Czech evidential relatives introduced by *jak* 'how'[*]

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[draft, comments welcome]

1   Introduction

This paper provides the first in-depth syntactic and semantic analysis of a type of headed relative clauses in Czech which we call *jak*-relatives. As example (1) shows, *jak*-relatives are introduced by *jak* 'how', are attached to a nominal which they modify (*buchtu* 'cake') – the relative clause head – and contain a gap or a resumptive pronoun (*ji* 'it'), coindexed with the head.[1,2]

(1) a   vochutnalas tu   buchtu,   jak   [ji]   dělali   ty   mladý?
     and tasted.2SG DEM cake.ACC.SG.F how.C it.ACC.SG.F made.PL DEM young.NOM.PL
     'and did you taste the cake that the young ones made?'

Jak-relatives represent only one of a number of relativization strategies in Czech (see, e.g., Karlík & Šimík 2017), as evidenced by the relative constructions in (2), modeled after the attested example in (1). The strategy in (2a) is very common in colloquial Czech. It involves the invariant complementizer *co* 'what' combined with a resumptive pronoun (optional in non-prepositional accusative and rare in nominative); see Toman (1998); Fried (2010); Fried & Lipská (2020); a.o. The strategy in (2b), involving the adjectival relative pronoun *kterou* 'which' (identical to its interrogative counterpart) is the standard relativization strategy in Czech and enjoys a broad semantic and stylistic distribution. The strategy in (2c), using the adjectival pronoun *jaký* 'what (kind of)' is (in standard Czech) semantically marked. It is used for relativizing kinds (here: 'the kind of cake they made'). Finally, the strategy in (2d) belongs to the formal register. The relative pronoun

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[1]Unless explicitly indicated otherwise, the data come from the Czech National Corpus and more particularly from the oral v1 corpus (Kopřivová et al. 2017), which is also the reason why they often do not conform to standard Czech orthography. The data used here were collected mostly during a corpus study of *jak*- vs. *co*-relatives; see Sláma & Šimík (to appear). Anything enclosed in square brackets was added by us.

[2]The following abbreviations are used in glosses: 1/2/3 = 1st/2nd/3rd person; ACC = accusative; ADJ = adjectival; ADV = adverbial; AUX = auxiliary; C = complementizer; DAT = dative; DECL = declarative; DEM = demonstrative; DIM = diminutive; F = feminine; GEN = genitive; IMP = imperative; INF = infinitive; INSTR = instrumental; M = masculine; N = neuter; NCI = negative concord item; NEG = negation; NOM = nominative; PFV = perfective; PL = plural; PRT = (discourse) particle; REFL = reflexive; SBJV = subjunctive; SG = singular.

is morphologically based on (a non-clitic version of) the personal pronoun combined with the relative postfix -*ž*. In this paper, we will only be concerned with the *jak*-type and an occasional comparison to the *co*-type.

(2) a. tu   buchtu,   co   (ji)   dělali
         DEM cake.ACC.SG.F what.C   it.ACC.SG.F made.PL
     b. tu   buchtu,   kterou   dělali
         DEM cake.ACC.SG.F which.ACC.SG.F made.PL
     c. tu   buchtu,   jakou   dělali
         DEM cake.ACC.SG.F how.ADJ.ACC.SG.F made.PL
     d. tu   buchtu,   již   dělali
         DEM cake.ACC.SG.F it.REL.ACC.SG.F made.PL
         'the cake they made'

The observation that *jak*-relatives are semantically special – as compared to the default *který*-relatives or *co*-relatives – goes back to Poldauf (1955), who claims that the use of *jak*-relatives implies that the referent of the nominal head (*buchtu* 'cake' in the examples above) can be "verified by the senses or memory".[3] Karlík & Šimík (2017), following Poldauf (1955), suggest that "the contribution of *jak* is that it activates the familiarity of the nominal head referent shared by the speaker and the hearer".[4] Poldauf (1955) supports his claim by the negative evidence in (3).

(3) *takové údaje, jak   si   nelze   ověřit   (Poldauf 1955: 170)
      such   data   how.C REFL impossible verify.INF
      Intended: 'the kind of data that are impossible to verify'

While we do not share Poldauf's acceptability judgement of (3), we believe that the gist of his idea is essentially correct: *jak*-relatives contribute an evidential (and indirectly epistemic) implication. *Jak*-relatives can thus be appropriately called EVIDENTIAL RELATIVES. Moreover, we will argue that the evidential implication is a conventional implicature in the sense of Potts (2005). The relative complementizer *jak* therefore has two core functions: (i) it shifts the type of the relative clause from $\langle e^a, t^a \rangle$ (ordinary predicate) to $\langle e^a, t^c \rangle$ (predicate "generating" a conventional implicature) and (ii) it contributes an evidential meaning to the effect that the hearer has evidence for the truth of its prejacent combined with the relative clause head. The proposed denotation of the relative complementizer *jak* is in (4); it is basically an evidential counterpart of Potts's (2005) COMMA operator.

(4) Denotation of the relative complementizer *jak*
     $[\![\text{jak}_\text{C}]\!] = \lambda P_{\langle e^a, t^c \rangle} \lambda x_{e^a}$. the hearer has evidence that $P(x) = 1 : t^c$

The resulting semantics for our initial example is as follows:

(5) $[\![$that cake, how.C the young ones made$]\!]$
     a. conventionally implicates that the hearer has evidence that the young ones made that cake and
     b. denotes $[\![$that cake$]\!]$

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[3]Original: "[...] u *jak* [vznikl] odstín ověřitelnosti smysly nebo pamětí." (Poldauf 1955: 170)

[4]Original: "Příspěvek *jak* k významu věty je takový, že aktivuje společnou znalost referenta vyjádřeného hlavou ze strany mluvčího a adresáta."

This analysis, spelled out in detail in section 4, makes a number of predictions. First, *jak*-relatives are expected not to combine with their relative head by standard predicate modification, as this would lead to a type clash (see Potts 2005). As a consequence, NPs modified by *jak*-relatives cannot be weak indefinites or quantificational restrictors. Relatedly, *jak*-relatives are expected to primarily modify referential expressions. We will further propose that *jak*-relatives can be used as arguments of so-called recognitional demonstratives (Himmelmann 1996), something that requires a modification of Potts's (2005) logic. Second, the contents of the evidential implicature should not be semantically accessible to matrix expressions. *Jak*-relatives should thus remain "invisible" to matrix operators such as attitude predicates. Likewise, *jak*-relatives should never contain expressions – e.g. bound pronouns or subjunctive mood – dependent on a matrix expression (e.g. quantifiers or negation). In section 5 we will show, using introspective and corpus evidence, that these predictions are borne out.

The analysis also raises important questions. Why should *jak* (literally 'how') have the proposed contribution? Is the relative complementizer function of *jak* functionally or even semantically related to some other function of *jak*? Our tentative answer to these question, formulated in section 6, is that *jak*-relatives are indirectly related to eventive how-complements.

The structure of the paper is as follows. Section 2 provides a basic characterization of the main formal and semantic properties of *jak*-relatives. Section 3 sets *jak*-relatives in the broader context of other uses of the word *jak* 'how' in Czech. We will see that besides its canonical adverbial function, it is productive as a complementizer in various types of clauses. Section 4 spells out the core proposal of this paper, namely that *jak*-relatives contribute conventional implicatures. We argue that there are two ways in which *jak*-relatives can combine with its nominal head – either by appositive modification or by becoming an argument of a recognitional demonstrative. Section 5 discusses three kinds of predictions and consequences of the proposal, namely (i) that *jak*-relatives only combine with referential heads, (ii) that *jak*-relatives are semantically opaque to matrix operations, and (iii) that *jak*-relatives have an intimate relationship to pragmatics of recognition. In section 6 we formulate the hypothesis that *jak*-relatives could be (diachronically) related to eventive how-complements. The relation is mediated by what we call insubordinated eventive how-complements (discussed more closely in 3.6). Section 7 concludes the paper.

2 Basic properties of *jak*-relatives

In this section, we discuss the basic formal and semantic properties of *jak*-relatives, comparing them to the better-studied *co*-relatives where appropriate. We show that *jak*-relatives are indeed relative clauses derived by operator movement. Next, we discuss how resumption works in *jak*-relatives. Finally, we briefly characterize the properties of the evidential implication.

That *jak*-relatives are actually relative clauses has been considered uncontroversial in the Czech linguistic discourse (Mathesius 1926; Poldauf 1955; Komárek et al. 1986; Daneš et al. 1987; Karlík et al. 2012). This typically implicit assumption is backed by the functional and formal analogy to the standard (though colloquial) *co*-relatives, illustrated in (6a). It has also been pointed out that *co*-relatives and *jak*-relatives can be conjoined; see (6b).[5]

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[5]Our analysis predicts that the *jak*-relative is not conjoined with the *co*-relative, but rather combines

(6)   a.   To je ta   paní, {co   / jak} ti   o   ní vyprávěl.
           it is DEM lady   what.C how.C you about her told.SG.M
           'That's the lady that he told you about.'   (Karlík et al. 2012: 298)

      b.   Ten známý,   co   bydlí ve Špindlu, jak   k němu jezdíme na
           DEM acquaintance what.C lives in Špindl   how.C to him go.1PL on
           dovolenou, se   asi   bude stěhovat.
           vacation   REFL probably will move.INF
           'The acquaintance that lives in Špindl, to whom we go on vacation, will
           probably move out.'   (Komárek et al. 1986: 96)

The analogy to *co*-relatives is further supported by documented cases of self-corrections;
see (7). Self-corrections have been argued to respect morphosyntactic categories (Woo
2019; Mrázková & Homoláč 2019), suggesting a morphosyntactic parallelism between the
complementizers *co* and *jak*.

(7)   furt má ty   tepláky   co   jak   měl   na začátku
      still has DEM sweatpants what.C how.C had.SG.M at beginning
      'he still has the sweatpants that he had at the beginning'

What we can add to these observations is that *jak*-relatives obligatorily contain a gap or a
resumptive pronoun coindexed with the relative clause head; see (8a). Using a hypernymic
epithet, as in (8b), does not sound felicitous to our ear.[6]

(8)   a.   to sou právě ty   komentáře jak   sme   jim posílali
           it are PRT   those comments how.C AUX.1PL them sent.PL
           'those are the comments that we sent them'

      b.   *to sou právě ty   komentáře jak   sme   jim posílali [ty   poznámky]
           it are PRT   DEM comments how.C AUX.1PL them sent.PL those notes
           Intended: 'those are the comments/notes that we sent them'

Example (9a) shows that *jak*-relativization can be long-distance, but is sensitive to islands.
See the adapted example (9b), where the embedded clause is selected by the demonstrative
to, turning it to a syntactic island. This is expected if *jak*-relatives are standard relatives
involving a locality-constrained operator–variable dependency.

