Pseudo-Relatives: Big and Direct

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1. Perception and The Pseudo-Relative

Proposition-denoting expressions tend to be expressed with 'larger' syntactic constituents, housing more functional structure, while expressions that denote events are typically 'smaller', often tenseless, phrases. This syntax-semantics mapping is best revealed under perception verbs. Epistemically positive perception reports (Barwise 1981)—so-called indirect perception reports—are expressed by finite CPs (as in the Italian example in (1)), whereas epistemically neutral perception reports are expressed with infinitives (2). The epistemic nature of indirect perception reports is highlighted by the continuations in (1) and (2) showing that indirect perception reports ascribe belief to their subjects, whereas direct perception report complements are transparent. Likewise, direct perception complements, unlike indirect perception complements, can be replaced by an extensionally equivalent description of an event *salva veritate* (Barwise 1981).

(1)   Gianni ha   visto **Maria piangere** …ma pensava ridesse.
        Gianni has seen Maria cry.INF   …but thought laugh.SUBJ
        Gianni saw Maria crying but thought she was laughing.

(2)   Gianni ha   visto dalle   lacrime **che Maria piangeva**, #ma pensava ridesse.
        Gianni has seen from.the tears   that Maria cry.IMPF, but thought laugh.SUBJ.
        'Gianni saw from the tears that Maria was crying, #but thought she was laughing.

Many Romance languages, including Italian, allow another kind of clausal constituent under perception verbs—the Pseudo-Relative. The pseudo-relative (PR) is a constituent that contains a finite clause but expresses transparent, epistemically neutral direct perception, like infinitival complements and unlike 'normal' finite clausal complements:

(3) Gianni ha visto [$_{PR}$ **Maria che piangeva**] . . .ma ha   pensato che ridesse.
     Gianni has seen   Maria that cry.IMPF   . . .but has thought that laugh.SUBJ
     'Gianni saw Maria crying . . . but he thought she was laughing.

Barwise (1981) established that direct perception verbs describe a relation between a perceiver and an individual situation, whereas indirect perception describes a relation between a perceiver and a proposition. It follows that substitution of extensionally equivalent descriptions of a situation preserves truth. PRs, then, must supply the individual situation required of direct perception.

   In this short report, we show that PRs — while finite — give rise to direct perception like infinitives. We provide novel evidence, however, that PRs differ from infinitives in being referential descriptions of situations rather than being existentially quantified (Higginbotham 1983). We then propose, based on independent syntactic evidence, that PRs are headed by a determiner that is responsible for the low type of PRs compared to 'normal' finite clauses.

   We begin in §2 with some basic facts about PRs. In §3 we show the contrasting scopal behavior of PRs compared to infinitives. In §4 we sketch a compositional analysis.

2.   PR Basics

PRs are found in many Romance languages, such as Italian (4), French, Spanish, as well as Greek and Dutch (i.a.). PRs are superficially similar to relative clauses, but are naturally translated as English ACC-ing constructions.

(4) Ho   visto **Gianni che correva**. (Italian)
     I.have seen Gianni that ran.IMPF
     'I saw John run/running.'

It is well-documented that PRs are not relatives (Kayne 1975, Radford 1977, Guasti 1988, Rafel 1999, **?**, Koopman and Sportiche 2008): PRs show tense restrictions not found of relatives; PRs only permit the invariant complementizer *che*, not relative pronouns (5a); and PRs only allow subject gaps (5b).[1]

(5) a. Ciò che   ho   visto è Gianni {che/*il quale} ballava.
         That which I.have seen is Gianni that/the which dance.IMPF
         'I saw Gianni dancing'

     b. Ho   visto Luigi$_1$ che e_1 salutava   Maria /*che Maria salutava e_1.
         I.have seen Luigi that   greet.IMPF Maria /that Maria greet.IMPF
         'I saw Luigi greeting Maria /*Maria greeting Luigi'

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[1]There are some exceptions to this. See Casalicchio 2013 and Angelopoulos 2015.

