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On the source of maximality in wh- constructions crosslinguistically

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1 Introduction

Jacobson (1995) argues that wh- clauses like the free relative in (1) and the constituent interrogative in (2) denote the same kind of object as the definite description in (3).

(1) I ate [what was left in the fridge].
(2) [What was left in the fridge]?
(3) I ate [the things that were left in the fridge].

In a situation in which three things were left in the fridge, for instance an egg, a carrot and a pastry, the definite description in (3) would denote the *maximal plural individual* made of the sum of that egg, that carrot and that pastry (Link 1983, more below). According to Jacobson (1995), the wh- clauses in (1) and (2) would both denote the singleton set containing that very same maximal plural individual.

The notions of maximal plural individual and, more generally, maximality play a crucial role in all three cases above. According to Link (1983), maximality in definite descriptions is lexically triggered by the meaning of the definite determiner. Similarly, Jacobson (1995) argues that maximality in wh- clauses is triggered by the meaning of wh- words, therefore making the strong prediction that wh- clauses should always exhibit maximality.

In this paper, I will show that this approach is problematic, especially if it is applied to wh- clauses crosslinguistically. In fact, there are free relatives (in languages rather than English) and constituent interrogatives (in English as well) which do not exhibit maximality. I will argue that, when it is present, maximality is not lexically triggered, but results from either a certain notion of answerhood (interrogatives) or the interplay of semantic properties of predicates and type-shifting rules (free relatives).

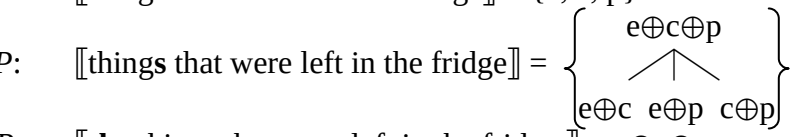
The paper is structured as follows. First, I will briefly introduce Link's (1983) proposal for the semantics of definite descriptions (§2) and Jacobson's (1995) related proposal for the semantics of wh- clauses (§2). Then, I will discuss examples of constituent interrogatives (§4.1) and free relatives (§4.2) that do not exhibit maximality. After stating the puzzle of maximal and non-maximal wh- clauses (§5), I will sketch a tentative unified semantic analysis which is based on the idea that wh- words introduce a free variable into the logical representation (§6). I will conclude with some remarks on the open problem of a semantic treatment for free relatives with adverbs of quantity (§7).

2 Maximality in definites (Link 1983)

Link (1983) proposes an elegantly unified semantic analysis for both singular and plural definite DPs, according to which they both refer to the *maximal* element of the set denoted by the NP. For instance, if only an egg was left in the fridge, then the singular NP *thing that was left in the fridge* will denote the singleton set containing just that egg ((4)a), while the singular definite DP *the thing that was left in the fridge* will refer to the maximal individual in that set, i.e. the only thing that was left in the fridge, i.e. the egg ((4)b).

(4) If an egg *e* was the only thing that was left in the fridge:
   a. *Singular NP*: ⟦thing that was left in the fridge⟧ = {e}
   b. *Singular DP*: ⟦**the** thing that was left in the fridge ⟧ = e

If an egg, a carrot and a pastry were the only things that were left in the fridge, then the singular NP *thing that was left in the fridge* will denote the set containing those three things ((5)a).

(5) If an egg *e*, a carrot *c* and a pastry *p* were the only things that were left in the fridge:
   a. *Singular NP*: ⟦thing that was left in the fridge⟧ = {e, c, p}
   b. *Plural NP*: ⟦thing**s** that were left in the fridge⟧ = 

   c. *Plural DP*: ⟦**the** thing**s** that were left in the fridge ⟧ = e⊕c⊕p

When plural morphology is added to the NP, it has crucial semantic consequences: it closes the set denoted by the singular NP under sum formation (⊕) and excludes all the singular individuals. Intuitively, the plural NP *things that were left in the fridge* will denote the set of all the plural individuals that can be obtained by summing the egg, the carrot and the pastry in all the possible combinations, as well as the *part-of* relation (≤)[1] that orders them ((5)b). It can be shown that such a structure has a unique maximal individual, i.e. the individual which results from summing all three singular individuals (e⊕c⊕p). This is the only element of the structure such that all the elements are part-of it (every element is part of itself).