(9)   a.   ty   Lidovky   jak   sem   řikala   mamce   [CP aby
           DEM Lidovky.newspaper how.C AUX.1SG told.SG.F mum.DAT   C.SBJV.3
           mi poslala   kvůli   těm zkouškám]
           me send.SG.F because.of those exams
           'the Lidovky newspaper that I told my mum to sent me because of those
           exams'

      b.   *ty   Lidovky   jak   sem   řikala   mamce   [NP [to] aby
           DEM Lidovky.newspaper how.C AUX.1SG told.SG.F mum.DAT   DEM C.SBJV.3
           mi poslala   kvůli   těm zkouškám]
           me send.SG.F because.of those exams

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with the whole NP+*co*-relative.

[6]Example (8b) would sound natural natural with a clear prosodic break before the *jak*-clause. In that
case, however, the *jak*-clause would not be a relative clause, but rather an independent insubordinate
eventive clause of the kind discussed in section 3.6.

> 'the Lidovky newspaper that I told my mum to sent me because of those exams'

As already mentioned, the foot of the relative dependency is optionally (and in some cases obligatorily) expressed by a resumptive pronoun. Resumptive pronouns are more frequent in *jak*-relatives than in *co*-relatives (22.4 % and 4.1 %, respectively, according to Sláma & Šimík to appear). Argumental functions are most often resumed by clitic personal pronouns, (10a), but the use of demonstratives – esp. in the default singular neuter form *to* – are attested, (10b). Adverbial demonstrative proforms, esp. *tam* 'there', are also very frequent, (10c).

(10) a. takovou tu fialku jak sme jí měli na tom vokně
such DEM violet.SG.F how.C AUX.1PL it.ACC.SG.F had.PL on DEM window
'that violet that we had on the window'

b. ty partnerský horoskopy jak sem to hledala jednou tobě
DEM partner.ADJ horoscopes how.C AUX.1SG DEM.SG.N searched once you.DAT
a Tomášovi
and Tomáš.DAT
'those partner horoscopes, which I once searched for for you and Tomáš'

c. do té Ostrožské Nové Vsi jak sem tam byl včera
to DEM Ostrožská Nová Ves.GEN how.C AUX.1SG there was yesterday
'to Ostrožská Nová Ves, where I was yesterday'

Resumptives are generally absent (but attested) in the subject function, (11a), typically also in the object function, (11b), and sometimes in adverbial functions, (11c).

(11) a. takovou tu vesnici jak sem si nikdy nepamatoval jak se
such DEM village how.C AUX.1SG REFL never remembered how REFL
menuje
name
'that village whose name I could never remember'

b. ty ponožky jak sem mu kupovala před tim
DEM socks how.C AUX.1SG him bought before that
'those socks that I once used to buy him'

c. na tom novym baráku jak dřív bydleli
at DEM new house how.C before.ADV lived.PL
'in that new house, where they used live'

Jak-relatives obligatorily convey the evidential implication. Consider example (12b). This sentence can be used in a context where the speaker provides information about some people which the hearer knows nothing about. It could be an answer to a question 'Who are those people?' The corresponding *jak*-relative, constructed by us and provided in (12b), is infelicitous in such a context and in fact rather unnatural independently of any supporting context (see section 5.1 for more discussion). The reason for the infelicity is that the speaker suggests something that is obviously not true – namely that the hearer knows and has evidence that the people go to Saarbrücken by car. That is, the evidential implication is a conventional part of the meaning of *jak*-relatives.

(12) a. to sou ňáký lidi co jezdí autem do Saarbruckenu
DEM are some people what.C go car.INSTR to Saarbrücken

       'those are some people who go to Saarbrücken by car'
  b. #to   sou ňáký lidi   jak   jezdí autem   do Saarbruckenu
     DEM are some people how.C go   car.INSTR to Saarbrücken
     Intended: 'those are some people who go to Saarbrücken by car'

Another piece of evidence that the evidential implication is conventional is that it cannot be cancelled. This is illustrated by the constructed example (13), where it is infelicitous to continue the first sentence by negating the implication that it is a known fact (which the hearer has evidence for) that Filip painted paintings his whole life. Relatedly, the surprise verbalized by the imperative verb *představ si* 'imagine' only targets the fact that they found the paintings, not that Filip used to paint (related issues will be discussed in more detail in section 5.2). We further note (without explicitly illustrating it) that the corresponding *co*-relative behaves differently in both respects: the continuation is felicitous and the surprise may target the fact that Filip used to paint.

(13) Představ si,   že   ve Filipově pozůstalosti našli   obrazy, jak   celý
      imagine.IMP REFL C.DECL in Filip's   estate   found.PL painting how.C whole
      život maloval.   #Nikdo   netušil,   že   měl   umělecké sklony.
      life   painted.SG.M nobody.NCI NEG.had.idea C.DECL had.SG.M artistic   inclinations
      'Imagine that they found paintings that Filip painted his whole life in his estate. Nodoby had an idea that he had artistic inclinations.'

The evidential implication is quite underspecified with respect to the *source* of evidence that the speaker appeals to. *Jak*-relatives can be "licensed" by direct evidence (typically visual, but possibly also other sensory evidence), but also reportative evidence, as illustrated in (14a) and (14b), respectively. The acquisition of the evidence is typically located in the past, as in (14a), but can also overlap with the utterance time, particularly in cases of sensory evidence. This is exemplified by the constructed example (14c). We have not found and cannot think of convincing cases of inferential (circumstantial) evidence.

(14) a. takový to   náměstíčko jak   tam prodávali ti   Vietnamci
        such   DEM square.DIM how.C there sell   DEM Vietnamese
        'this square where the Vietnamese were selling things [possible implication: the hearer has been to the square and witnessed the Vietnamese selling things (at some point in the past)]'
    b. s   tim prvním dítětem jak   jim umřelo
        with DEM first   child   how.C them died
        'with their first child, the one that died [possible implication: the hearer has heard that the child died]'
    c. ta   popelnice, jak   má na sobě žlutou nálepku
        DEM dustbin   how.C has on REFL yellow sticker
        'the dustbin that has the yellow sticker on it [possible implication: the hearer can see the dustbin at the moment of utterance]'

Finally, we would like to note that despite the underspecified nature of the evidential implication, some kind of evidence must be involved. Mere epistemic necessity (certainty) does not license the use of *jak*-relatives. Example (15), for instance, is felicitous in a situation where the hearer was a committee member – and hence witnessed there being a candidate with the longest experience – or had heard before about there being such a candidate. Epistemic necessity alone – namely that the hearer knows or believes that one

of the candidates had the longest experience – is not sufficient to license the *jak*-relative. Once again we note in passing that a corresponding *co*-relative would be felicitous in the latter scenario.

(15) Vybrali   jsme   toho kandidáta, jak   měl   nejdelší zkušenosti v oboru.
      selected.PL AUX.1PL DEM candidate   how.C had.SG.M longest experience in field
      'We selected the candidate that had the longest experience in the field.'

In summary, we have shown that *jak*-relatives are, from a syntactic perspective, standard relative clauses. We further concentrated on the semantic specialty of *jak*-relatives, namely the evidential implication. We demonstrated that the implication is underspecified with respect to the kind of evidence involved, but that it is an obligatory and non-detachable part of *jak*-relatives' meaning.

3   Functions of *jak* 'how' in Czech

The word *jak* 'how' is highly polyfunctional in Czech (Svoboda 1972, 1988; Šipková 2005; Pečený 2010). This section lists and illustrates most of the functions *jak* can take up. We point out any relevant differences or similarities to the relative complementizer *jak* along the way.

3.1   Adverb

By default, *jak* functions as an interrogative, relative, comparative, or equative adverb, modifying VPs, AdjPs or AdvPs. Some examples are included in (16).

(16) a. no a jak se jí líbí na tanečních?
          well and how REFL her like at dance.classes
          'well, and how does she like it at the dance classes?'

      b. na jak dlouho budeš   v Německu?
          for how long.ADV will.be.2SG in Germany
          'for how long will you be in Germany?'

      c. jo a udělali voba vlezy vobráceně než jak bych   chtěl
          yeah and made.PL both entries reverse   than how SBJV.1SG want
          'yeah and they made both entries the other way than [how] I wanted them to be'

      d. tim způsobem jak se   na vás nalepí
          the way.INSTR how REFL on you sticks
          'the way they stick to you'

In its adverbial function, *jak* exhibits the usual polysemy documented for other languages (see, e.g., Sæbø 2015; Umbach et al. 2021). All the question–answer pairs in (17) (constructed by us) are possible.

(17) Q Jak jsi   jel?
         how AUX.2SG went
         'How did you go?'

A$_1$	Pomalu.	manner
	slowly	
	'Slowly.'	
A$_2$	Přes Březnici.	method
	through Březnice	
	'Through (the town) Březnice.'	
A$_3$	Autem.	instrument
	car.INSTR	
	'By car.'	

In the interrogative function (root or matrix), the Czech *jak* can have a reason interpretation. For a discussion of this use of 'how', see, e.g., Jaworski (2009); Pak (2016); Fleury & Tovena (to appear).

(18)   [nechápu]   jak jen můžete dělat že   nevíte   vo   koho
      NEG.understand.1SG how only can.2PL do.INF C.DECL NEG.know.2PL about who
      de?
      goes
      '[I don't understand] how can you [you can] only be doing as though you had no idea who it is?'

3.2   Adverbial complementizer

The Czech *jak* 'how' is very productive as a complementizer in adverbial clauses, typically temporal ones, where it seems functionally equivalent to the canonical complementizer *když* 'when'. Such temporal clauses are typically modified by a short temporal adverbial such as *potom* 'then' (19a) or *hned* 'right after' (19b), but not necessarily (19c). Adverbial clauses introduced by *jak* can also have conditional or causal readings; see (19d) and (19e), respectively. We consider this kind of *jak* a complementizer, as it has no manner- or method-related semantics. Let us also point out that there is no obligatory evidential implication of the kind found in *jak*-relatives.

(19)   a. potom jak   sem   to dávala na tu   desku dřevěnú. tak propichla
          then   how.C AUX.1SG it gave   on DEM board wooden   so   pierced
          aby   para vyšla
          C.SBJV.3 steam went.out
          'Then as I put it on the wooden board, [I] pierced it so that the steam could go out.'

    b. měla sem   ho tam dát   hned   jak   mi to řekla neuroložka
          had AUX.1SG him there give.INF right.after how.C me it said neurologist
          'I should have put him there right after the neurologist said it to me.'

    c. jak   ho chytnou policajti hned   mu dávaj dejchat
          how.C him catch   police   right.after him give   breathe
          'when the police catches him, they immediately ask him to take a breath test'

    d. jak   je vožralej člověk tak ho   neuneseš
          how.C is drunk   man   then him NEG.carry
          'if/when somebody is drunk, then you can't carry him'

e.   a   jak   pršelo tak to i   začalo hnít
        and how.C rained so   it even started rot.INF
        'and because it was raining, it even started rotting'

3.3   Parenthetical complementizer

The Czech *jak* 'how' also introduces what Potts 2002 called "*as*-parentheticals" (Rulíková 1966; Štěpán 2007, 2011); see the examples in (20). Also in this case, there is no obligatory evidential implication.

