventional implicature status, or opacity effects (cf. §3 and Potts 2002b). As discussed above, the general lexical entry for *as* in (14) can be extended to the conjunction-internal cases simply by adding $\langle e \rangle$ to the set of types that the metatype σ can range over. This much enables a reduction of the differences between the various types of *as*-clauses to differences in (a) the internal semantics of the gap (i.e., whether it is proposition- or property-denoting), and (b) the target of PA (i.e., the entire gap or just a proper subpart thereof).

6.3.2 Flexibility in the choice of attachment sites

Although the discussion in the previous sections has focused on *as*-clauses embedded in DP conjunctions, the analysis generalizes easily to subclausal conjunctions of categories other than DP. The following examples illustrate this point with *as*-clauses embedded in conjunctions of generalized quantifiers (117a), attributive adjectives (117b), non-finite VPs (117c), and PPs ((117d), example provided by Ilse Zimmermann, p.c.). All these cases can be handled in the same way as those involving a DP conjunction, on the assumption that the metatype σ in (104) can range over the relevant types.

(117) a. Every pundit and, [as it eventually transpired [$_{CP}$ __]], every team member criticized the coach's defensive tactics.
As-clause = it eventually transpired that every team member criticized the coach's defensive tactics.

b. This exhaustive and, [as Edna pointed out [$_{CP}$ __]], incriminating report ruined Ames' career.
As-clause = Edna pointed out that the report is incriminating.

c. Sleeping eight hours a day and, [as many doctors now agree [$_{CP}$ __]], eating a plant-based diet are crucial factors in staying healthy.
As-clause = many doctors now agree that eating a plant-based diet is a crucial factor in staying healthy.

d. Right before the lunch break and, [as Edna just pointed out [$_{CP}$ __]], right after the board meeting are both good times for the IT guy to come fix Harvey's computer.
As-clause = Edna just pointed out that right after board meeting is a good time for the IT guy to come fix Harvey's computer.

Arguably, (117b) and (117c) can be handled without any modification to (104), on the assumption that adjectives and VPs are $\langle s\langle et\rangle\rangle$-type constituents. Example (117a) can be subsumed under (104) to the extent that one wishes to allow liberal use of type shifters to lower generalized quantifiers to either $\langle s\langle et\rangle\rangle$ or $\langle e\rangle$; else, the taxonomy in Table 1 would have to be augmented with a fourth column containing $\langle s\langle\langle et\rangle t\rangle\rangle$-type hosts. Similarly, whether (117d) requires adding extra types to σ depends directly on one's assumptions about the type of PP modifiers. I have nothing to say about these issues here beyond noting that any extension along these lines is acceptable so long as it only involves adding extra types to σ, rather than modifying the template of the lexical entry.

6.3.3 Extensions to non-coordinate environments

As mentioned in §1, the reason that the bulk of this article revolves around conjunction-internal *as*-clauses is because they provide an environment in which it is relatively easy to ensure that the *as*-clause is adjoining directly to a DP, rather than to a larger constituent that properly contains the DP. However, adjunction of an *as*-clause to a DP or a similarly small constituent is possible even in the absence of a coordinate structure. Consider (118) and (119) below, both of which feature an NP host embedded under a determiner. This particular configuration blocks an alternative analysis in terms of Heavy NP Shift (as Potts (2002b) proposes for example (3) of §1), on the assumption that HNPS may not separate an NP from its selecting determiner —cf. the ungrammaticality of (120).[13]

[13] Here I have chosen to treat HNPS as a movement process, but the argumentation holds under non-movement approaches too.

(118) *Context: school trip to the ancient history museum*
Curator: Hey, don't touch that vase! It is extremely valuable!
Guide: Now, look here, kids! This, [as the curator just warned us [$_{CP}$__]] extremely valuable vase was found in 1967 at an archaelogical site in the outskirts of Crete.
As-clause = the curator just warned us that the vase is extremely valuable.

(119) A: Hey, look at that guy over there with a Yankees shirt!
B: That's not a Yankees shirt, that's a Nationals shirt!
A: Whatever. I just wanted to say that the guy with the, [as you aptly pointed out [__]], Nationals shirt is hitting on Edna.
As-clause = you aptly pointed out that it is a National shirt.