Finally, the plural definite DP *the things that were left in the fridge* will refer to the maximal individual of the set denoted by the plural NP ((5)c), in the same way as the singular definite DP *the thing that was left in the fridge* above referred to the maximal individual of the set denoted by the singular NP.

[1] Reflexive, transitive and anti-symmetric.

3 Maximality in wh- constructions

3.1 Some facts

In a situation like the one above in which an egg, a carrot and a pastry are the only things left in the fridge, a constituent interrogative like (6)a requires an exhaustive answer, that is an answer that lists all and only the things that are left ((6)b). An answer that mentions only some of them sounds infelicitous ((6)c).

(6) **Constituent interrogatives**

a. What was left in the fridge?

Answers:

b. An egg, a carrot and a pastry (were left in the fridge).

c.# An egg was left in the fridge.

In the same situation, the free relative in (7)a can be paraphrased with the complete list of the things that were left in the fridge or with a definite DP that refers to all and only those things, as in (7)b. A paraphrase with a partial list or an indefinite DP, as in (7)c, is not truth-conditionally equivalent.

(7) **Free relatives**

a. I ate [what was left in the fridge].

Paraphrases:

b. I ate [the egg, the carrot and the pastry that were left in the fridge].
[$_{\text{definite DP}}$ the things that were left in the fridge].

c.# I ate [an egg and a carrot that were left in the fridge].
[$_{\text{indefinite DP}}$ something that was left in the fridge].

3.2 Jacobson's (1995) proposal

Jacobson (1995) assumes that the two tests above, the answer test for constituent interrogatives and the paraphrase test for free relatives, show that both kinds of wh- clauses trigger maximality in the same way as definite DPs: constituent interrogatives require "maximal" answers and free relative can be paraphrased with "maximal" DPs.

She argues that this is due to the semantic property of wh- words that introduce both wh- interrogatives and free relatives.[2] In her view, wh- words denote a function from a set A of individuals to the singleton set containing the maximal individual of A. In the situation above, in which the usual egg, carrot and pastry are still all alone in the fridge, the wh- clause *what was left in the fridge* denotes the singleton set containing the maximal individual that was left in the fridge (8).

[2] Free relatives are introduced by a subset of the wh- words that introduce wh- interrogatives. For instance, *why*, *how* +Adj/Adv, and *whose* cannot occur in free relatives.

(8) ⟦ what was left in the fridge ⟧ = { e⊕c⊕p }

This proposal makes the clear prediction that whenever a wh- word is present, maximality must be triggered, since maximality is lexically encoded in the meaning of wh- words. In other words, constituent interrogatives and free relatives will always require exhaustive answers and will always be paraphraseable with definite DPs, respectively. This prediction is not borne out, as I will show in the next section.

4 Non-maximal wh- clauses

4.1 Non-maximal constituent interrogatives

Beck and Rullmann (1999) convincingly show that there are constituent interrogatives that do not require exhaustive answers. They mainly discuss wh- measure phrases like *how much* and *how many*, which cannot occur in free relatives. But, as they briefly mention, constituent interrogatives with wh- words like *what*, which can occur in free relatives, show the same non-maximal effects as well.

For instance, in the slightly unusual situation in which the only things that are needed for the party are an egg, a carrot and a pastry, the constituent interrogative in (9)a can be answered with any of the answers in (9)b-d, including the non-exhaustive ones in (9)b-c.

(9) a. What can I bring to the party?

Answers:

b. An egg.
c. An egg and a carrot.
d. An egg, a carrot and a pastry.

Similarly, if there are at least three restaurants in Los Angeles where good Italian food can be eaten, the answer to the constituent interrogative in (10)a does not need to mention all of them ((10)b-c).