(20)   a.   mám   vyloženě jak se   řiká tu   pasivní znalost
            have.1SG absolutely how REFL say   DEM passive knowledge
            'I have this absolutely – as one could say – passive knowledge [of English]'

       b.   políbil si   ty předtím to   děvče […] se   kterym si   babičku
            kissed AUX.2SG you before   DEM girl   with which   AUX.2SG grandma.ACC
            podváděl jak   tvrdí
            cheated   how.C claims
            'Did you kiss that girl with whom you cheated on grandma, as she claims?'

3.4   Pseudorelative complementizer

The Czech *jak* 'how' can further be used as a complementizer in so-called pseudorelative structures (Cinque 1996; Casalicchio 2016). Pseudorelatives and related constructions in Czech were discussed, e.g., in Caha (2004) or Panevová (2008). Pseudorelatives, like relatives, involve a direct referential dependency between a matrix NP and an embedded pronominal/*pro* element. Moreover, they are sometimes string-identical with genuine relative clauses and can thus be easily confused with them. Consider (21a), which could – in isolation – involve both a pseudorelative and a *jak*-relative. The meaning is different, however. On the pseudorelative reading, (21a) is true if the speaker saw the women's activity of rummaging. That is, the rummaging took place at the time of seeing. On the *jak*-relative reading, (21a) is true if the speaker saw the women and if the women (often) rummage. Additionally, the *jak*-relative contributes the conventional implicature that the hearer has evidence that the women (often) rummage in it. An analogous ambiguity is present in (21b) as well.[7]

(21)   a.   sem   viděla ty   ženský   jak   se   v tom přehrabujou
            AUX.1SG saw   DEM women.ACC how.C REFL in it   rummage

            (i)   'I saw the women rummaging in it'   pseudorelative
            (ii)   'I saw the women, who [often] rummage in it [and the hearer has evidence that they rummage in it].'   *jak*-relative

       b.   a   já pak viděl Božku   jak   lítá z   naším košíkem
            and I   then saw   Božka.ACC how.C flies with our   basket

            (i)   'and then I saw Božka running around with our basket' pseudorelative
            (ii)   'and then I saw Božka, who [often] runs around with our basket [and the hearer has evidence that Božka runs around with our basket]'

                                                       jak-relative

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[7] The reported habitual reading of the *jak*-relative is salient, but not obligatory. With enough contextual support, one could imagine a progressive interpretation, too. In

Not all instances of pseudorelatives constitute string-identical versions of *jak*-relatives, though. Pseudorelatives can "relativize" weak (existential) nominals, as in (22a). As we will see in section 5.1, this is not possible in *jak*-relatives. They can further "relativize" pronouns – even clitic pronouns – which do not even need to be linearly adjacent to the pseudorelative; see (22b) and (22c). Finally, let us note that pseudorelatives in Czech productively alternate with infinitives, which is illustrated by example (23), which we constructed based on (22c). This contrasts with relative clauses: Czech has no productive strategy to form infinitival relatives. All this clearly suggests that pseudorelatives are not relative clauses at all – an uncontroversial assumption in the literature.

(22)   a.   a   vidim   ňákýho chlápka jak   se   mi vopírá vo   auto
            and see.1SG some   guy.ACC how.C REFL me lean   against car
            'and I see some guy leaning against my car'

        b.   slyšim   ho   jak   de   do toho obýváku
            hear.1SG him.ACC how.C goes to DEM living.room
            'I hear him going to the living room'

        c.   bych   jí   chtěla vidět jak   by   lezla z   těch schodů
            SBJV.1SG her.ACC wanted see.INF how.C SBJV crawl from DEM stairs
            'I'd like to see her crawling from the stairs'

(23)   bych   jí   chtěla vidět [lézt]   z   těch schodů
        SBJV.1SG her.ACC wanted see.INF   crawl.INF from DEM stairs
        'I'd like to see her crawling from the stairs'

Even though pseudorelatives are obligatorily selected by verbs of perception ('see', 'hear', 'sense') and thus involve a certain "evidential" flavor, the evidential component is quite different from that in *jak*-relatives. First, pseudorelatives always involve sensory evidence, while *jak*-relatives are underspecified with respect to the evidence they imply; it can be sensory, but also reported. Second, in pseudorelatives the evidential proposition is asserted and can therefore be negated, for instance. In contrast, the evidential proposition in *jak*-relatives is conventionally implicated and is thus semantically inert with respect to operators like negation (see section 5.2). Third, the evidential proposition in pseudorelatives is always attributed to the subject of the sensory predicate; in *jak*-relatives, it is always tied to the speaker and hearer.

3.5   Eventive complementizer

The pseudorelative complementizer function reported in the previous section is loosely related to what we call here the eventive complementizer, following the terminological choice of Umbach et al. (2021), without necessarily adhering to their syntactic and semantic proposal.[8] According to Umbach et al. (2021), eventive complements introduced by 'how' can be embedded under (i) perception verbs ('see', 'hear', 'notice', etc.), (ii) cognitive verbs ('remember', 'forget', 'imagine', etc.), and (iii) speech-report verbs ('tell',

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[8]Umbach et al. (2021) explicitly argue that the German eventive *wie* 'how' is not a complementizer, but an adverb base-generated in SpecCP. We find these two options difficult to empirically distinguish and therefore prefer to remain terminologically consistent with the other non-manner/method instances of *jak* 'how' (see Nye 2013 for empirical arguments that the English "eventive *how*" is a complementizer). Notice also that a complementizer-based analysis does not preclude the free relative-based analysis of Legate (2010) and Umbach et al. (2021), as complementizer-based free relatives are independently attested (see, e.g., Sadler & Camilleri 2018 or Caponigro 2021, who calls them super-free relatives).

'describe', 'portray', etc.). Representatives of these three classes are illustrated in (24). In addition, Czech also allows embedding under the epistemic predicate 'know'; see (25).

(24) a. já sem si akorát všimla jak ona došla a tak si nás zkoukla
I AUX.1SG REFL just noticed how.C she came and so REFL us looked
'I just noticed how she came and look at us.'

b. uplně se dokážu představit jak se tam nabourávám do něčeho
completely REFL can.1SG imagine how.C REFL there hack.1SG into
něčeho
something
'I can easily imagine how I'm hacking into something there.'

c. vyprávěl jak střílel u šváry vietnamský prasata
told how.C shot at brother.in.law Vietnamese pigs
'He told (us) how he was shooting Vietnamese pigs at his brother-in-law's.'

(25) víš jak sem se styděla jít za profesorkou a říct jí že
know.2SG how.C AUX.1SG REFL shamed go.INF to professor and tell her C.DECL
sem vdaná
am married
'you know [≈ remember] how I once felt shy to go to the professor and tell her that I'm married'

In many cases – and also in the cases above (not illustrated here) – the complementizer *jak* 'how' alternates with the standard declarative complementizer *že* 'that' with an intuitively noticeable (but hard-to-describe) meaning difference.[9] What is important to note for our purposes is that the eventive *jak* does not trigger the evidential implication of *jak*-relatives: none of the examples in (24) bear the implication that the hearer has evidence that the complement is true.

The only notable "exception" in this respect is example (25). In this case, the speaker appeals to the hearer's knowledge by using *víš* 'you know'. Importantly, however, it is not only knowledge that the speaker appeals to, but rather also the hearer's experience. The utterance implies that the hearer has evidence (direct or indirect) that the complement of 'know' is true. In this respect, the utterance differs from the alternative with the standard declarative complementizer *že* 'that', where only knowledge – but not experience/evidence – is being appealed to.

3.6   Insubordinated eventive complementizer

The last function of *jak* 'how' that we would like to mention is what we call the insubordinated eventive complementizer.[10] This function is arguably closely related to two previously mentioned functions, namely the adverbial complementizer (section 3.2) and the eventive complementizer (section 3.5). Consider the examples in (26). The clauses introduced by *jak* are syntactically similar to conditional clauses of the kind discussed in section 3.2. At the same time, each of the *jak*-clauses in (26) introduces a topical referent

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[9]See Umbach et al. (2021) and Liefke (to appear) for in-depth discussion of the semantics of how-complements. The initial impression is that there is considerable intra- and cross-linguistic variation. Also for this reason, we do not attempt to describe the semantics of the Czech how-complements in any detail.

[10]We are grateful to Josef Šimandl for bringing this kind of construction to our attention. The terminological and analytical choices we make here are our own responsibility.

which is then picked up in the main clause: *toho NP* 'this SURNAME' – *to* 'that' in (26a), *ta obrovská osika* 'this huge aspen' – *to* 'that' in (26b), and *tý Deltě* '(this) Delta' – *tam* 'there' in (26c).[11] Finally, the *jak*-clauses are intuitively interpreted as though they were complements of an epistemic/recognitional predicate – 'know' or 'remember' in particular. Notice that if such a predicate were present (and it could easily be added in all the examples in (26)), these clauses would clearly be categorized as how-complements of the kind discussed in 3.5. What is important is that even without such an explicit predicate, these clauses convey the hearer-oriented evidential implication. In this sense, the *jak*-clauses are "insubordinated" – they exhibit the syntactic and semantic properties of their subordinated counterparts.[12] In section 6 we will hypothesize that these insubordinated *jak*-clauses might be the diachronic source for *jak*-relatives.

(26) a. jak   sem   teďko byl u toho NP   […] to   byl jako machr
        how.C was.1SG now   was at DEM SURNAME   DEM was PRT champ
        '[you know/remember] how I was at this guy called NP […], that was a real champ'

    b. jak   sme   byli na tý   procházce […] jak   je tam ta   obrovská
       how.C AUX.1PL were at DEM walk   how.C is there DEM huge
       osika ty   vole to   je strom
       aspen you dude DEM is tree
       '[you know/remember] how we took this walk, how there was a this huge aspen, dude, what a tree!'

    c. jak   sme   hráli na tý   Deltě tak tam prostě ze   čtyryceti lidí
       how.C AUX.1PL played at DEM Delta so there PRT   from forty   people
       deset přišlo na nás
       ten   came for us
       '[you know/remember] how we played at Delta, so ten people out of forty came to see us'

3.7   Interim summary

We have gone through a number of functions of the Czech word *jak* 'how'. Besides its canonical adverbial use, it can be used as a complementizer in various kinds of constructions. What will be of particular interest to *jak*-relatives is the eventive complementizer function, both in its embedded and insubordinated use. We will get back to this issue in section 6.

4   Analysis of *jak*-relatives

We propose that *jak*-relatives are relative clauses which contribute what we have called the EVIDENTIAL IMPLICATION about the relative clause nominal head. What is implied is that the speaker expects the hearer to have evidence that the relative clause is true about the referent of the nominal head. Furthermore, we argue that the evidential implication is a conventional implicature in the sense of Potts (2005).

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[11]NP is an anonymized version of a particular surname in the corpus oral v1.

