# Embedding definites instead of questions: The case of Spanish and French[1]

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**Abstract.** Spanish and French may use relativised constructions introduced by a definite and a demonstrative, respectively, as complements of question-embedding verbs. We argue that these constructions are the intensional versions of the respective headless RCs in those languages: DPs (not interrogative CPs) encoding number-neutral maximality. These combine with question-embedding predicates as concealed questions (similar to *I know the temperature of the lake*), analysed as individual concepts (Romero, 2005). The cross-linguistic implication is that some languages recruit concealed questions as a generalised question-embedding strategy, with DPs taking up the functional space usually associated to *wh*-interrogatives.

**Keywords:** embedded questions, headless relative clauses, concealed questions, definiteness, Romance languages, French, Spanish

## 1. Introduction

In Spanish and French, it is possible to combine question-embedding verbs such as *saber/savoir* 'know' or *enterarse de/apprendre* 'learn, discover' with constructions that show definite morphology, see (1)–(2). We refer to these constructions as the *nominal Q(uestion)-strategy*, where "question" is only a descriptive label.

(1) SPANISH NOMINAL Q-STRATEGY
   a. Sé [**lo** **que** ha comprado Tycho].
      know.1SG DEF.N COMP has bought Tycho
      'I know what Tycho bought.'
   b. Me he enterado de [**lo** **que** ha pasado].
      REFL have.1SG found.out of DEF.N COMP has happened
      'I found out what happened.'

(2) FRENCH NOMINAL Q-STRATEGY
   a. Je sais [**ce** **que** Tycho a acheté].
      I know DEM COMP Tycho has bought
      'I know what Tycho bought.'
   b. J'ai appris [**ce** **qu'**il s'est passé].
      I=have learnt DEM COMP=it REFL=is happened
      'I learned what happened.'

The status of these constructions is unclear. On one hand, they look like the respective headless relative clauses (RCs) in those languages, which are introduced by a definite in Spanish, and a demonstrative in French, cf. (3), and are usually treated as DPs. This suggests that the nominal Q-strategies may share the same DP structure as these constructions.

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(3) a. Théo va a vender [**lo** **que** ha comprado Tycho].
Théo goes to sell DEF.N COMP has bought Tycho
'Théo is going to sell what Tycho bought.' SPANISH HEADLESS RC
b. Théo va vendre [**ce** **que** Tycho a acheté].
Théo goes sell DEM COMP Tycho has bought
'Théo is going to sell what Tycho bought.' FRENCH HEADLESS RC

On the other hand, the constructions in (1)–(2) receive a question-like interpretation and they are a regular strategy to express *what*-questions in embedded contexts. In Spanish, the nominal Q-strategy in (1) can be easily replaced by the *qué*-interrogative in (4), with only subtle pragmatic and distributional differences (Kellert, 2018). The French case is even more striking: in embedded contexts, the nominal Q-strategy is the canonical way to express non-oblique *what*-questions, since regular *wh*-interrogatives (*qu'est-ce que*, in-situ *quoi*, cf. (5)) are limited to colloquial registers (Blanche-Benveniste, 1997; Lefeuvre and Rossi-Gensane, 2017; Abeillé and Godard, 2021).

(4) Sé [**qué** ha comprado Tycho].
know.1SG what has bought Tycho
'I know what Tycho bought.' (≈ (1a)) SPANISH *wh*-INTERROGATIVE

(5) Je sais [**qu'est-ce** **que** Tycho a acheté].
I know what=is=DEM COMP Tycho has bought
*(Colloquial)*'I know what Tycho bought.' (≈ (2a)) FRENCH *wh*-INTERROGATIVE

A priori, the distribution of our constructions is somewhat unexpected if we are indeed dealing with a definite DP. What is surprising is not the combination of a DP with a Q-embedding predicate: it is well known that this combination exists (Baker, 1968; Grimshaw, 1979), and there is a large body of literature on so-called "concealed questions", namely (definite) DPs with question meaning as in (6) (Heim, 1979; Romero, 2005; Nathan, 2006; Frana, 2017). Rather, what is unexpected is the wide distribution of the nominal Q-strategy, and its role as a generalised means to express *what*-questions (which contrasts with other languages like English or German). This suggests that we may be dealing with some form of interrogative construction instead, which is how complements of Q-embedding predicates with clausal (sub)structure are usually analysed (Karttunen, 1977).