(10) a. Where can I eat good Italian food in Los Angeles?

Answers:

b. At Alto Palato.
c. At Alto Palato and Pizzicotto.
d. At Alto Palato, Pizzicotto and Il Grano.

Although Beck and Rullmann (1999) are concerned only with English and German, non-exhaustive constituent interrogatives of the kind we just discussed seem to crosslinguistically widespread. (11) is the Italian translation of (10) and shows the very same pattern.

(11) a. Dove posso mangiare del buon cibo italiano a Los Angeles?
Answers
b. Da Alto Palato.
c. Da Alto Palato e da Pizzicotto.
d. Da Alto Palato, da Pizzicotto e da Il Grano.

In conclusion, there are constituent interrogatives that allow non-exhaustive answers and therefore do not exhibit maximality. It follows that the meaning of wh- words cannot be responsible for exhaustivity/maximality in the constituent interrogatives that exhibit it.

4.2 Non-maximal free relatives

If we look at free relatives crosslinguistically, we find at least two contexts in which free relatives cannot be replaced with definite DPs and, therefore, do not exhibit maximality: when they occur in the complement position of existential predicates or when they occur with adverbs of quantity. I will discuss both cases in turn.

4.2.1 Indefinite free relatives

There are languages other than English that allow wh- clauses to occur in the complement position of existential verbs like the equivalents of *be* and *have* in English. Although these wh- clauses are introduced by the same wh- words as "maximal" free relatives, they cannot be paraphrased with definite DPs, but only with indefinite DPs. This is why I label them *indefinite free relatives*. Two examples of indefinite free relatives in Italian are given in (12)a and (13)a.

(12) a. C'è [$_{\text{indefinite FR}}$ chi dice sempre di sì].[3]
there's who says always of yes
'There is somebody/people who always says/say yes.'
b. Ci sono [$_{\text{indefinite DP}}$ (delle) persone che dicono sempre di sì].
there are some people that say always of yes]
'There are people who always say yes.'
c. * Ci sono [$_{\text{definite DP}}$ le persone che dicono sempre di sì].
there are the people that say always of yes
('There are the people who always say yes.')

[3] *FR* stands for 'free relative'.

(13) a. Ho [$_{\text{indefinite FR}}$ con chi parlare] quando sono triste.
have.1SG with whom to-speak] when am sad
'I have somebody to talk to when I am sad.'

b. Ho [$_{\text{indefinite DP}}$ qualcuno con cui parlare] quando sono triste.
have.1SG somebody with whom to-speak when am sad
'I have somebody to talk to when I am sad.'

c. * Ho [$_{\text{definite DP}}$ la persona/le persone con cui parlare] quando sono triste.
have.1SG the person/the people with whom to-speak when am sad
('I have the person/people to talk to when I am sad.')

(12)b and (13)b show that indefinite free relatives can be replaced and paraphrased with indefinite DPs, while (12)c and (13)c show that the paraphrase test for maximality fails with indefinite free relatives, because unsurprisingly definite DPs cannot occur in existential contexts.

Indefinite free relatives are not an idiosyncratic construction of Italian. So far, I have found them in other Romance languages (Spanish, Catalan, Portuguese, French, and Romanian), Slavic (Russian, Bulgarian, and Serbo-Croatian) and Modern Greek among Indo-European languages, and also in Finno-Ugric (Hungarian and Estonian) and Modern Hebrew. For reasons that are not clear to me, Germanic languages do not have indefinite free relatives, except Yiddish. Examples of indefinite free relatives crosslinguistically are given in the appendix.

In conclusion, there is a robust crosslinguistic pattern that shows that free relatives need not trigger maximality.

4.2.2 Free relatives and adverbs of quantity

English has idiosyncratic restrictions on free relatives introduced by *who*.[4] But, looking at free relatives crosslinguistically once again, we find that most languages allow free relatives with the equivalents of *who* quite freely. Examples are given below from Italian ((14)a) and Spanish ((14)b).