PRs, it turns out, are a species of small clauses, with a DP 'subject' and a finite CP predicate (Cinque 1995). Furthermore, PRs exhibit a range of structural ambiguities typical of surface small clauses, serving as complements to perception verbs but also serving as secondary predicates in depictive constructions among other contexts. The latter instances are PRs in which the subject and CP do not form a constituent. In this paper we focus on the variety of PR that complements direct perception, which *does* form a constituent. This is shown by the fact that the PR may topicalize (6a) or be isolated in a pseudo-cleft (6b):

(6)   a.   MARIO CHE PIANGEVA, ho visto!
               Mario   that   weep.IMPF, I   saw.
               'Mario weeping, I saw' (Cinque 1995:(5))

        b.   **Ciò che$_1$**   /(***Chi$_2$**) ho   visto è **Mario$_2$ che piangeva$_1$**
               That which /(Who)   I.have seen is Mario   that cry-IMPF
               'What /(*Who) I saw was Mario crying' (after Radford 1977: 160(98))

The latter diagnostic is particularly useful because the grammaticality of *ciò* 'that' instead of *chi* 'who' highlights that the constituent PR denotes not an ordinary individual (the subject) but the entire situation described by the PR complex.

    Here we add the observation that constituent PRs are DPs.[2] Like DPs, PRs may complement prepositions (7a), unlike standard finite CPs and infinitives (7b–c). Further, PRs coordinate with other DPs and trigger plural agreement (8).

(7)   a.   La vista [$_{PP}$ di [$_{PR}$ Carlo che balla   il   tango]] è da non perdere
               The sight   of   Carlo that dance-PRES the tango   is to not miss
               'The sight of Carlo dancing the tango is not to be missed' (Cinque 1995: (35b))

        b.   *La storia di che Carlo balla   /Carlo ballare   . . .
               the sight of that C.   dances /C.   dance.INF . . .
               'the sight of C. dancing'

(8)   [$_{PR}$ Lea che piange] e [$_{DP}$ l'evento che temi]   sono immagini orribili.
             L.   that cries   &   the.event that you.fear are   images   horrible.
        'L. crying and the event you fear are horrible images.'

    Having established that PRs are DP constituents that describe situations, we turn now to a novel scope contrast between PRs and infinitives under perception verbs

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[2]Cinque 1995 claimed that DP/NP was only one of three of the possible parses for surface PR strings. In addition to the non-constituent parse found in depictives, Cinque claimed that there are two single-constituent parses of different categories: a CP parse (which denotes a situation—a proposition in Cinque's terms) and a DP parse (which denotes an individual). The above shows that even the situation-denoting parse is a DP.

3. PR Scopelessness

In this section, we show that PR complements to perception verbs are referential, whereas infinitival complements of perception verbs carry existential quantificational force.

Higginbotham (1983) proposed that (bare) infinitives under direct perception verbs are existentially quantified event descriptions. While his main goal was to argue for an event-based analysis of direct perception over Barwise's (1981) claims that situations are needed, Higginbotham's claims about the quantification force of infinitives remains uncontroversial. Higginbotham suggests that (bare) infinitival complements are the indefinite versions of an event description; so the only difference between (9a) and (9b) is that the first is indefinite and the second definite.

(9) a. John saw Mary depart.
     b. John saw Mary's departure.

The Italian infinitive likewise exhibits existential force under perception verbs. This is demonstrated, among other things, by the fact that infinitives may scope below negation. (10), for instance, does not entail that there was an event of Maria dancing the tango. (Of course, there is also an interpretation compatible the existential scoping above negation.)

(10) Dato che Maria non ha mai ballato, Gianni non ha mai visto **Maria ballare**.
      Given that M. NEG has never danced, G. NEG has never seen M. dance.
      'Since M. has never danced, G. has never seen M. dance.'

This is precisely where PRs differ from infinitives. Unlike infinitives, PRs carry an existence commitment under negation (11).

(11) #Dato che M. non ha mai ballato, G. non ha mai visto **M. che ballava**
      Given that M. NEG has never danced, G. NEG has never seen M. that dance.-IMPF.
      'Since M. has never danced, G. never saw M. dancing.'

This contrast is borne out in Spanish. An infinitival complement is possible in (12) but the PR in (13) presents a contradiction (Paula Menéndez-Benito, p.c.).[3]

(12) Juan no vio a Lea bailar,   porque Lea no llegó a bailar.
      J.   NEG saw OBJ L. dance.INF, because L. NEG arrive to dance.INF
      'Juan didn't see Lea dance, because she didn't get to dance.'