(6) I know **the temperature of the lake**.
≈ I know *what* **the temperature of the lake** *is*. CONCEALED QUESTION (CQ)

Due to their mixed nature, the literature struggles to provide a clear analysis of (1)–(2). The discussion is divided into two camps, reflecting the options presented above: some treat them as interrogatives (Koopman, 1982; Sportiche, 2008; Kellert, 2017, 2018), and others as DPs, namely, concealed questions as in (6) (Bouchard and Hirschbühler, 1986; Contreras, 1999; Suñer, 1999; Konrad, 2019). However, there is no real debate on their status, and a generalised reluctance to fully commit to the chosen analyses. For example, some papers consider the nominal Q-strategy constructions to be DPs, but still discuss them alongsde regular interrogatives (Contreras, 1999; Konrad, 2019). Kellert (2017) considers a DP analysis "impossible", even after showing syntactic differences between the nominal Q-strategy and *wh*-interrogatives. Konrad (2019) states that the line dividing interrogatives and definites is blurred, without developing the consequences of such assertion. Overall, the two options have not been evaluated systematically, and a formal semantic analysis the constructions is missing.

The present paper addresses this gap by providing an analysis that focuses on the syntax-semantics interface. In what follows, we systematically evaluate the two existing hypotheses regarding their status, which we explicitly formulate as follows:[2]

- **Hypothesis 1 (H1) – Interrogative analysis.**
  They are syntactically a CP, semantically a question *(type* $\langle\langle s,t\rangle,t\rangle$*)*
- **Hypothesis 2 (H2) – DP analysis.**
  They are syntactically a DP, semantically a concealed question *(type* $\langle s,e\rangle$*)*

H1 states that the construction in (1)–(2) is radically different from the headless RCs in (3). Despite superficial similarities, they involve different syntax and semantics, where *lo que/ce que* in the nominal Q-strategy ultimately behave like *wh*-interrogatives. H2 takes the opposite stand: there is only one *lo que/ce que* structure (a headless RC) which may be combined with extensional verbs and Q-embedding verbs alike. When they combine with Q-embedding verbs, they do so as concealed questions. On an individual concept analysis of concealed questions (Romero, 2005), this means that the nominal Q-strategies in (1)–(2) are nothing but the intensionalised version of the headless RCs in (3).

As we will show, the empirical evidence overwhelmingly supports H2. It is possible (and desirable) to capture these constructions without using any interrogative syntax or semantics, i.e. by assuming that they are relativised DPs – ultimately providing support for the concealed question analysis (Suñer, 1999; Contreras, 1999; Konrad, 2019). In other words, there is no syntactic difference between the nominal Q-strategy in (1)–(2) and the headless RCs in (3).

Our argumentation proceeds in several steps. First, we establish that the nominal Q-strategy involves DPs, and not CPs, as they behave similar to regular headless RCs (Section 2). We then present the analysis of their internal syntax and semantics (Section 3), before showing how they combine with question-embedding verbs as concealed questions (Section 4). We summarise these findings and discuss cross-linguistic implications in Section 5.[3]

## 2. Diagnostics: are we dealing with a CP or a DP?

To tease our hypotheses apart, we first need to establish whether we are dealing with an interrogative CP or with a relativised definite DP. All diagnostics point to a DP, supporting H2. We first consider arguments against an interrogative analysis, and then turn to arguments in favour of a DP parallel to that of headless RCs.

### 2.1. Arguments against an interrogative analysis (H1)

Embedded interrogatives usually involve a CP structure, specifically one where an interrogative pronoun (*what, who, where*, etc.) moves to the left periphery via *wh*-movement (Katz and Postal, 1964; Baker, 1968, 1970; Chomsky, 1977). It is conceivable that the nominal Q-strategy instantiates one such structure, in one of the following configurations: a) one where *lo que/ce que* is a complex *wh*-pronoun in SpecCP, as in (7a); or b), one where *ce/lo* are a *wh*-pronoun, and co-occur with the complementiser *que* in C, as in (7b).

[2] We leave it to future research to explore how these two hypotheses relate to relabeling approaches to free relatives (Donati, 2006; Cecchetto and Donati, 2015).

[3] The judgements are from two native speakers of Peninsular Spanish and two native speakers of French, in addition to the authors'.