[4] Free relatives introduced by *who* are unacceptable for most speakers when they occur in subject position of matrix clauses (i), while they seem to improve in subject position of embedded clauses (ii) and in object position when *who* can be interpreted as *whoever* (iii).

(i) a. *Who I fall in love with hates me. (cf. Whoever I fall in love with hates me.)
b. *Who I fell in love with last year hated me.

(ii) (?) I'm certain that who you choose will be right one for me.

(iii) a. I will marry who you choose. (cf. I will marry whoever you choose.)
b. *I married who you chose, and now I am totally unhappy.

(14) a. [$_{FR}$ Chi è di origini meridionali] è basso.
who is of origins Southern is short
'A person/the people who is/are from the Southern Italy is/are short.'[5]

b. [$_{FR}$ Quien es del sur] es bajo.
who is of-the south is short
'A person/the people who is/are from the South is/are short.'

These free relatives show a distributional difference with plural definite DPs: they cannot occur in a clause with an adverb of quantity (e.g. *mostly*, *for the most part*, *in part*, *to a large extent*), while plural definite DPs can. Examples are given below from Italian (15) and Spanish (16). The adverbs of quantity are underlined.

(15) *Italian*

a. * [$_{FR}$ Chi è di origini meridionali] è <u>in gran parte</u> basso.
who is of origins Southern is in great part short
('A person who is from Southern Italy is for the most part short.')

b. [$_{PL.\ definite}$ Gli italiani di origini meridionali] sono <u>in gran parte</u> bassi.
the Italians of origins Southern are in great part short
'(The) Italians from Southern Italy are for the most part short.'
= 'Most Italians from Southern Italy are short.'

(16) *Spanish*[6]

a. * [$_{FR}$ Quien es del sur] es <u>en gran parte</u> bajo.
who is of-the south is in great part short
('A person who is from the South is for the most part short.')

b. [$_{PL.\ definite}$ Las personas que son del sur] son <u>en gran parte</u> bajas.
the people that are of-the south are in great part short
'(The) people who come from the South are for the most part short.'
= 'Most people from the South are short.'

5 A semantic puzzle about free relatives

As we saw in §4, there are both constituent interrogatives and free relatives that do not pass the tests that detect maximality according to Jacobson (1995). Therefore, when it shows up, maximality cannot be lexically triggered by the meaning of wh- words. Beck and Rullmann (1999) suggest a different account for maximality in constituent interrogatives that exhibit it. But what about free relatives? The brief crosslinguistic look in §4.2 showed that there are at least two contexts in which free relatives cannot be replaced by definite DPs, and the reasons feel inherently semantic. Therefore we would expect these two constructions to be semantically different. Nevertheless, it is also true that free relatives can be paraphrased with definite DPs in most contexts (e.g. (1) and (3), (7)a and (7)b).

[5] The author of this paper is from Southern Italy.
[6] Mexican and Castilian Spanish. Maria Arche, Heriberto Avelino, Javier Gutierrez-Rexach p.c.

A semantics for free relatives should be flexible enough to derive maximality in the many cases free relatives show it and block it in the few cases they don't. A tentative solution along these lines will be suggested in the next section.

6 Towards a proposal

6.1 Wh- words as free variables

Given the conclusion above that maximality cannot be lexically encoded in the meaning of wh- words, I will assume that the semantic contribution of bare wh-words is minimal. They just introduce a free variable in the logical representation with some restrictions (e.g. *who*: animate, *what*: inanimate, *when*: time, *where*: location, *how*: manner).[7]

Free variables are not assigned a semantic value by definition (this is why they are "free"). Therefore, open formulas, i.e. formulas with free variables, i.e. what wh- clauses translate into, cannot be assigned a semantic value. A further semantic process must occur to make the wh- clauses interpretable.