[12]The canonical reference for insubordination is Evans (2007). For a discussion of insubordination in Czech, see Fried (2009); Machač & Fried (2021). What our insubordinated event complements have in common with more common cases of insubordination is that they express epistemic attitudes.
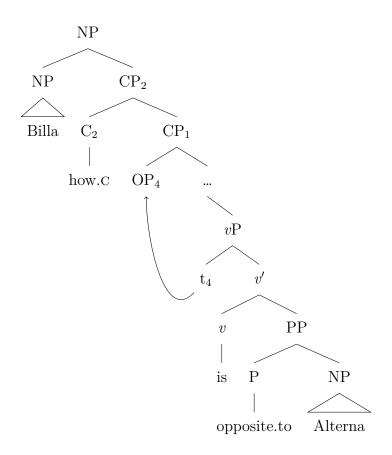
Figure 1: Proposed syntactic structure for the bracketed part of (27)

We introduce our analysis by looking at a simple case where the *jak*-relative modifies a referential expression – a proper name (section 4.1). We then move on to the analysis of *jak*-relatives modifying demonstrative descriptions (sections 4.2 and 4.3). We will argue that there are two ways in which the *jak*-relative can combine with its NP head: either in an appositive fashion, as discussed in section 4.1, or – on its restrictive use – the *jak*-relative is an argument of the so-called recognitional demonstrative (section 4.3). The latter method constitutes a departure from Potts's (2005) logic of conventional implicatures in that a CI meaning is not just a comment on at-issue meaning, but co-determiners the at-issue meaning, as well.

4.1   Initial proposal: *jak*-relatives modifying proper names

Consider example (27). In this utterance, a *jak*-relative modifies the proper name *Billa* 'the Billa supermarket'. By using the *jak*-relative, the speaker intends to clarify which Billa supermarket she has in mind and at the same time implies that the hearer has evidence that the Billa supermarket she refers to is opposite to the Alterna club. Appealing to the hearer's evidence- or experience-based knowledge is an effective way of achieving successful reference.

(27)   tam   byli   zastavený   policajti tam   u   [Billy, jak   je naproti   Alterně]
       there were stopped   police   there at Billa how.c is opposite.to Alterna
       'there were policemen at the Billa supermarket, the one that's opposite to the
       Alterna club'

A simplified syntactic structure we propose for the bracketed part of (27) is in Figure 1. The relative clause consists of two CP layers. CP_1 hosts the standard relative operator binding the relative clause-internal argument position of the relativized nominal – here the subject of the predicate *je naproti Alterně* 'is opposite to Alterna'. The complementizer *jak* 'how' is hosted by the higher C_2 head. It turns the relative clause into one that contributes a conventional implicature. CP_2 is then adjoined to the head NP.

The proposed semantic lexical entry for the complementizer *jak* used in *jak*-relatives is in (28), with some additional detail provided in (29). In type-theoretic terms, *jak* selects an ordinary $\langle e, t \rangle$-type predicate (the a-superscript indicates an "at-issue type") and turns it into a predicate whose application to an entity yields a truth value of the conventional implicature (CI) type (indicated by the c-superscript).[13] Informally speaking, the complementizer *jak* yields the conventional implicature that the hearer of the utterance ($\mathsf{HR}(u)$) has evidence that the property denoted by its complement (P) applied to the denotation of the relative clause head (y) is true.[14]

(28) $[\![\text{jak}_\text{C}]\!]^u = \lambda P_{\langle e^a, t^a \rangle} \lambda y_{e^a} [\mathsf{EVID}(P(y))(\mathsf{HR}(u))_{t^c}]$

(29) For any proposition p and individual x,
      $\mathsf{EVID}(p)(x)$ is true iff x has evidence that $p = 1$

Figure 2 shows how this semantics is applied in our example (27). The *jak* complementizer selects the predicate denoted by its CP_1 complement (corresponding to the set of entities that are opposite to Billa) and returns a CI-generating predicate – the denotation of CP_2. This predicate is applied to the relative clause head *Billa*, which denotes an at-issue entity. The application, called CI application by Potts (2005), yields an at-issue result – the entity denoted by *Billa* – and the conventional implicature that the hearer has evidence that Billa is opposite to Alterna. These two layers of meanings are visually divided by the bullet. For purposes of subsequent semantic composition, i.e., the integration of the NP into the external syntactic context, only the at-issue meaning is visible; the CI meaning or its parts remain invisible for any further computation.

What is the pragmatics of using a *jak*-relative? At first sight, the situation is somewhat paradoxical: the speaker informs the hearer that the hearer has evidence – and hence believes – that the relative clause is true of the relative clause head. Why would the speaker want to inform the hearer about his or her own beliefs? We would like to suggest that the situation in which such a counterintuitive discourse move is felicitous is one where the speaker wants to *remind* the hearer that the hearer possesses this evidence. And because the *jak*-relative is "about" the relative clause head, it is used primarily with the aim to help the hearer *identify* the referent of the head. Notice that the fact that the head is referential (i.e., it is of type e) does not yet guarantee that the hearer is automatically capable of identifying it. In fact, the very purpose of the *jak*-relative is to make the identification easier for the hearer and this is done in a very efficient way – by referring to the evidence available to the hearer.[15]

In our example, the speaker anticipates the hearer's uncertainty about what *Billa* she

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[13]For a full exposition of the logic of conventional implicatures $\mathcal{L}_\text{CI}$, see Potts (2005). For now, we diverge from Potts' original proposal in minor technical details, but not in spirit. In section 4.3 we will argue for a more substantial departure from Potts' proposal.

[14]We further note, without explicitly formalizing it, that having evidence for p entails knowing/believing p.

[15]We do not go into the details of referent identification. One way of approaching the issue is via individual concepts (expressions of type $\langle s, e \rangle$) and, by extension, Aloni's (2001) conceptual covers.
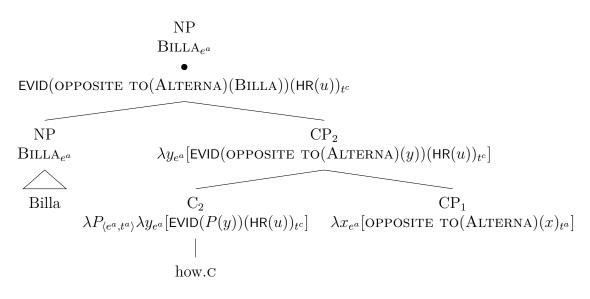
Figure 2: Composition of *jak*$_C$ with the relative clause

refers to. In order to help the hearer identify the Billa supermarket intended, the speaker reminds the hearer that it is opposite to the Alterna club, something that the hearer has direct or indirect evidence for. That way, the inteded referent is successfully activated in the hearer's mind and the conversation can continue.

4.2   Modification of NPs: A preliminary analysis

Consider now an utterance in which the *jak*-relative modifies a desriptive NP. We choose an example in which the NP is introduced by a demonstrative. As we will discuss more closely in 5.1, demonstrative descriptions are particularly common heads of *jak*-relatives.

(30)   bydlela   přímo v [tom baráku jak   sme   koupili]
       lived.SG.F right in DEM house how.C AUX.1PL bought.PL
       'she lived right in the house which we bought'

Figure 3 provides a structural representation compatible with the proposed semantics. The demonstrative combines with the NP first, giving rise to a referential expression, which can then be modified by the *jak*-relative. For simplicity, we only provide the meaning of the complete relative clause (CP$_2$), its head, and the result of the CI application.

The analysis might provide the right truth conditions and felicity conditions, but it also raises two concerns. First, the semantics of the demonstrative description is too simplistic; it is generally acknowledged that demonstratives have a more complex structure and semantics than definite articles (see, e.g., Wolter 2006; Elbourne 2008; Schwarz 2009; Ahn 2019; Nowak 2019). Second, the *jak*-relative in Figure 3 is appositive. While this might be correct for some cases, there are reasons to doubt that *jak*-relatives are always appositive. In many cases, there is a clear intuition that the *jak*-relative provides a property essential in determining the reference of the whole NP. Consider the examples in (31). Example (31a) is intuitively compatible with both a restrictive and an appositive reading, as indicated by the translations in (i) and (ii). Example (31b) only seems to afford the restrictive interpretation: the property of being able to throw in a ball from a long distance is essential in determining the kind of basketball player that the speaker
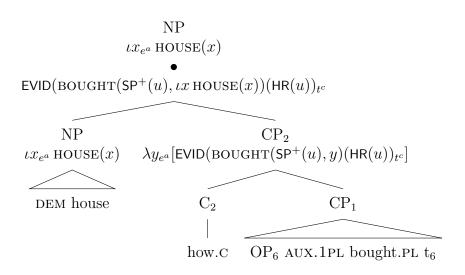
Figure 3: Proposed (preliminary) syntactic and semantic structure for the bracketed part of (30)

finds "incomprehensible".[16] What is also common are examples like (31c), where the demonstrative combines directly with the *jak*-relative and together they function as an apposition to a referential NP. A related use is illustrated in (31d), where the demonstrative+*jak*-relative functions as a self-standing NP. In both of these cases, there is a clear intuition that the *jak*-relative is essential in determining the NP reference.

(31) a. Lucie přinesla   ty kosmatice   jak   sem   si   v pondělí
          Lucie brought.SG.F DEM fried.elderflower how.C AUX.1SG REFL in Monday
          dělala
          made.SG.F
          (i)   ✓ 'Lucie brought the fried elderflower that I made on Monday'
          (ii) ✓ 'Lucie brought the fried elderflower, which I made on Monday'

      b. nepochopitelný sou pro mě ty basketbalisti   jak   na třicet metrů
          incomprehensible are for me DEM basketball.players how.C on thirty meters
          to hodí do toho košíku
          it throw into DEM basket
          (i)   ✓ 'what's incomprehensible to me are those basketball players who can
                  throw it into the basket from thirty meters'
          (ii) ✗ 'what's incomprehensible to me are those basketball players, who can
                  throw it into the basket from thirty meters'

      c. teď volala   Lucka ta jak   s   ní chodí brácha
          now called.SG.F Lucka DEM how.C with her goes brother
          'Lucka has just called, the one that my brother dates.'

      d. to je ten jak   se   ztratil jo?
          it is DEM how.C REFL lost   yes
          'it's the one that got lost right?'

The restrictive use of *jak*-relatives, as well as the need for a more realistic semantics of

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[16]Example (31b) also demonstrates that *jak*-relatives can modify not just particulars, but also (ad-hoc) kinds. This phenomenon is in fact quite frequent in the corpus. The kind reading is often supported by the kind-demonstrative *takový* 'such'.

demonstratives, warrant a reconsideration of the analysis proposed in Figure 3.

4.3 Accounting for the restrictive reading

4.3.1 Background on two-argument demonstratives

Over the past 20 years or so, the research on demonstratives has converged on the idea that demonstratives require two arguments: the NP and an additional argument which co-determines the extension of the whole demonstrative description (Del Gobbo 2003; Elbourne 2008; Schwarz 2009; Nowak 2014, 2019; Šimík 2016; Ahn 2019; among others). The various technical implementations differ (and potentially make different predictions), but the gist of the proposal can be spelled out as in (32): a demonstrative takes two predicative arguments and returns the unique entity which satisfies both predicates.

(32) $[\![\text{DEM}]\!] = \lambda P_{\langle e,t \rangle} \lambda R_{\langle e,t \rangle} [\iota x_e \, P(x) \wedge R(x)]$

The first argument (P) corresponds to the NP. The nature of the second argument (R) depends on the function of the demonstrative. In deictic uses, R is the property of being identical (or otherwise related; cf. Elbourne 2008) to the entity pointed at ($R = \lambda y[y = \text{BELLO}]$).