(120) a. * Archaeologists found [$_{DP}$ this t_i] in 1967 [$_{NP}$ extremely valuable vase]$_i$.
b. * That guy was wearing [$_{DP}$ the t_i] yesterday [$_{NP}$ Nationals shirt].

6.3.4 Correference restrictions with Predicate gaps

Conjunction-internal *as*-clauses with Predicate gaps embedded in a subject coordination exhibit a restriction whereby the subject immediately dominating the Predicate gap has to be correferential with the host of adjunction (Joseph deVeaugh-Geiss, p.c.). This restriction holds for regular subjects (121), passivized subjects (122)/(123), and subjects of raising predicates (124). Note, importantly, that the correference ban never affects higher subjects within the *as*-clause (in this batch of examples, *Edna*).

(121) a. Harvey and, [as Edna predicted he$_{i/*j}$ would [$_{Pred}$__]], Gerald$_i$ have commited to running 10km a day.
b. * Harvey and, [as Edna thinks you should have [$_{Pred}$__]], Gerald have commited to running 10km a day.

(122) a. Harvey and, [as Edna predicted he$_{i/*j}$ would be [$_{Pred}$__]], Gerald$_i$ have been selected for the Olympic team.
b. * Harvey and, [as Edna thinks you should have been [$_{Pred}$__]], Gerald have been selected for the Olympic team.

(123) a. Harvey and, [as Edna predicted he$_{i/*j}$ would be [$_{Pred}$__]], Gerald$_i$ have been awarded a place in the Olympic team.
b. * Harvey and, [as Edna thinks you should have been [$_{Pred}$__]], Gerald have been awarded a place in the Olympic team.

(124) a. Harvey and, [as Edna predicted he$_{i/*j}$ would be [$_{Pred}$__]], Gerald$_i$ are likely to make it to the Olympic team.
b. * Harvey and, [as Edna thinks you could have been [$_{Pred}$__]], Gerald are likely to make it to the Olympic team.

Other subtypes of *as*-clauses are not constrained in this way. The examples in (125) and (126) illustrate the lack of this particular correference restriction in *as*-clauses with a Predicate gap embedded in (respectively) direct object and dative object coordinations, as well as for the corresponding regular *as*-clauses.[14] *As*-clauses (both conjunction-internal and regular) with a CP gap are similarly free from this restriction (127).

[14] This asymmetry can be constructed as an additional argument against treating conjunction-internal *as*-clauses as reduced clausal coordinations: if (121b) were derived in this way, it would be predicted to have the same grammaticality status as (125c), and similarly for all the other ungrammatical sentences in (121)–(124).

(125) a. Harvey$_i$ learned to speak Russian and, [as Edna predicted he$_{i/j}$ would [$_{Pred}$__]], Chinese.
b. Harvey learned to speak Russian and, [as Edna thinks you should have [$_{Pred}$__]], Chinese.
c. Harvey$_i$ learned to speak Russian, [as Edna predicted he$_{i/j}$ would [$_{Pred}$__]].
d. Harvey$_i$ learned to speak Russian, [as Edna thinks you should have [$_{Pred}$__]].

(126) a. Edna$_i$ gave Harvey and, [as Gerald predicted she$_{i/j}$ would [$_{Pred}$__]], Laura $100 in cash.
b. Edna gave Harvey and, [as Gerald thinks you should have [$_{Pred}$__]], Laura $100 in cash.
c. Edna$_i$ gave Harvey $100 in cash, [as Gerald predicted she$_i$ would [$_{Pred}$__]].
d. Edna$_i$ gave Harvey $100 in cash, [as Gerald thinks you should have [$_{Pred}$__]].

(127) a. Harvey and [as he$_{i/j}$ swears [$_{CP}$__]], Bobby$_i$ will learn to speak Russian.
b. Harvey and [as Edna swears [$_{CP}$__]], Bobby will learn to speak Russian.
c. Harvey will learn to speak Russian and [as he$_{i/j}$ swears [$_{CP}$__]] Chinese.
d. Harvey will learn to speak Russian and [as Edna swears [$_{CP}$__]] Chinese.
e. Harvey$_i$ will learn to speak Russian, [as he$_{i/j}$ swears [$_{CP}$__]].
f. Harvey will learn to speak Russian, [as Edna swears [$_{CP}$__]].