There are at least three ways to bind a free variable and turn an open formula into an interpretable formula. A free variable can be bound deictically/anaphorically, by a quantifier/operator, or by lambda abstraction. Free variables that are introduced by wh- words can neither be assigned a value anaphorically/deictically nor be bound by a quantified DP, unlike other lexical items that have been claimed to introduce free variables (e.g. personal pronouns). (17)a cannot mean just what (17)b means, in which the pronoun *she* refers to the same individual as the name *Maria*. In a situation in which Maria failed three important tests in a row, while everybody else in her class passed them, she may wonder whether she is smart (i.e. (17)b would be true) without any reason to wonder whether everybody else is (i.e. (17)a would be false). Similarly, (18)a *vs.* (18)b: the DP quantifier *every student* can bind *she*, but not *who*.

(17) a. Maria wonders who is smart.
b. Maria$_i$ wonders if she$_i$ is smart.
(18) a. Every student wonders who is smart.
b. Every student$_i$ wonders if she$_i$ is smart.

We are left with just binding by non-DP quantifiers/operators or lambda abstraction, which I assume to apply freely. Both options are made use of with wh- clauses.

[7] Nishigauchi (1990) makes a similar suggestion without giving an actual analysis nor discussing the kinds of free relatives I am discussing here. Berman (1994) develops Nishigauchi's (1990) suggestion into a detailed semantic analysis which is based on the idea that constituent interrogatives act as the restrictor and the nuclear scope of a possibly silent sentence-level quantifier by means of presupposition accommodation (but see Lahiri (2002) for criticism). Free relatives with a generic reading are claimed to act only as restrictors by stipulation, while no account is given (or can be easily given) for free relatives with a specific reading.

6.2 Constituent interrogatives

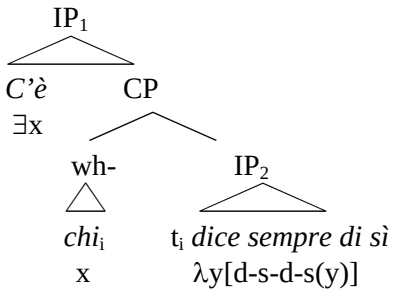
In constituent interrogatives, the free variable is bound by an interrogative operator. In other words, constituent interrogatives can and must contain an expression whose semantic value is “free”. This is just a way to capture the intuition that to ask a question is a way to ask for a semantic value which is unknown to the speaker: I the speaker utter an expression that is "free", you the listener reply with an expression that has a relevant semantic value.

When it is shows up, exhaustivity/maximality in constituent interrogatives can be accounted for by a notion of answerhood which requires an answer to be “maximally” informative, as argued for by Beck and Rullmann (1999). Because of space limitations, I need to refer the reader to their paper for details.

6.3 Indefinite free relatives

In indefinite free relatives, the free variable is bound by the existential quantifier that I assume to be part of the lexical meaning of the matrix existential predicate, as shown in (19) and (20).

(19) C’è [$_{\text{indefinite FR}}$ chi dice sempre di sì]. (Cf. (12)a.)
there’s who says always of yes
‘There is somebody/people who always says/say yes.’



(20) a. $IP_2 \rightsquigarrow$ λy[d-s-d-s(y)] (*from the lexicon, by FA[8] and λ abstraction*)
b. wh- $\rightsquigarrow$ x (*from the lexicon*)
c. CP $\rightsquigarrow$ d-s-d-s(x) *(from a. and b. by FA)*
d. $IP_1 \rightsquigarrow$ ∃x[d-s-d-s(x)] (*from c., d., and the lexicon by FA*)

Intuitively, the matrix predicate asserts the existence of at least one individual that would make the embedded clause true, i.e. an individual who says yes all the time.

[8] “FA” stands for “function application”.

6.4 Standard free relatives

In standard free relatives, i.e. all free relatives that are not indefinite, no quantifier/operator is present. Lambda abstraction is the only available option. It turns free relatives into set-denoting expressions (type <et>). But these free relatives occur where only individual-denoting expressions (type <e>) or generalized quantifiers (type <et,t>) can occur. The type mismatch is solved by means of type-shifting operations along the lines of Partee (1987).