(33) $[\![\text{that dog [pointing at BELLO]}]\!] = \iota x \, \text{DOG}(x) \wedge x = \text{BELLO}$

In disourse-anaphoric uses, the second argument is the property of being identical to a previously mentioned referent.

(34) $[\![\text{that dog [referring back to BELLO]}]\!] = \iota x \, \text{DOG}(x) \wedge x = \text{BELLO}$

Recently, Nowak (2019), following Del Gobbo (2003) and Lin (2003), argued that the second argument can also be filled by overt material, typically by a relative clause. In (35), $R = \lambda y[\text{SAW}(\text{JANE}, y)]$.[17]

(35) $[\![\text{that dog Jane saw}]\!] = \iota x \, \text{DOG}(x) \wedge \text{SAW}(\text{JANE}, x)$

4.3.2 *Jak*-relatives as arguments of demonstratives: First attempt

We are now in a position to consider this type of analysis for *jak*-relatives. As Figure 4 demonstrates, however, there is no straightforward way of semantically integrating the *jak*-relative into the structure of the demonstrative description. The reason is that the R-predicate expected by the demonstrative is of the at-issue type, while the *jak*-relative is of the CI type. The problem is in fact quite deep: Potts (2005) states explicitly that there is no natural language expression that would take a CI-type expression as its argument, intentionally leaving a gap in his logic of conventional implicatures. The rationale behind his decision is that conventional implicatures are taken to be comments on at-issue meanings (and never conversely). It is also empirically supported by the observation that conventional implicatures can never be semantically embedded.

We will argue that there are empirical reasons that demonstratives can, in fact, select CI types as their arguments.

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[17]This analysis also readily accounts for demonstrative descriptions that introduce new referents (and hence are non-deictic and non-anaphoric), which are typically accompanied by relative clauses, called "establishing relatives" by Hawkins (1978).
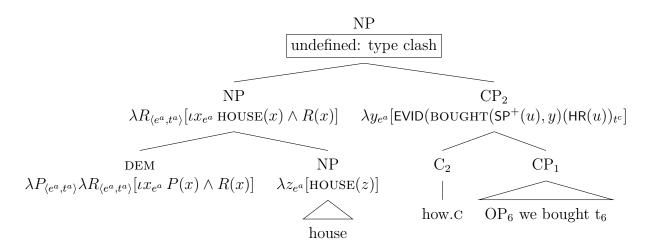
NP
$\boxed{\text{undefined: type clash}}$

NP
$\lambda R_{\langle e^a, t^a \rangle}[\iota x_{e^a}\, \text{HOUSE}(x) \wedge R(x)]$

CP_2
$\lambda y_{e^a}[\text{EVID}(\text{BOUGHT}(\text{SP}^+(u), y)(\text{HR}(u))_{t^c}]$

DEM
$\lambda P_{\langle e^a, t^a \rangle}\lambda R_{\langle e^a, t^a \rangle}[\iota x_{e^a}\, P(x) \wedge R(x)]$

NP
$\lambda z_{e^a}[\text{HOUSE}(z)]$

house

C_2
how.C

CP_1
OP_6 we bought t_6

Figure 4: Reconsidered syntactic and semantic structure for the bracketed part of (30) (non-final)

4.3.3 Demonstratives are special: Affective and recognitional demonstratives

All kinds of nominals (referential, kind-denoting, non-referential) can be modified by so-called affective demonstratives (term due to Liberman 2008; see also Lakoff 1974; Bowdle & Ward 1995; Davis & Potts 2010; Potts & Schwarz 2010; Šimík 2016; for an early discussion of Czech affective demonstratives, see Mathesius 1926). What the examples in (36) have in common is that the demonstrative does not affect the core semantics of the NP it combines with; that is, it does not type-shift the NP, as one would expect from a definite determiner. The import is pragmatic: the demonstrative expresses a shared sentiment about the NP referent. This sentiment can affect particulars (Donald Trump, our father) but also kinds (iPads); it can be positive (iPads, our father), as well as negative (Donald Trump). What is important is that this affective component cannot be semantically embedded: it is always tied to the speaker and hearer; see (37), where the sentiment is not felt to be attributed to the doctor, but rather to the speaker and hearer.

(36) a. This Donald Trump is really something! (adapted from Lakoff 1974: 347)

b. Those iPads are quite popular. (adapted from Bowdle & Ward 1995: 33)

c. Ten náš tatínek nějak stárne. (Mathesius 1926: 40)
DEM our dad somehow gets.old
'That dad of ours is getting old.'

(37) Doktor pochybuje, že se ten náš tatínek dožije Vánoc.
doctor doubts C.DECL REFL DEM our father live.to Christmas
'The doctor doubts that our father live to Christmas [and we – including the hearer – feel affectionate about him].'

A related phenomenon are the so-called recognitional demonstratives (Himmelmann 1996), discussed by Šimík (2016) under the term "anaphoric pragmatic demonstratives".[18] Their function is to remind the hearer that the denotation of the modified NP has already been spoken about. Šimík (2016) notices that, like affective demonstratives, recognitional demonstratives in Czech combine with any kind of NP, including non-referential ones,

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[18]For recent corpus-based analyses of Czech demonstrative descriptions, see Zíková (2017) and Dvořák (2020).

without affecting their core semantics (whence "pragmatic" demonstratives). See (38), where the NP *sekretářku* 'secretary' retains its referentially opaque status, despite it being modified by the demonstrative.

(38) Katedra   lingvistiky ještě hledá   tu   sekretářku.   (Šimík 2016: 644)
      department linguistics still searches DEM secretary
      'The linguistics department is still looking for a secretary [remember, we spoke about them needing one].'

Like affective demonstratives, the recognitional component in recognitional demonstratives cannot be semantically embedded: it always concerns the shared knowledge, discourse, or experience of the speaker and hearer. In (39), for instance, the demonstrative is used by the speaker to remind the hearer that (Lea's going to) Berlin was spoken about, despite it being embedded. The reading, where the recognition would concern Jitka – the linguistically expressed attitude holder – is not available.

(39) Jitka pochybuje, že   Lea pojede do toho Berlína.
      Jitka doubts   C.DECL Lea go.PFV to DEM Berlin
      'Jitka doubts that Lea will go to Berlin [remember, we spoke about her going to Berlin].'

Šimík (2016) argues that the affective and recognitional component of these "pragmatic" demonstratives corresponds to the second argument (R) of the demonstrative.[19] Provided that this analysis is on the right track, we have a reason to assume that affective and recognitional demonstratives can, in fact, select a CI predicate as their second argument. Using the term "pragmatic" as a cover term for affective and recognitional, we can define the semantics of the pertinent demonstrative as in (40).[20]

(40) $[\![\text{DEM}_{\text{PRAG}}]\!] = \lambda P_{\langle e^a, t^a \rangle} \lambda R_{\langle e^a, t^c \rangle} [\iota x_{e^a}\, P(x) \bullet R(x)_{t^c}]$

Consider first how this semantics works with a demonstrative description without any modifier. In (41a), constructed by us, the demonstrative description can be interpreted as recognitional: the speaker reminds the hearer that they communicated about the market recently and by doing that, she helps the hearer figure out the reference of *ten trh* 'the market'. The semantics for the demonstrative description is provided in (41b). The recognitional component is encoded by the R-argument of the demonstrative. It is modelled – appropriately in our view – as a predicate contributing a conventional implicature. The predicate is implicit in this case – represented as a free variable, whose meaning is resolved pragmatically.

(41) a. Jdu   na ten trh.
          go.1SG on DEM market
          'I'm going to the market [remember, I told you about the market recently].'
      b. $[\![\text{DEM}_{\text{PRAG}}\ \text{market}\ R_3]\!]^g = \iota x\, \text{MARKET}(x) \bullet [g(3)](x)_{t^c}$

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[19]The technical implementation in Šimík (2016) differs from the one put forth in section 4.3.1 and in (40) below, but the substantial correspondence is clear. We are also glossing over cases where the demonstrative does not type shift its nominal complement (i.e., where it does not contribute the iota operator).

[20]The denotation in (40) is simplified to match the one in (32). In particular, it glosses over the type-preserving nature of the demonstrative and the type-flexible nature of its first argument. See Šimík (2016) for details.

where $g(3)$ is resolved to the CI-type predicate characterizing entities that the speaker and hearer recently spoke about

Figure 5 provides the syntactic and semantic structure for the example with which we opened section 4.2. The meaning of the pragmatic demonstrative has been redefined and the *jak*-relative can therefore be semantically integrated into the meaning of the whole NP. Its semantic and pragmatic role is fully parallel to the one of the recognitional component in recognitional demonstrative descriptions. Syntactically, the analysis is in line with the recent proposals of Nowak (2019) or Ahn (2019).
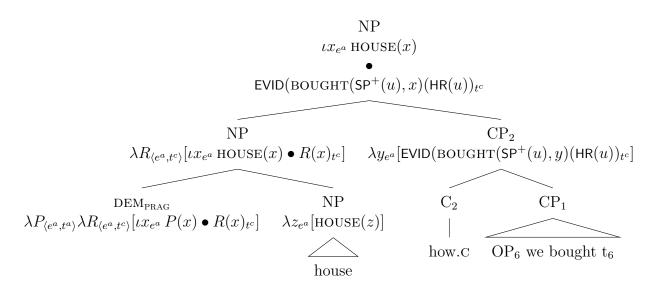

Figure 5: Reconsidered syntactic and semantic structure for the bracketed part of (30) (final)

We are aware that this proposal requires an addition to Potts's (2005) logic of conventional implicatures – a technical exercise that we do not attempt here. The addition is, however, not just technical, but mainly substantial. What we are suggesting is that a conventional implicature can be a comment on the at-issue meaning while at the same time co-determine what the at-issue meaning is. However counterintuitive this seems, it aligns well with the contribution of recognitional demonstratives: they remind the hearer of a referent (or, more generally, a nominal meaning) and this reminder (comment) helps the hearer identify that referent. In section 5.3, we will see that *jak*-relatives are indeed very closely associated with recognitional demonstratives.

4.4 Interim summary

We have argued that *jak*-relatives contribute conventional implicatures in the sense of Potts (2005). By using a *jak*-relative, the speaker reminds the hearer that he has evidence that the proposition derived by applying *jak*-relative to the relative clause head is true. This proposal works seamlessly for appositive relative clauses (section 4.1). *Jak*-relatives, however, can also be used restrictively, which turns out to be a challenge for Potts's (2005) logic of conventional implicatures (section 4.2). We have proposed a slight departure from this logic and have allowed demonstratives – and more particularly the so-called affective and recognitional demonstratives – to select CI meanings (section 4.3).

5 Predictions and consequences

5.1 Referential properties of the head

We have proposed that there are two ways in which the *jak*-relative can enter the structure: either it is an appositive modifying a referential expression or it is the second argument of a recognitional demonstrative. It cannot combine with the relative clause NP head in the standard intersective fashion. For that reason, we expect *jak*-relatives to combine with proper names, referential NPs – either bare or indefinite – and demonstrative descriptions. On the other hand, *jak*-relatives should not combine with quantificational NPs.