Clearly, this cannot be treated as a binding effect, given that binding into an *as*-clause is not possible (§3.3).[15] Rather, I propose that the relevant factor is whether the pronouns/names in question are part of the meaning targeted by PA. Consider first examples (121) through (124), where the subject immediately dominating the gap is the intended target of PA. That these subject are generated in a gap-internal position is obvious for (122), (123), and (124), which involve subject promotion through passivization and raising. The same conclusion holds for (121), on the assumption that Predicate gaps are large enough to contain Spec*v*P (i.e., the thematic position of transitive subjects). The latter assumption can be justified on the grounds that Predicate gaps are a subcase of VP Ellipsis (§3.7 and LaCara 2013) and VP Ellipsis demonstrably targets a category large enough to contain the thematic position of transitive subjects (Merchant 2013). In contrast, in neither of the examples in (126) or (127) is the relevant subject pronoun/name targeted by PA: in (126a) and (126b), PA targets the object of the gap; in (126b) and (126d), it arguably targets a lower VP that contains the verb and the object, but not the subject; and in all the examples in (127), condition (116) prevents the overt subject from being targetable at all, as it is not part of the meaning of the gap.

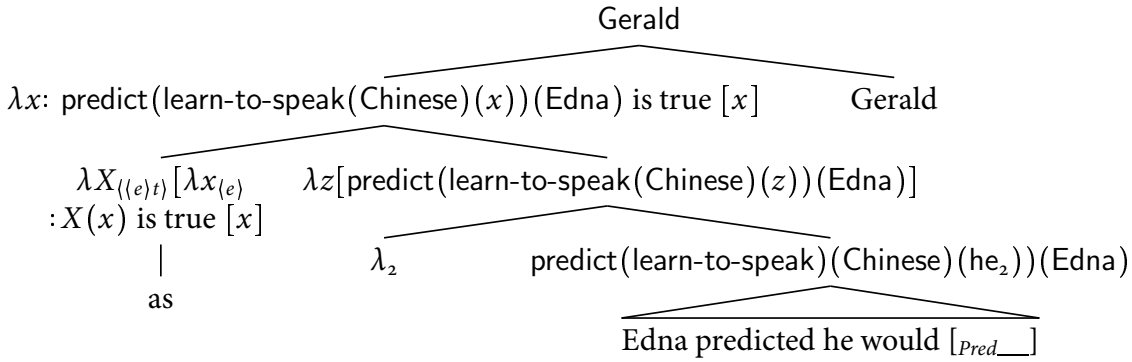
To see how this is a relevant factor, consider the derivation of (121a) as an illustration. Prior to the last application of PA, this example would have the rough representation in () below, ignoring the contribution of the modal (the steps that lead to this representation are left as an exercise for the reader).

(128) $[\![\ [_{CP}\ [_{vP}\ t_i$ learn to speak Chinese$]_k$ Edna predicted that he$_i$ would $t_k]\ ]\!] =$
$\mathsf{predict}(\mathsf{learn\text{-}to\text{-}speak}(\mathsf{Chinese})(\mathsf{he}))(\mathsf{Edna})$

In order to continue the derivation, the subject of the lower clause *he would learn to speak Chinese* needs to be abstracted over. Condition (116) allows this, given that this subject is part of the meaning of the gap. This much results in the following tree, after composition with *as*.

[15] Even if one accepted that pronominal binding across the *as*-clause boundary is exceptionally permitted here, we would be dealing with Conditions B and C, which, if anything, would force disjoint reference.

(129)



By the lexical semantics of *as*, it follows that the individual, x such that Edna predicted that x would learn to speak Chinese, is Gerald –i.e., the subject immediately dominating the Predicate gap has to be correferential with the *as*-clause host, as desired. In this particular environment, *he* cannot be mapped to any other person. Example (121b) is ungrammatical for the same reason, i.e., in this particular context, *you* cannot be felicitously mapped to Gerald.