(7) *Wh*-pronoun hypothesis *(to be discarded)*

a. [CP *ce que/lo que*$_1$ [C' $\emptyset_C$ [TP *you have bought* $t_1$]]] (Option A)

b. [CP *ce/lo*$_1$ [C' *que*$_C$ [TP *you have bought* $t_1$ ]]] (Option B)

These structures should not be dismissed a priori, since they are attested in other Romance languages (Kellert, 2018). For instance, Brazilian Portuguese has a definite-marked *wh*-pronoun *o que* (analogous to (7a), Medeiros Júnior 2016); in turn, in North-Eastern Italian dialects *wh*-pronouns in embedded interrogatives obligatorily co-occur with an overt complementizer (analogous to (7b), Poletto and Vanelli 1995). We present three diagnostics ruling out such structures. Note that some of them have previously been discussed (Kellert, 2018; Konrad, 2019), but partly in isolation and not for both languages.

***Diagnostic 1: Occurrence in matrix questions.*** It is generally assumed that *wh*-pronouns primarily express questions (Katz and Postal, 1964; Baker, 1968, 1970). Spanish *lo que* and French *ce que* cannot appear in matrix questions, unlike genuine *wh*-pronouns in these languages.

(8) {**Qu'est-ce que** / **#Ce que**} tu as mangé ?
what=is=DEM COMP / DEM COMP you have eaten
*Intended:* "What did you eat?' FRENCH

(9) ¿{**Qué** / **#Lo que**} has comido?
what / DEF.N COMP have.2SG eaten
*Intended:* 'What did you eat?' SPANISH

An interrogative analysis could accommodate this by treating *lo que/ce que* as "special *wh*-pronouns" that only appear in embedded contexts (Sportiche, 2008). However, this would go against the widely held assumption that questions are the same semantic/syntactic entity in matrix and embedded contexts (Karttunen, 1977). It seems simpler to assume instead that *lo que/ce que* do not generate the relevant clausal structure or question alternatives, as happens with other DPs, cf. (10).[4]

(10) a. **#La maison que** Tycho a achetée ?
the house COMP Tycho has bought
*Intended:* 'Which house did Tycho buy?' FRENCH

b. #¿**La casa que** Tycho ha comprado?
the house COMP Tycho has bought
*Intended:* 'Which house did Tycho buy?' SPANISH

***Diagnostic 2: Coordination with a* wh-*pronoun.*** If *ce que* and *lo que* are *wh*-pronouns, they should be able to coordinate with other *wh*-pronouns, as long as they have similar theta-roles (Williams, 1981; Citko and Gračanin-Yuksek, 2013). However, they do not.[5] Note that both

[4]One notable exception is Abaza (North-Caucasian), which has been claimed not to have any *wh*-pronouns, even in matrix questions (Arkadiev and Caponigro, 2021).

[5]This test comes with limitations. For French, we cannot show a contrast with the coordination of *what* in embedded contexts for independent reasons: *qu'est-ce que* is colloquial in such contexts, and *quoi* is ungrammatical unless a preposition is pied-piped. Second, the test only applies to Option A in (7a) (complex *wh*-pronouns). Option B in (7b), in which *que* is a complementiser, is independently ruled out: *qui/quién* are only compatible with a null C, whereas *lo/ce* require an overt C – so, the two would introduce different requirements on C:

orders are ruled out, so the ungrammaticality is not due to superiority effects (which can arise with coordinated questions in mono-clausal structure, cf. Citko and Gračanin-Yuksek 2013).

(13) a. Sé **quién y** {***lo que / qué**} ha hecho ruido.
know.1SG who and DEF.N COMP / what has made noise
*Intended:* 'I know who and what made noise.'
b. Sé {***lo que / qué**} **y quién** ha hecho ruido.
know.1SG DEF.N COMP / what and who has made noise
*Intended:* 'I know what and who made noise.' SPANISH

(14) a. *Je sais **qui et ce que** tu aimes.
I know who and DEM COMP you like
*Intended:* 'I know who and what you like.'
b. *Je sais **ce que et qui** tu aimes.
I know DEM COMP and who you like
*Intended:* 'I know what and who you like.' FRENCH (Konrad, 2019: (103–104))

***Diagnostic 3: Sluicing.*** Unlike *wh*-interrogatives, our constructions do not allow for sluicing (Ross, 1969), either in Spanish (Brucart, 1987; Suñer, 1999) or in French (Muller, 1989):[6]