Corpus data confirm this prediction very clearly. Table 1 shows that *jak*-relatives combine with demonstratives in the absolute majority (nearly 90%) of the cases. The demonstratives take various forms (the default *ten*, which accounts for 83.3% of all the demonstratives, but also *tenhle, tento,* etc.; see Berger 1993) and are sometimes further modified by other determiners (typically *takový* 'such', exceptionally *nějaký* 'some'; see Uhlířová 1992). Bare NPs as *jak*-relatives' heads are also relatively frequent; about half of the 47 occurrences are proper names. The indefinite determiner *nějaký* (as the single determiner) occurs only once in our dataset.[21] All other attested determiners or determiner-like expressions (e.g. possessive) are non-quantificational. Crucially, and in line with our prediction, there is no instance of a *jak*-relative headed by a quantificational NP.

Co-relatives behave differently. While the majority of the NP heads are modified by demonstratives, there is much more variation. What is important is that *co*-relatives can also be headed by quantificational NPs, such as 'all NP', 'every NP', 'no NP', or 'one NP' ('one' in the determiner, not cardinal numeral function). In addition, *co*-relatives are productive in the construction of a comparison class for superlatives and superlative-like expressions ('the first/last/only NP that…').

determiner	*jak*-relative		*co*-relative	
demonstrative	491	88.2%	1323	63.9%
bare (no determiner)	47	8.4%	399	19.3%
nějaký	1	0.2%	84	4.1%
other non-quantificational	18	3.2%	109	5.3%
quantificational	0	0.0%	96	4.6%
superlative+	0	0.0%	61	2.9%
total	557		2072	

Table 1: Types of NP heading the relative clause (adapted from Sláma & Šimík to appear)

Our intuition supports the corpus findings. Neither of the examples in (42) is acceptable when *co* is replaced by *jak*.[22]

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[21] *Nějaký* is the most common indefinite determiner in Czech (for some discussion, see Hlavsa 1975; Perissutti 2001; Pergler 2014). It affords a variety of uses and readings, of which some may be considered quantificational and others referential.

[22] Example (42a) with *jak*, provided that it is pronounced with a clear prosodic break after *teenager*, is marginally acceptable on the conditional/temporal reading (see section 3.2). Example (42b) with *jak* is marginally acceptable on an appositive reading: 'the longest shift, which [as I've already mentioned] you could have, …'.

(42) a. každej teenager {co   / [*jak]} dneska ráno   vstane […] si   pustí
          every teenager what.C   how.C today morning gets.up   REFL turn.on
          Evropu dvě
          Evropa 2
          'every teenager that gets up today in the morning turns on the Evropa 2 radio'
      b. nejdelší šichtu { co   / [* jak]} můžeš   mít   tak to   je do vod
          longest shift   what.C   how.C can.2SG have.INF so   DEM is till from
          devíti do jedenácti
          nine   till eleven
          'the longest shift you can have is from nine to eleven'

Moreover, examples of this type are unacceptable even in cases where it is plausible
that the evidential implication is satisfied. This is illustrated by (43), which would be
felicitous in a situation where the hearer can see the stain on the sock. Yet, the use of
jak is impossible. This strongly suggests that the *jak*-relative is unacceptable because of
its CI status and not because the proposition conveyed by the relative clause is somehow
incompatible with the evidential implication.

(43) to   je jedinej flek {co   / [*jak]} mam   na ponožce
      DEM is only.ADJ stain what.C   how.C have.1SG on sock
      'that's the only stain I have on my sock'

In summary, *jak*-relatives are exclusively headed by referential expressions. A combina-
tion with uncontroversially quantificational heads is not attested in our corpus sample,
which is predicted by our analysis, where *jak*-relatives contribute a CI meaning, which
cannot intersect with the regular meaning of the NP head and which, therefore, cannot
be quantified into. The most common type of head of *jak*-relatives involves a demonstra-
tive determiner. We will get back to this issue in 5.3, where we will provide some more
arguments that these demonstratives primarily serve the recognitional function.

5.2   Semantic opacity of *jak*-relatives

If *jak*-relatives contribute CI meanings, we expect them to be opaque for purposes of
semantic operations from the matrix context. More particularly, *jak*-relatives (or the
proposition they express) should not be "visible" to semantic operators in the matrix
clause and they should never contain variables bound from the matrix.

The former kind of opacity was already illustrated in example (13), where we saw that
speaker's linguistically expressed surprise ('imagine that…') cannot target the contents of
a *jak*-relative (while the same is possible with a corresponding *co*-relative). Approaching
the issue in a more rigorous way, we observe that out of the 557 *jak*-relatives in our
spoken corpus, there is not a single one that would use the subjunctive mood; all involve
the indicative.[23] The subjunctive is also rare in *co*-relatives, but it is not absent: there
are 29 instances of subjunctive *co*-relatives in our corpus (total number of *co*-relatives:
2072). The subjunctive in Czech (and more generally; see Quer 1998) often indicates
semantic dependency on a predicate or operator. This is illustrated by the corpus example
(44a), where the embedded subjunctive (expressed by the auxiliary *by*) is licensed by
the matrix negation. If the negation is not present, the subjunctive is ungrammatical

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[23]In our intuition, the subjunctive is not grammatically ruled out from *jak*-relatives, but its semantically
dependent version is (anticipating the discussion of example (45)).

under the intended reading, as exemplified by the modified example (44b). The intended reading must use the (unmarked) indicative. For completeness, we show in (44c) that the subjunctive is grammatical without negation, but it has a different reading, one where the subjunctive is not dependent on the matrix context.

(44) a. nemám   pocit, že   by   mně to […] pomohlo
          NEG.have.1SG feeling C.DECL SBJV.3 me   it   helped
          'I don't think it helped me.'

     b. mám   pocit, že   (*by)   mně to pomohlo
         have.1SG feeling C.DECL   SBJV.3 me   it helped
         (Intended:) 'I think it helped me.'

     c. mám   pocit, že   by   mně to pomohlo
         have.1SG feeling C.DECL SBJV.3 me   it helped
         'I think it would help me.'

Matrix negation can license the subjunctive also in relative clauses. A case in point is example (45a). Importantly for us, replacing *co* with *jak* leads to ungrammaticality. The ungrammaticality is due to the unlicensed subjunctive and not due to kind relativization, as *jak*-relatives can relativize kinds (see example (31b) above and the associated footnote 16). For completeness, we show in the modified example (45b) that the subjunctive really is licensed by the matrix negation: if the negation is omitted, the intended reading can only be expressed by the indicative.[24]

(45) a. Zuzka asi   opravdu nebude   ten typ { co   / [* jak]}
          Zuzka probably really   NEG.will.be.3SG DEM type   what.C   how.C
          by   měla   jako   zástupy nápadníků
          SBJV.3 had.SG.F like.PRT crowds suitors
          'Zuzka will probably not be the type [of woman] who has many suitors'

     b. Zuzka asi   opravdu bude   ten typ, co   {*by   měla   /
         Zuzka probably really   will.be.3SG DEM type what.C   SBJV.3 had.SG.F
         má} zástupy nápadníků
         has crowds suitors
         (Intended:) 'Zuzka will probably be the type [of woman] who has crowds of suitors.'

The *co*-relative in (46a) contains a variable bound by the matrix quantifier *každej* 'everyone': the agent of the embedded photographing event covaries with the value of the matrix subject. As predicted, using a *jak*-relative in this case leads to ungrammaticality. The modified example in (46b) demonstrates that if the matrix quantificational subject is replaced by a referential expression, the result is more natural. This is expected because the value of the embedded subject can be resolved by pragmatic coreference; semantic binding is not necessary in this case. Notice that the *jak*-relative is optionally (and preferentially, in fact) accompanied by a demonstrative modifying the noun *tejden* 'week', which anchors the event more explicitly to a particular moment in the past. As we will see in section 5.3, this is a very common phenomenon in *jak*-relatives, whose recognitional nature is often reinforced by the use of additional recognitional demonstratives. We further note that while the addition of the demonstrative on *tejden* 'week' in (46a) might

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[24]In case any doubts should arise, we note that the verb *bude* 'will (be)' is used as an epistemic modal in (45), not a future copula.

make the *jak*-relative a bit more natural, it is still felt to be semantically ill-formed.

(46) a. každej vytáhnul ty svoje fotky { co / [* jak]} za tejden
     everyone pulled.out DEM POSS.REFL photos what.C how.C in week
     nafotil
     photographed
     'everyone pulled out the photos that they took during the week'

   b. Filip vytáhnul ty svoje fotky, jak za (ten) tejden nafotil.
     Filip pulled.out DEM POSS.REFL photos how.C in DEM week photographed
     'Filip pulled out the photos that he took during the week.'

In summary, we have seen that the *jak*-relative and the expression it is composed of are semantically "invisible" to any matrix material. This is expected if the *jak*-relative contributes a CI meaning rather than a regular at-issue meaning. We have illustrated the phenomenon by the impossibility to license the subjunctive mood or pronominal bound variables, properly contained in the *jak*-relative, by matrix operators.

5.3   Recognitional function of the *jak*-relative

We have argued that the primary function of the *jak*-relative is recognitional. This means that the speaker helps the hearer identify the referent of the head NP by highlighting its property which is evident – in one way or another – to the hearer. There is no straightforward way to prove that the demonstratives that head the *jak*-relative is of the recognitional kind (beyond native speaker intuition). Yet, there are two kinds of suggestive evidence that we would like to put forth in support of our claim.

First, in our spoken corpus of of *jak*- and *co*-relatives (2629 tokens in total), we have identified 19 instances where the NP modified by the relative is an argument or adjunct of the verbs *pamatovat/vzpomenout (si)* 'remember [state/inchoative]' or *připomenout* 'remind'. While this is not a very high frequency, it is notable that 12 of these 19 cases are *jak*-relatives. This indicates a preference for using a *jak*-relative in case 'remembering' or 'reminding' is at issue; note that there are nearly 4 times as many *co*-relatives than *jak*-relatives in our sample, so the null hypothesis would expect only about 5 *jak*-relatives in the minisample of 19 relatives.

The other piece of indirect evidence for the recognitional nature of *jak*-relatives is the frequency of demonstratives used within the relative clause. Consider the *jak*-relative in (47), which contains three additional demonstratives.[25] The use of these demonstratives is not motivated semantically: the NPs that they modify are proper names – the name of an institution and the name of a city quarter – so their reference is clearly settled. Instead, the demonstratives are used for recognitional reasons – to remind the hearer that he has heard about these aspects of the offer – and thereby reinforce the recognitional character of the whole *jak*-relative (and the demonstrative it is headed by).

(47) mně se tam hrozně líbila fakt ta nabídka jak byla teďka v tom
     me REFL there a.lot liked really DEM offer how.C was now in DEM.SG.M
     v tý Akademii věd někde v tý Krči
     in DEM.SG.F academy sciences somewhere in DEM Krč

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[25]The first one – *tom* – has no syntactic function in the clause; its occurrence is a result of the speaker's hesitation.