But how can a set be turned into an individual or a generalized quantifier? If the initial set is a singleton, the mapping will be a natural one: it will turn a set into its only element. Therefore, I will assume that the condition under which type-shifting in free relatives can occur is that they must initially denote a singleton set. This may sound similar to the conclusions in Jacobson (1995). The crucial difference is that she claims that initially free relatives can only denote a singleton and this is because of the meaning of wh- words. On the contrary, what I am arguing for is that free relatives that do not denote a singleton can be generated: this is the case with indefinite free relatives. But, if a standard free relative that does not denote a singleton is generated, then no operator/quantifier is available, type-shifting is blocked, a type mismatch arises, and the free relative ends up being uninterpretable.

The individual in the singleton that a standard free relative denotes can be either atomic or plural, depending on the semantic properties of the predicates in the free relative and in the matrix clause (more in §7 below). If it is atomic, then a free relative will end up denoting an atomic individual, after type-shifting has applied. This is the same as the denotation of a singular definite DP. Similarly, if the singleton contains a plural individual, the free relative will be truth conditionally equivalent to a plural definite DP. But the equivalence between definite DPs and free relatives breaks down with adverbs of quantity. The plural definite DP in (21)a denotes a plural individual that adverbs of quantity can quantify over, while, if we replace it with a free relative, the sentence becomes uninterpretable ((21)d). Collective and mass definites pattern like plural definites ((21)b-c), while conjoined DPs behave like free relatives ((21)e).

(21) a. [(The) Italians from Southern Italy] are for the most part short.
b. [The volleyball team from Southern Italy] is for the most part tall.
c. [The tea I bought] is for the most part expensive.
d. * [$_{FR}$ Chi è di origini meridionali] è in gran parte basso.
who is of origins Southern is in great part short
('A person who is from Southern Italy is for the most part short.')
e. * [Lucia, Trisha, Tasha and Sasha] are for the most part tall.

From the contrast between plural definite DPs and free relatives in (21), I conclude that we have at least two different kinds of plural individuals. Plural definite DPs refer to one, standard free relatives like the one in (21)d refer to the other. Adverbs of quantity can quantify over the former, but not over the latter.

What kinds of plural individuals are they? And how are they different? The pattern in (21) shows that the plural individuals that plural definite DPs denote have properties in common with the individuals that singular collective/mass definites denote. On the other hand, the plural individuals free relatives like (21)d denote are closer to the individuals that conjoined DPs denote: they both refer to some plurality, but neither of them is compatible with adverbs of quantity.[9] Unfortunately, I do not have nor do I know of a theory of plurality that makes two different kinds of plural individuals available and can account for the contrast in (21). Further research is needed. The loose end that follows is just a collection of some speculations that may shed some further light on the nature of the contrast between plural definite DPs and free relatives with adverbs of quantity, and the two kinds of plural individuals they refer to.

7 Loose end: free relatives and their predicates

7.1 *Part* vs. *parts* and morphologically plural predicates

Let us assume that adverbs of quantity act like sentence level quantifiers that take the individual denoted by the subject of the sentence as their restrictor. The crucial question is: what do they do with their restrictor?

If we look at *for the most part* and its equivalents in Italian (*in gran parte* 'in great part') and Spanish (*en gran parte* 'in great part'), we see that all of them contain the word *part* (or its equivalent) in its singular form: *for the most part* rather than **for the most part*s. This is true for the other adverbs of quantity as well. I take the singular morphology on adverbs of quantity to indicate that adverbs of quantity select just a certain part of their restrictor, rather than many parts. Therefore, a restrictor is needed that can be split in two: the part that the adverb of quantity will select and the part that it will ignore.