(13) #Juan no vio a Lea que bailaba,   porque Lea no llegó a bailar.
      J.   NEG saw OBJ L. that dance.IMPF, because L. NEG arrive to dance.INF
      'Juan didn't see Lea dance, because she didn't get to dance.'

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[3]The same contrast holds for Greek and Dutch (G. Spathas, A. Neeleman & H. Van de Koot p.c.)

PRs exhibit their referential, non-quantificational status (as opposed to infinitives) under other operators too. For instance, while the infinitive within the conditional in (14a) does not force the presupposition that there was an event of Gianni dancing, the use of the PR in the same position suggests that Gianni was dancing:

(14)   a.   Se Maria avesse   visto Gianni ballare   si sarebbe   arrabbiata.
            If   M.   had.COND seen G.   dance.INF SI would.be angry.
            'If M. had seen see G. dance she would have got angry.'

         b.   Se Maria avesse   visto Gianni che ballava   si sarebbe   arrabbiata.
            If   M.   had.COND seen G.   that dance.IMPF SI would.be angry.
            'If M. had seen G. that dance she would have got angry.'

Under universal quantifiers, infinitives show an expected ambiguity: they can be interpreted as describing events that co-vary under the universal, giving rise to a distributive reading (15a). PRs in the same context strongly resists a distributive interpretation (15b).

(15)   a.   Tutti hanno visto Maria ballare.
            All   have   seen M.   dance.INF
            'Every one saw M. dance.'

         b.   Tutti hanno visto Maria che ballava.
            All   have   seen Mary that dance.IMPF.
            'Every one saw M. dancing.'

Co-varying readings only become easily available if the PR contains a bound variable pronoun:

(16)   Ogni ragazzo ha visto sua sorella che ballava.
       Every boy has seen his sister that dance.IMPF.
       'Every boy saw his sister dancing.'

Similar cumulative/distributive differences are found with numerals *inside* the PR:

(17)   a.   Tutti abbiamo visto 3 orsi   scappare una volta o l'altra.
            All   we.have seen 3 bears run.away one time or the'other.INF.
            'We all saw 3 bears run away some time or other'.   DISTR. /CUMUL.

         b.   Tutti abbiamo visto 3 orsi   che scappavano   (??una volta o l'altra).
            All   we.have seen 3 bears that run.away.IMPF (one   time or other).
            'We all saw 3 bears running away (some time or other)'.   CUMUL. /*DISTR.

Finally, we would like to add two more striking contrasts between PRs and infinitives under other operators. First, under *ever*, infinitives give rise to non-specific interpretation, making the question in (18)[B] felicitous. In contrast, the use of the PR in (18)[B′] is infe-

licitous, which is expected if the PR is referential, just a definite DPs or specific indefinite DPs are (cf. (18)[B″]).

(18) A: Max voleva proprio ballare con Lea al matrimonio
         M. want.IMPF really dance.INF with L. at.the wedding.
         'M. really wanted to dance with L. at the wedding.'

       B: Ma l'aveva mai vista Lea ballare?
         But her'had ever seen L. dance.INF
         'But had he ever seen L. dance?'

       B′: ??Ma l'aveva mai vista Lea che ballava?
         But her'had ever seen L. that dance.IMPF
         'But had he ever seen L. dance?'

       B″: ??But has he ever seen the dance by Lea/a certain dance by Lea?

Under future operators, PRs also deliver a more specific interpretation, unlike the existentially quantified infinitive. The PR gives rise to a type of scheduled-event interpretation.

(19) a. Max vorrà   vedere Lea ballare.
         M. want.FUT see   L.   dance.INF.
         'M. will want to see L. dance.' (L. might dance or not)
         ...wherever or whenever that may happen, if it does.

       b. Max vorrà   vedere Lea che balla.
         M. want.FUT see   L.   that dance.PRES.
         'M. will want to see L. dancing.' (L. will dance, it is scheduled)
         #...wherever or whenever that may happen, if it does.