'I really liked this [job] offer, which was recently [announced] in the Academy of Sciences somwhere in Krč'

It turns out that 164 out of the 557 *jak*-relatives in our corpus (29.4%) contain at least one demonstrative. Compared to that, only 288 out of the 2072 *co*-relatives (13.9%) contain a demonstrative. An informal inspection of the data suggests that most of the demonstratives have a recognitional character.[26] The significantly higher proportion of demonstratives in *jak*-relatives is in line with our expectations.

In summary, we have presented corpus-based evidence suggesting that *jak*-relatives indeed have a recognitional function. This is in line with our analysis, where the *jak*-relative is selected by a pragmatic (recognitional) demonstrative, specialized to select a property of the CI type as its second argument.

6   Motivating the properties of *jak*-relatives

Why do *jak*-relatives have the properties they have? Why do they contribute a conventional implicature? And why do they appeal to the hearer's evidence? We have no definitive answers to these questions, but we do have an observation to offer, namely that *jak*-relatives are related to (insubordinated) complements of the verb 'remember' (or its kin 'know'; see section 3.6). Consider the triplet of constructed sentences in (48).[27]

(48)   a.   Pamatuju   si,   jak   Jitka v létě   bydlela v tom domě.
            remember.1SG REFL how.C Jitka in summer stayed in DEM house
            'I remember how Jitka stayed in the house in the summer.'

       b.   Jak   Jitka v létě   bydlela v tom domě, tak ten   prý   shořel.
            how.C Jitka in summer stayed in DEM house so   DEM allegedly burnt.down
            'Remember how Jitka stayed in the house in the summer? I heard that it burnt down.'

       c.   Ten dům, jak   tam Jitka v létě   bydlela, prý   shořel.
            DEM house how.C there Jitka in summer stayed   allegedly burnt.down
            'The house that Jitka stayed at in the summer burnt down, I hear.'

In example (48a), the *jak*-clause is an eventive complement of the verb 'remember' (see section 3.5). What is of interest is that the *jak*-complement differs from the variant with declarative complementizer *že* by being presupposed. Even if 'remember' is negated (49a), its *jak*-complement remains true. As illustrated by the contrast in (49), this does not hold of *že*-complements.[28]

(49)   a.   to   si   nepamatuješ,   jak   vás   na gymplu   nechtěla   ředitelka
            DEM REFL NEG.remember.2SG how.C you.PL at high.school NEG.wanted director
            rozdělit?
            divide.INF

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[26]This is not very surprising, as the recognitional use of demonstratives in Czech is very frequent independently of *jak*-relatives. According to Dvořák (2020), one third of all adnominal demonstratives in spoken discourse are recognitional.

[27]We remain agnostic as to whether the relation is a diachronic one.

[28]The contrast in (49) brings to light a related relevant issue: while *že*-complements of 'not remember' are typically in the subjunctive, *jak*-complements never are. This is reminiscent of the parallel behavior of *jak*-relatives, discussed in section 5.2.

(i)   Assertion: 'you don't remember how the director didn't want to divide you at high school?'

(ii)   Presupposition: 'the director didn't want to divide you at high school'

b. já taky si   nepamatuju   že   bych   někdy   čekala
    I also REFL NEG.remember.1SG C.DECL SBJV.1SG some.time waited

(i)   Assertion: 'I also don't remmeber that I ever waited'

(ii)   Does not presuppose: 'I once waited'

Let us move on to (48b). The example involves a *jak*-clause analogous to the eventive complement in (48a), but in what we have consider its insubordinated version (see section 3.6). It retains the crucial properties of the subordinated version in that it appeals to memories and that these are not at issue (either presupposed or conventionally implicated). There is a clear intuition that in this construction, the speaker does not report on her own memories, but rather appeals to the memories of the hearer: she invites the hearer to recall the event of Jitka staying in the house – whether the hearer possesses past direct evidence of that (e.g., the hearer was Jitka's neighbor) or reported evidence (e.g., the speaker and hearer already had a conversation about it). We would like to emphasize that it is always the hearer whose evidence is being called upon; even if the whole complex sentence was embedded, the evidence could not be attributed, say, to a linguistically expressed attitude holder. The appeal to the hearer's evidence is something that is "emergent" in the insubordinated use, i.e., it is not "inherited" from the subordinate version. Yet, the anchoring of the attitude to the speaker/hearer appears to be a more general side-effect of insubordination (see Fried 2009 for the insubordination of Czech *jestli* 'whether' complements). Finally, example (48c) is our vanilla *jak*-relative. As we already know, its semantic properties are basically identical to those we observe for the *jak*-clause in (48b): the speaker appeals to the hearer's evidence that Jitka stayed in the house. Despite the subordinated syntax, the *jak*-relative retains the hearer-orientation, which we have modeled by means of conventional implicatures.

The relation between (48b) and (48c) is similar to the relation between a correlative and its corresponding relative, illustrated in (50).

(50) a. Kdo   přijde pozdě, tomu   nemůžeme   pomoct.
          who.NOM comes late   DEM.DAT NEG.can.1PL help.INF
          'Whoever comes late, we can't help them.'

      b. Nemůžeme   pomoct tomu,   kdo   přijde pozdě.
          NEG.can.1PL help.INF DEM.DAT who.NOM comes late
          'We can't help those who come late.'

While insubordinated eventive complements like (48b) are not standard correlatives, they appear to be closely related. They typically involve a prominent referent expressed by a demonstrative description (cf. the wh-word in standard correlatives) – *tom domě* 'DEM house' in (48b) – which is anaphorically picked up (by *ten* in (48b)) in what appears to be the consequent clause in the pseudo-correlative structure. It is this sentence-internal anaphoric relation that might underlie the "resubordination" of the insubordinated *jak*-clause.

7 Summary and outlook

We have provided an in-depth syntactic and semantic analysis of *jak*-relative clauses in Czech. Building on the original insight of Poldauf (1955), we proposed to analyze them as evidential relatives. More particularly, *jak*-relatives convey that the speaker expects the hearer to have evidence that their denotation truthfully applies to their referential head. By appealing to the hearer's evidence, the speaker aims to help the hearer identify the referent of the relative clause head. We argued that the evidential implication is a conventional implicature – it is obligatorily speaker/hearer-oriented, cannot combine with regular NP meanings by intersection (and hence cannot be quantified over), cannot be semantically embedded, and cannot contain expressions semantically dependent on matrix operators or quantifiers. The CI status of *jak*-relatives is in an apparent conflict with the fact that *jak*-relatives function as arguments of demonstratives. We suggested that this behavior of *jak*-relatives motivates a relaxation of Potts's (2005) logic of conventional implicatures: demonstratives, and in particular affective and recognitional demonstratives are special and can take CI meanings as arguments. We closed our article by asking the difficult question of why *jak*-relatives have the properties described. In response we offer the observation that *jak*-relatives are related to eventive complements of the verb 'remember', more particularly via their insubordinated versions.

There are a number of ways in which *jak*-relatives could be approached in the future and in which their study could help us further our understanding of relativization, clausal complementation, and reference. It would be beneficial, for instance, to investigate how the *jak* complementizer in *jak*-relatives fits the broader typological landscape of epistemic/evidential complementizers (see, e.g., Boye et al. 2015; Boye & Kehayov 2016), as well as how it compares to morphologically and possibly semantically related phenomena in other Slavic languages (Jędrzejowski 2020). Another question is whether it is possible to trace the diachronic development of *jak*-relatives and whether the synchronic pattern described in section 6 has any diachronic underpinnings. Next, one could be more explicit about the formal semantics of the *jak* complementizer and attempt to find systematic connections to the recently developed semantics of 'how' in eventive complements (Umbach et al. 2021; Liefke to appear) or to the formal semantics of complementation more generally (Moulton 2009; Elliott 2017; a.o.). Last but not least, our analysis of *jak*-relatives and demonstratives poses a challenge to Potts's (2005) idea that conventional implicatures can never be arguments of at-issue meanings. More particularly, it calls for a deeper investigation of affective and recognitional demonstratives, which so far have resisted systematic formal semantic treatment.

References

Ahn, Dorothy. 2019. *THAT thesis: A competition mechanism for anaphoric expressions*. Cambridge, MA: Harvard University dissertation. https://ling.auf.net/lingbuzz/004742.

Aloni, Maria. 2001. *Quantification under conceptual covers*: University of Amsterdam dissertation. https://hdl.handle.net/11245/1.173339.

Berger, Tilman. 1993. Das System der tschechischen Demonstrativpronomina. Habilitation thesis, Ludwigs-Maxmilians-Universität München.

Bowdle, Brian F. & Gregory Ward. 1995. Generic demonstratives. In *BLS 21: Papers from the Twenty-First Annual Meeting of the Berkeley Linguistics Society*, 32–43. Berkeley, CA: Berkeley Linguistic Society. https://doi.org/10.3765/bls.v21i1.1399.

Boye, Kasper & Petar Kehayov (eds.). 2016. *Complementizer semantics in European languages.* Berlin: De Gruyter Mouton. https://doi.org/10.1515/9783110416619.

Boye, Kasper, Eva van Lier & Eva Theilgaard Brink. 2015. Epistemic complementizers: A cross-linguistic survey. *Language Sciences* 51. 1–17. https://doi.org/10.1016/j.langsci.2015.04.001.

Caha, Pavel. 2004. *Konstrukce akuzativu s infinitivem v češtině, minimalistický model.* Brno: Masaryk University MA thesis.

Caponigro, Ivano. 2021. Introducing headless relative clauses and the findings from Mesoamerican languages. In Ivano Caponigro, Harold Torrence & Roberto Zavala Maldonado (eds.), *Headless relative clauses in Mesoamerican languages*, New York: Oxford University Press.

Casalicchio, Jan. 2016. Pseudo-relatives and their left-periphery: A unified account. In Ernestina Carrilho, Alexandra Fiéis, Maria Lobo & Sandra Pereira (eds.), *Romance Languages and Linguistic Theory 10: Selected papers from* Going Romance 28*, Lisbon*, 23–42. Amsterdam: John Benjamins. https://doi.org/10.1075/rllt.10.02cas.

Cinque, Guglielmo. 1996. The pseudo-relative and ACC-ing constructions after verbs of perception. In *Italian syntax and universal grammar*, 244–275. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511554261.009.

Daneš, František, Miroslav Grepl & Zdeněk Hlavsa (eds.). 1987. *Mluvnice češtiny 3: Skladba.* Praha: Academia.

Davis, Christopher & Christopher Potts. 2010. Affective demonstratives and the division of pragmatic labor. In Maria Aloni, Harald Bastiaanse, Tikitu de Jager & Katrin Schulz (eds.), *Logic, language, and meaning: 17th Amsterdam Colloquium Revised Selected Papers*, 42–52. Berlin: Springer. http://web.stanford.edu/~cgpotts/papers/davis-potts-ac09.pdf.

Del Gobbo, Francesca. 2003. *Appositives at the interface.* Irvine, CA: University of California dissertation.