The maximal plural individual that plural definite DPs denote can always be split in two. It is the "biggest" individual/part of the complex structure that constitutes the denotation of plural nouns, as we briefly discussed in §2. Plural morphology makes progressively bigger individuals/parts available up to the biggest one. For each individual/part, there will always be a complementary one, such that their sum will be identical to the maximal plural individual. For instance, in a situation in which there are six Italians at the party (a, b, c, d, e, and f), the maximal plural individual a⊕b⊕c⊕d⊕e⊕f denoted by *the Italians at the party* can be split into the two individuals/parts a⊕b⊕c⊕d and e⊕f. An adverb of quantity like *for the most part* in a sentence like *The Italians at the party are for the most part short* could then select a⊕b⊕c⊕d and ignore e⊕f.

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[9] Notice that the unacceptability of (21)e cannot be accounted for with a conjunction reduction approach, according to which (21)e would be semantically equivalent to (i). If we replace the distributive predicate *tall* with a collective one like *be friends with each other*, the sentence is still unacceptable.

(i) *Lucia is for the most part tall, Trisha is for the most part tall, Tasha is for the most part tall and Sacha is for the most part tall.

(ii) *Lucia, Trisha, Tasha and Sasha are for the most part friends with each other.

If this is on the right track, then the reason why free relatives like the one in (21)d cannot occur with adverbs of quantity is because they do not denote a kind of plural individual that makes those crucial individuals/parts available. Independent support for this conclusion comes from the fact that plural morphology seems to be one of the triggers for the availability of those parts/individuals, but the wh- words and therefore the free relatives we have looked at so far exhibit and trigger singular number agreement.

Spanish supports this conclusion since it has free relatives with both *who* singular (*quien*) and *who* plural *(quienes)*. Singular free relatives cannot occur with adverbs of quantity ((16)a, repeated below as (22)a), while plural free relatives can ((22)b).

(22) a.* [$_{FR}$ Quien es del sur] es en gran parte bajo.
who is of-the south is in great part short
('A person who is from the South is for the most part short.')

b. [$_{plural\ FR}$ Quienes son del sur] son en gran parte bajos.
who.PL are of-the south are in great part short
'Those who come from the South are for the most part short.'

Also, Italian and Spanish show number agreement on adjectives. Free relatives with an adverb of quantity seem to be sensitive to that. If neither the free relative predicate nor the matrix predicate are adjectival, then a free relative with an adverb of quantity sounds much more acceptable. For instance, the Italian free relative in (23)a contains the adjectival predicate *comunista* 'comunist.SG' in its singular form (the plural form being *comunisti*) and the result is quite unacceptable. (23)b does not have any adjectival predicate *comunista* being replaced by the PP predicate *di sinistra* 'left-wing' (lit. 'of left'), and it is clearly better than (23)a.

(23) a.?* Chi è comunista ha in gran parte votato contro Berlusconi alle ultime
who is comunist has in great part voted against B. at-the last
elezioni.
elections.

b.(?)Chi è di sinistra ha in gran parte votato contro Berlusconi alle ultime
who is of left has in great part voted against B. at-the last
elezioni.
elections.
'Most leftists voted against Berlusconi in the last elections.'

A similar contrast holds if we switch the two predicates, though (24)b does not sound totally natural:[10]

[10] The slight akwardness of (24)b may be due to the conflict with the other interpretation that is available for it, i.e. "Each person who voted against Berlusconi at the last elections was left-wing for most of her political ideas."

(24) a. * Chi ha votato contro Berlusconi alle ultime elezioni era in gran parte
who has voted against B. at-the last election was in great part
comunista.
comunist.SG

b. ? Chi ha votato contro Berlusconi alle ultime elezioni era in gran parte
who has voted against B. at-the last election was in great part
di sinistra.
of left
'Most people who voted against Berlusconi at the last elections were leftists.'

In conclusion, the kind of object a free relative denotes depends on those semantic properties of its predicate(s) that are triggered by singular *vs.* plural morphology.

7.2 Collective *vs.* distributive predicates

There is also a relation between the denotation of a free relative and the lexical semantic properties of its predicate and/or the matrix predicate. If the predicate in a free relative is collective (e.g. *gather*) and the matrix predicate is not adjectival (e.g. *to be in favor of the strike*), then a free relative can occur with an adverb of quantity:

(25) (?) [Chi si è riunito in assemblea] è in gran parte a favore dello sciopero.
who CL is gathered in meeting is in great part in favor of-the strike
'Most people who gathered for the meeting are in favor of the strike.'