Again, this shows that PRs are *not* existentially quantified like infinitives. Rather PRs must be referential, either like a definite or a specific indefinite, as shown by the fact that definite DPs and specific indefinite DPs give rise to similar scheduled interpretations:

(20) a. I want to see a hockey match (any one will do).
       b. I want to see a certain/the hockey match. (has not happened, but scheduled)

In sum, we have seen that PRs are referential descriptions of situations. They must denote type s, and given that they are DPs (§2), it is natural to suppose that the null D is responsible for converting a constituent containing the PR subject and the CP that denotes type $\langle s,t \rangle$ to type s. In the next section we show what set of situations the $\langle s,t \rangle$ constituent denotes.

4.   Analysis

PRs refer to situations that their clauses describe. The question is exactly what situation? The simplest hypothesis would be that the PR refers to the Davidsonian (1967) event de-

scribed by the verb phrase in the PR, much as Higginbotham claimed for bare infinitives. This won't work for the PR, however, because of the presence of tense and aspect in PRs. Guasti (1988) documented a number of temporal properties of PRs, but the most salient is that PRs must generally, if they are interpreted as episodic,[4] be (a) simultaneous and (b) contain imperfect aspect. In Italian, imperfective is semantically decomposable into past tense and imperfective viewpoint aspect. Now, importantly the imperfective aspect is truly interpreted as such: the following sentence simply means that Gianni saw an ongoing event of Maria dancing.

(21)   Gianni ha visto Maria che ballava.

The object of perception, then, corresponds to a situation contained within an event of Mary dancing.[5] Independent evidence that the PR describes a Kleinian topic situation (not a Davidsonian event) comes from PRs that contain perfects. PRs generally disallow auxiliaries, but in a narrow set of circumstances, they can contain a perfect construction (22):

(22)   Ho   visto Maria che aveva appena rotto   la   finestra.
         I.have seen M.   that had   just   broken the window.
         'I saw M. who had just broken the window'.   (Giusti 1992, cited in Casalicchio, 2013)

(22) can report that what Gianni saw was a result situation that contains Mary and a broken window. Assuming a particular theory of perfects (see e.g. Giorgi and Pianesi 1997), in which they introduce topic situations that denote result states that incorporate their subjects, the meaning of (22) follows naturally if PRs describe situations introduced by high verbal inflectional heads.

To implement our analysis, we adopt a standard approach to the semantics of the verbal projection (Smith 1991, Klein 1994, Kratzer 1998a) in which verbs denote properties of (Davidsonian) events; viewpoint aspect maps properties of events to properties to Kleinian topic times; and tense relates topic times to the utterance time. However, we adopt a Kratzerian (Kratzer 1989) situation semantics, and uniformly treat both temporal and event arguments as situations, which have both spatial and temporal properties (Portner 1992, Cipria and Roberts 2000, Kratzer 2007). Finally, we adopt a referential theory of tense (Partee 1973, Kratzer 1998a), whereby tense denote contextually salient situations whose temporal ordering with respect to the utterance sitation (s_o) is given by a presupposition. ($\leq$ indicates the inclusion relation for the imperfective.)[6]

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[4]See Grillo & Moulton 2015 for an event-kind analysis of apparent cases of Tense mismatch in PRs which we claim involve habituals.

[5]Infinitival complements of perception verbs in Romance also deliver the same ongoing interpretation (Giorgi and Pianesi 1997), unlike English bare infinitives. It remains very much an open question about whether the ongoing interpretation is delivered by the verb root itself or by other functional structure (Zucchi 1999). For PRs, the facts are pretty clear though: imperfective is responsible. Non-imperfective aspect (e.g. with Italian simple past), is ungrammatical in PRs. We leave to future work why this should be so.

[6]Alternatives may work here too, e.g. treat PRs like sequence of tense complements, specially as though the tense is uninterpreted, but perhaps abstracted over (see e.g. Kratzer's zero tense, or Kusumoto 2005).

(23)   a. $[\![\ \text{IMPF}\ ]\!] = \lambda P_{\langle s,t \rangle} \lambda s. \exists s'[s \leq s' \ \& \ P(s')]$
       b. $[\![\ \textbf{ball-}\ ]\!] = \lambda s. \lambda x. \text{dance}(x)(s)$
       c. $[\![\ \textbf{past}\ ]\!]^c$ is only defined if c provides a situation s that precedes s_o (the utterance situation). If defined, then $[\![\ \textbf{past}\ ]\!]^c = s$.