Dvořák, Jan. 2020. The emerging definite article *ten* in (informal spoken) Czech: A further analysis in terms of semantic and pragmatic definiteness. *Naše řeč* 103(4). 297–319.

Elbourne, Paul D. 2008. Demonstratives as individual concepts. *Linguistics and Philosophy* 31(4). 409–466. https://doi.org/10.1007/s10988-008-9043-0.

Elliott, Patrick D. 2017. *Elements of clausal embedding.* London: University College London dissertation.

Evans, Nicholas. 2007. Insubordination and its uses. In Irina Nikolaeva (ed.), *Finiteness: Theoretical and empirical foundations*, 366–431. Oxford: Oxford University Press.

Fleury, Damien & Lucia Tovena. to appear. On the pragmasemantics of a high adjunct wh-word. In *Proceedings of the 49th Linguistic Symposium on Romance Languages*, .

Fried, Mirjam. 2009. Construction grammar as a tool for diachronic analysis. *Constructions and Frames* 1(2). 261–290. https://doi.org/10.1075/cf.1.2.04fri.

Fried, Mirjam. 2010. Accusative resumptive pronoun in the Czech relative clauses with absolutive relativizer *co. Korpus – gramatika – axiologie* 2010(1). 16–29.

Fried, Mirjam & Karolína Lipská. 2020. Dvě relativizační strategie v češtině: Konstrukčně-gramatický přístup. *Naše řeč* 103(1–2). 37–54.

Hawkins, John A. 1978. *Definiteness and indefiniteness: A study in reference and grammaticality prediction.* London: Croom Helm.

Himmelmann, Nikolaus P. 1996. Demonstratives in narrative discourse: A taxonomy of universal uses. In Barbara A. Fox (ed.), *Studies in anaphora*, 205–254. Amsterdam: John Benjamins. https://doi.org/10.1075/tsl.33.08him.

Hlavsa, Zdeněk. 1975. *Denotace objektu a její prostředky v současné češtině.* Praha: Academia.

Jaworski, William. 2009. The logic of *how*-questions. *Synthese* 166(1). 133–155. https://doi.org/10.1007/s11229-007-9269-3.

Jędrzejowski, Łukasz. 2020. On the semantic change of evidential argument *jakoby*-clauses in Polish. In Remus Gergel & Jonathan Watkins (eds.), *Quantification and scales in change*, 85–130. Berlin: Language Science Press. https://doi.org/10.5281/zenodo.3929243.

Karlík, Petr & Radek Šimík. 2017. Vztažná věta s jmennou hlavou. In Petr Karlík, Marek Nekula & Jana Pleskalová (eds.), *CzechEncy – Nový encyklopedický slovník češtiny*, Praha: Nakladatelství Lidové noviny.

Karlík, Petr, Marek Nekula & Zdenka Rusínová (eds.). 2012. *Příruční mluvnice češtiny.* Brno: Nakladatelství Lidové noviny.

Komárek, Miroslav, Jan Kořenský, Jan Petr & Jarmila Veselková (eds.). 1986. *Mluvnice češtiny 2: Tvarosloví.* Praha: Academia.

Kopřivová, Marie, David Lukeš, Zuzana Komrsková, Petra Poukarová, Martina Waclawičová, Lucie Benešová & Michal Křen. 2017. *ORAL: Korpus neformální mluvené češtiny, verze 1 z 2. 6. 2017.* Praha: Ústav českého národního korpusu FF UK. https://www.korpus.cz.

Lakoff, Robin. 1974. Remarks on *this* and *that.* In Michael W. La Galy, Robert A. Fox & Anthony Bruck (eds.), *CLS 10: Papers from the Tenth Regional Meeting of the Chicago Linguistics Society*, 345–356. Chicago, IL: Chicago Linguistic Society.

Legate, Julie Anne. 2010. On how *how* is used instead of *that. Natural Language & Linguistic Theory* 28(1). 121–134. https://doi.org/10.1007/s11049-010-9088-y.

Liberman, Mark. 2008. Affective demonstratives. Language Log. http://languagelog.ldc.upenn.edu/nll/?p=674.

Liefke, Kristina. to appear. Two kinds of English non-manner how-complements. In *Proceedings of Sinn und Bedeutung 25*, .

Lin, Jo-Wang. 2003. On restrictive and non-restrictive relative clauses in Mandarin Chinese. *The Tsing Hua Journal of Chinese Studies* 33(1). 199–240.

Machač, Pavel & Mirjam Fried. 2021. Fonetické redukce a vyjadřování jistotních postojů v insubordinačních strukturách. *Časopis pro moderní filologii* 103(1). 7–35. https://doi.org/10.14712/23366591.2021.1.1.

Mathesius, Vilém. 1926. Přívlastkové *ten, ta, to* v hovorové čeština. *Naše řeč* 10(2). 39–41. http://nase-rec.ujc.cas.cz/archiv.php?lang=en&art=1316.

Moulton, Keir. 2009. *Natural selection and the syntax of clausal complementation.* Amherst, MA: University of Massachusetts dissertation. https://scholarworks.umass.edu/open_access_dissertations/99.

Mrázková, Kamila & Jiří Homoláč. 2019. Verbálně signalizované sebeopravy nahrazením ve veřejných mluvených textech. In Jana Hoffmannová, Jiří Homoláč & Kamila Mrázková (eds.), *Syntax mluvené čeština*, 67–101. Praha: Academia.

Nowak, Ethan. 2014. Demonstratives without rigidity or ambiguity. *Linguistics and Philosophy* 37(5). 409–436. https://doi.org/10.1007/s10988-014-9159-3.

Nowak, Ethan. 2019. Complex demonstratives, hidden arguments, and presupposition. *Synthese* https://doi.org/10.1007/s11229-019-02250-5.

Nye, Rachel. 2013. *How complement clauses distribute: Complementiser-how and the case against clause-type.* Ghent: Ghent University dissertation. https://biblio.ugent.be/publication/4220766/file/4336853.

Pak, Marjorie. 2016. Propositional *how* questions and negation. In Aaron Kaplan, Abby Kaplan, Miranda K. McCarvel & Edward J. Rubin (eds.), *WCCFL 34: Proceedings of the 34th West Coast Conference on Formal Linguistics*, 423–430. Somerville, MA: Cascadilla Proceedings Project. http://www.lingref.com/cpp/wccfl/34/paper3348.pdf.

Panevová, Jarmila. 2008. České konstrukce tzv. slovanského akuzativu s infinitivem. *Slovo a slovesnost* 69(3). 163–175.

Pergler, Jiří. 2014. Koreference a typy reference v čeština. *Studies in applied linguistics* 5(1). 7–26. http://hdl.handle.net/20.500.11956/96741.

Perissutti, Anna Maria. 2001. *Determinátory neurčitosti v čeština.* Brno: Masaryk University dissertation.

Pečený, Pavel. 2010. K sémantice srovnávacích struktur se spojovacím *jak. Jazykovědné aktuality* 47(1–2). 23–36.

Poldauf, Ivan. 1955. Vztažné věty v angličtině a čeština. In *Sborník Vysoké školy pedagogické: Jazyk a literatura, II*, 159–194. Olomouc: Státní pedagogické nakladatelství.

Potts, Christopher. 2002. The syntax and semantics of *as*-parentheticals. *Natural Language & Linguistic Theory* 20(3). 623–689. https://doi.org/10.1023/A:1015892718818.

Potts, Christopher. 2005. *The logic of conventional implicatures*. Oxford: Oxford University Press.

Potts, Christopher & Florian Schwarz. 2010. Affective *this*. In *Linguistic Issues in Language Technology 3.5: Implementation of linguistic analyses against data*, 1–30. Stanford, CA: CSLI Publications. http://journals.linguisticsociety.org/elanguage/lilt/article/view/664.html.

Quer, Josep. 1998. *Mood at the interface*. Utrecht: Utrecht University dissertation.

Rulíková, Blažena. 1966. K problematice některých typů vedlejších vět s výrazem *jak*. *Slovo a slovesnost* 27(4). 300–316.

Sadler, Louisa & Maris Camilleri. 2018. Free relatives in Maltese. *Brill's Journal of Afroasiatic Languages and Linguistics* 10(1). 115–159. https://doi.org/10.1163/18766633-00901001.

Sæbø, Kjell Johan. 2015. "How" questions and the manner–method distinction. *Synthese* https://doi.org/10.1007/s11229-015-0924-9.

Schwarz, Florian. 2009. *Two types of definites in natural language*. Amherst, MA: University of Massachusetts dissertation. https://scholarworks.umass.edu/dissertations/AAI3380015.

Šimík, Radek. 2016. On pragmatic demonstratives: The case of pragmatic discourse anaphora in Czech. In Nadine Bade, Polina Berezovskaya & Anthea Schöller (eds.), *Proceedings of Sinn und Bedeutung 20*, 640–657. Tübingen: University of Tübingen. https://ojs.ub.uni-konstanz.de/sub/index.php/sub/article/view/287.

Šipková, Marie. 2005. Spojovací *jak* v dnešní mluvené češtině. In Světla Čmejrková & Ivana Svobodová (eds.), *Oratio et ratio: Sborník k životnímu jubileu Jiřího Krause*, 313–317. Praha: Ústav pro jazyk český Akademie věd České republiky.

Sláma, Jakub & Radek Šimík. to appear. Vztažné věty s relativizátorem *jak*. *Naše řeč* .

Štěpán, Josef. 2007. Ke komentujícím vedlejším větám se spojovacím výrazem *jak*. *Slovo a slovesnost* 68(2). 101–116.

Štěpán, Josef. 2011. Polovedlejší věty se spojkami *jestli, pokud, aby* v současné češtině. *Slovo a slovesnost* 72(2). 102–117.

Svoboda, Karel. 1972. *Souvětí spisovné češtiny*. Praha: Univerzita Karlova.

Svoboda, Karel. 1988. *Kapitoly z vývoje české syntaxe hlavně souvětné*. Praha: Charles University.

Toman, Jindřich. 1998. A discussion of resumptives in Colloquial Czech. In Željko Bošković, Steven Franks & William Snyder (eds.), *Formal Approaches to Slavic Linguistics 6: The Connecticut Meeting 1997*, 303–318. Ann Arbor, MI: Michigan Slavic Publications.

Uhlířová, Ludmila. 1992. *Ten nějaký // nějaký ten* a případy podobné. *Naše řeč* 75(5). 247–254.

Umbach, Carla, Stefan Hinterwimmer & Helmar Gust. 2021. German *wie*-complements: Manners, methods and events in progress. *Natural Language & Linguistic Theory* https://doi.org/10.1007/s11049-021-09508-z.

Wolter, Lynsey. 2006. *That's that: The semantics and pragmatics of demonstrative noun phrases.* Santa Cruz, CA: University of California dissertation.

Woo, Brent. 2019. Innovation in functional categories: *slash*, a new coordinator in english. *English Language & Linguistics* 23(3). 621–644. https://doi.org/10.1017/S1360674317000557.

Zíková, Magdalena. 2017. *Gramatikalizační potenciál anaforické funkce lexému ten v mluvených narativech.* Praha: Charles University dissertation. http://hdl.handle.net/20.500.11956/91732.