In other words, the correference effect observed in (121) through (124) is simply a by-product of the fact that the lexical semantics of *as* require the variable created by PA to be filled in with the meaning of the host of adjunction. This is the case in (121) through (124),[16] but not in (125) or (127), where the relevant subject pronoun/name is not the target of PA.[17] As a consequence, none of the latter examples exhibit a correference restriction.

7 Known issues and outlook

The contribution of this article is the establishment of the fact that parenthetical *as*-clauses with proposition- and property-sized gaps can adjoin to individual-type hosts, contrary to the claims in Potts (2002b). However, this pattern can be integrated into Potts's general analysis simply by (a) modelling gaps as discourse anaphors with an articulate internal semantics, and (b) letting the topmost application of PA target either the entire meaning of the gap or only a proper subpart thereof. As such, the different subtypes of parenthetical *as*-clauses can be derived from variations on the size of the gap and the target of PA.

[16] Regular *as*-clauses allow Predicate gaps that resemble Pseudogapping, in the sense that both the subject and some predicate-internal constituent appear outside the gap. The following example is the closing line of the 2013 film *Hitchcock*.

(i) I share this award, [as I have [$_{Pred}$___] my life], with Alma.

On the assumption that Pseudogapping involves movement of the second remnant out of the ellipsis site (Jayaseelan 1990 *et seq*), the prediction is that comparable examples where the *as*-clause is embedded in an object coordination ought to give rise to an object correference restriction analogous to those in (121) through (124). In practice, this prediction is somewhat difficult to test due to the fact that Pseudogapping independently disfavors pronominal second conjuncts. However, to the extent that speakers accept such cases of Pseudogapping, correference judgements go as expected.

(ii) a. Harvey has met Edna and, [as I have [$_{Pred}$___] her$_{i/*j}$], Sally$_i$ in a swanky restaurant.
b. * Harvey has met Edna and, [as I have [$_{Pred}$___] you], Sally$_i$ in a swanky restaurant.

[17] Although note that this analysis predicts that languages that allow A-raising across finite clause boundaries ought to exhibit a correference restriction with CP gaps, under the appropriate circumstances. I haven't been able to check whether this is correct.

There is, nonetheless, one aspect of *as*-parentheticals that remains obscure under the analysis I have developed. As already mentioned in §1, Potts's (2002b) claims that *as*-clauses may not adjoin to individual-type hosts. If this claim is correct, then (3) requires adjunction of the *as*-clause to a propositional host, with *a dozen Tai languages* undergoing Heavy NP Shift.

(3) Klaus speaks, [as you said [$_{CP}$__]], a dozen Tai languages.

Potts justifies such an analysis on the grounds that this class of examples exhibit a number of properties normally associated with HNPS (I have independently confirmed these judgments with other speakers). First, the extent to which an *as*-clause can intervene between a verb and its object correlates with the phonological weight of the object, as one would expect if the latter has undergone HNPS.

(130) Klaus speaks, [as you said [$_{CP}$__]], { * them / ?? German / ✓ excellent German }.

As-clauses may not separate a preposition from its complement either, again as expected if such examples involve HNPS of the complement.[18]

(131) a. ?? Ames spoke to, [as you maintained [$_{CP}$__]], the head of Soviet counterinsurgency.
b. Ames spoke, [as you maintained [$_{CP}$__]], to the head of Soviet counterinsurgency.

Finally, *as*-clauses may not separate double-object verbs from their objects, once again paralleling the situation with HNPS.

(132) a. * She sent, [as you said [$_{CP}$__]], her loving father a request for funds.
b. * She sent recently her loving father a request for funds.

Clearly, these examples cannot be taken as reflective of a general ban on adjunction to individual-type hosts; rather, they indicate that adjunction to such hosts is not entirely free (properly, the topmost application of PA may not always target a proper subpart of the meaning of the gap and has to target the entire gap instead). Unfortunately, I have not yet been able to determine the factor(s) that influence this asymmetry.

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[18] But note that Potts judges (131a) as comparatively more acceptable that analogous examples featuring HNPS of the complement of a preposition across more familiar adverbial modifiers (i). At present, I do not know if this is a relevant asymmetry.

(i) * Ames spoke to recently the head of Soviet counterinsurgency.

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