What we want is for the PR to describe the topic situation of the embedded clause. We propose (somewhat non-standardly)[7] that the tense pronoun is abstracted over. We implement this by an object-language lambda abstraction operator in C. (We show also abstraction over a *pro* in subject position, and the PR subject in a Spec,CP, consistent with the claims that PRs are small clauses with a CP predicate. See Moulton and Grillo in prep. for further evidence from reconstruction and the motivation for abstraction operators in C here.)

(24) $[_{DP}\ \text{D}\ [_{CP}\ \text{Maria}\ \text{C}_{\lambda_{\langle 1,2 \rangle}}\ [_{TP}\ \text{past/s}_2\ [_{AspP}\ \text{IMPF}\ [_{VP}\ \text{pro}_1\ \text{ballava}\ ]]]]]$

We suggest here that the determiner that converts this property into a description of an individual situation is a definite—hence the ι operator.[8]

(25) $[\![\ (24)\ ]\!] = \iota s : s$ precedes $s_o. \exists s'\ [s \leq s' \ \& \ \text{dance}(\text{Maria})(s')]$
       ⤳ the situation s that is contained in an ongoing dancing event by Maria, with the presupposition that s is a past

This referential description of a past event then serves as the complement to direct perception *see*, and this delivers the behaviour of PRs seen in §3. As definites, the PR's existence presupposition will project out of negation and conditionals (10)–(14). Co-varying interpretations (15)–(16) will only be available with a bound variable pronoun (cf. *Everyone saw the play* vs. *Everyone_i saw the play he_i wrote*.) Infinitives, we saw, showed evidence

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[7]This abstraction has the appearance of binding a pronoun with indexical properties. We don't know whether this poses any particular problem, since nothing in principle precludes the derived predicate from characterizing a set of situations that are presupposed to precede the utterance time.

[8]Another alternative is that PRs are a type of specific indefinite, which would capture the scope facts as well. In that case, the determiner could correspond to a choice function (Fodor and Sag 1982, Reinhart 1997, Kratzer 1998b, Matthewson 1999) or the PR could be a type of singleton indefinite (Schwarzschild 2002). The crucial evidence hinges on whether PRs impose a uniqueness requirement. At first glance, it appears that they do not, when we compare them with over definite descriptions of situations in the scenario below:

(i)   The Barbarians attacked every night during the last week, but Aurelio was only present on Thursday.
      a.   #Aurelio ha visto l'attacco dei   Barbari.
           Aurelio has seen the'attack of.the Barbarians.
           Aurelio saw the attack of the Barbarians.

      b.   Aurelio ha visto i   Barbari   che attaccavano.
           Aurelio has seen the Barbarians that attack.IMPF.
           Aurelio saw the Barbarians attacking.

However, several NELS attendees pointed out to us that the PR might house some silent temporal restrictor (i.e. 'on Thursday') that would let the PR satisfy the uniqueness requirements of a definite. Given that we are treating tense as referential – although in PRs it is abstracted over – this possibility may be viable. We leave this choice point open to further research.

of being existentially quantified. We suggest that infinitives denote properties of situations and combine with a property-taking *see* (see Geenhoven 2000, Zimmermann 1993). This will allow them to scope under negation.

(26) a. Infinitive/property-taking ⟦ **see** ⟧ = $\lambda P.\lambda s.\lambda x.\exists s'[\text{see}(s')(x)(s) \& P(s')]$
      b. Individual/PR-taking ⟦ **see** ⟧ = $\lambda s'.\lambda x.\lambda s.[\text{see}(s')(x)(s)]$

(27) Gianni non ha mai   visto **Maria ballare**.
      G.   NEG has never seen M. dance.
      'G. has never seen M. dance.' NEG $> \exists$
      $\lambda s.\neg\exists s'[\text{see}(s')(I) \& \text{dance}(\text{Maria})(s')]$

4.1   Conclusion

The central result reported here is that PRs are referential descriptions of topic situations. This explains why, although finite, PRs may serve as complements to direct (rather than indirect) perception and why they differ from infinitives (which also deliver direct perception) in their scopelessness. We offered a compositional analysis that involved abstraction over topic situations with subsequent type-shifting to a low type via a D (which we tentatively treat as a definite determiner). This short report did not touch upon *why* PRs look the way they do, why they are DPs, and why 'normal' finite clauses cannot deliver direct perception. An explanation for these questions is offered in Moulton & Grillo (in prep.).

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