As a collective predicate, *riunirsi* 'gather' may make available that 'part' that adverbs of quantity are looking for, by means of its lexical meaning.

7.3 Conclusion

Whatever the right explanation for the facts above turns out to be, they show that the object that a free relative denotes is highly dependent on the meaning of its predicate or the matrix predicate—one more reason not to assume that wh- words play a crucial role in determining the denotation of free relatives.

Appendix
Examples of indefinite free relatives crosslinguistically

(26) *Spanish* (Heriberto Avelino, Maria Arche p.c.)
Tengo [con quién hablar] quando estoy triste.
have.1SG with whom to-speak when am sad
'I have somebody to talk to when I am sad.'

(27) *Catalan* (Amàlia Llombart-Huesca p.c.)
Tinc [amb qui parlar] quan estic trist.
have.1SG with whom to-speak when am sad
'I have somebody to talk to when I am sad.'

(28) *Portuguese* (Móia 1992: 94; Jazon Santos p.c.)
O Paulo não tem [a quem pedir ajuda].
the Paulo not has to whom ask-for.INF help
'Paulo doesn't have anybody to ask for help.'

(29) *French* (Hirschbühler 1978: 168; Dominique Sportiche p.c.)
J'ai [de quoi écrire].
have.1SG of what to-write
'I have something to write with.'

(30) *Romanian* (Grosu 1994:138)
Maria are [cu cine vota].
Maria has with whom to-vote
'Maria has somebody to vote for.'

(31) *Russian* (Pancheva Izvorski 2000: 26; Ora Matushansky p.c.)
Est' [s kem pogovorit'].
be.PRES with whom to-talk
'There is somebody with whom one could talk.'

(32) *Serbo-Croatian* (Alexandra Perovic p.c.)
Nemam [ga kome dati].
not-have.1SG it.ACC whom.DAT give.1SG
'I have no one to give it to.'

(33) *Bulgarian* (Rudin 1986: 190)
Toj ima [s kogo da govori].
he has with whom PARTICLE talk.3SG
'He has somebody to talk to.'

(34) *Modern Greek* (Maria Baltazani p.c.)
Exo [me pion na miliso] otan ime lipimenos.
have.1SG with whom.ACC PARTICLE talk.1SG when am sad
'I have somebody to talk to when I am sad.'

(35) *Hungarian* (Anikó Lipták p.c.; Anna Szabolcsi p.c.)
Van [kivel beszélni].
is who.INSTR talk.INF
'There is/are someone/people to talk to.'

(36) *Estonian* (Lumme Erilt p.c.)
Mul ei ole, [mida süüa].
I not have what.PART eat
'I don't have anything to eat.'

(37) *Modern Hebrew* (Grosu 1994:138; Daphna Heller p.c.)
eyn li [im mi le-daber].
not-is to-me with who to-talk
'I don't have anybody to talk to.'

(38) *Yiddish* (Adam Albright p.c.)
Ikh hob nit [mit vemen ikh ken reden], az ikh bin troyerik.
I have not with who.DAT I can speak when I am sad
'I don't have anybody to talk to when I am sad.'

(39) *Yiddish* (Koysev n.d.)
[…] nisht vayil es iz nisht geven [mit vemen tsu redn].
not because it has not been with whom to speak
'[…] not because there wasn't anyone to talk to.'

(40) *English* (Carson Schütze p.c., Harold Torrence p.c.)
*I have [who(m) to talk to] when I am sad.

(41) *German* (Daniel Büring p.c.)
*Ich habe [mit wem ich sprechen kann], wenn ich traurig bin.
I have with whom I speak can when I sad am

(42) *Dutch* (Hilda Koopman p.c.)
*Ik heb [met wie te praten als ik me triest voel].
I have with who to talk if I me sad feel

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