(16) Compró algo, pero no sé {**qué / *lo (que)**} ~~compró~~.
bought.3SG something but NEG know.1SG what / DEF.N COMP bought.3SG
'She bought something, but I don't know what.' SPANISH

(17) Zoé s'est blessée, mais j'ignore {**avec quoi / *ce avec quoi**} ~~elle s'est blessée~~.
Zoé hurt.herself but I=ignore with what / DEM with what she hurt.herself
'Zoé hurt herself, but I don't know what with.' FRENCH

Under movement approaches (Ross, 1969; Lasnik, 2001; Merchant, 2001), sluicing involves deletion of TP after *wh*-movement to SpecCP. If *ce (que)* or *lo (que)* are interrogative pronouns, as expected under H1, we would expect them to be available in sluicing, like other *wh*-pronouns in Spanish and French. Specifically, Option A should allow for sluicing with *lo que/ce que* as remnant. Option B should allow for sluicing with *lo/ce* as remnant – assuming Merchant (2001)'s Sluicing COMP generalisation, according to which no material should appear on C. None of these options is possible, as shown above.

In the interest of space, we have excluded further tests (e.g. unavailability of the nominal Q-strategy in infinitival questions). These also show that the constructions do not involve any of the structures in (7) – which speaks against the interrogative analysis in H1.

(11) *[$_{CP}$ [*quién y lo*]$_1$ [$_{C'}$ *que* $_C$ [$_{TP}$ $t_1$ *hace ruido* ]]] ⇒ selectional requirements: met for *lo*, unmet for *quién*
(12) *[$_{CP}$ [*quién y lo*]$_1$ [$_{C'}$ $\emptyset_C$ [$_{TP}$ $t_1$ *hace ruido* ]]] ⇒ selectional requirements: unmet for *lo*, met for *quién*

[6] In (17), *quoi* is required to generate an oblique RC (Obenauer, 1976; Abeillé and Godard, 2021). Under Q-embedding predicates, the LHR *ce avec quoi* competes with the interrogative form *avec quoi*, but despite their apparent similarity, these two constructions are very different in nature – for instance, only the LHR can appear under extensional predicates:
(15) Prends {***avec quoi**$_{wh\text{-}}$ **/ ce avec quoi**$_{LHR}$} tu penses nourrir ton chat.
Take with what / DEM with what you think feed your cat
'Take what you plan to feed your cat with.'

2.2. Arguments for a DP analysis (H2)

Additionally, the nominal Q-strategy behaves similarly to DPs. Specifically, it patterns like headless RCs in Spanish and French and unlike interrogatives. We go one step further and suggest that we are dealing with one and the same construction: a relativised definite DP wich may be combined with extensional verbs (giving rise to the headless RC use) or with Q-embedding verbs (giving rise to the nominal Q-strategy).

***Diagnostic 4: Combination with all.*** *Lo que/ce que* can appear with the quantifier 'all', both for the nominal Q-strategy (i.e. with Q-embedding verbs like *know*) and the headless RC construction (i.e. with extensional verbs like *buy*), cf. (18)–(19) (cf. Konrad 2019). This contrasts with *wh*-interrogatives, which are only acceptable in the absence of 'all', cf. (18)–(20).

(18) a. J'achèterai tout {**ce** **dont** / ***de quoi**} j'ai besoin pour voyager.
I=will.buy all.SG DEM REL.GEN / of what I=have need for travel.INF
'I will buy everything I need to travel.'

b. Je sais tout {**ce** **dont** / ***de quoi**} j'ai besoin pour voyager.
I know all.SG DEM REL.GEN / of what I=have need for travel.INF
'I know everything I need to travel.' FRENCH

(19) a. Compraré todo {**lo** **que** / ***qué**} necesitas.
buy.FUT.1SG all.N DEF.N COMP / what need.2SG
'I will buy everything that you need.'

b. Sé todo {**lo** **que** / ***qué**} necesitas.
know.1SG all.N DEF.N COMP / what need.2SG
'I know everything that you need.' SPANISH

(20) a. Je sais ∅ **de quoi** j'ai besoin pour voyager.
I know ∅ of what I=have need for travel.INF
'I know what I need to travel.' FRENCH

b. Sé ∅ **qué** necesito para viajar
know.1SG ∅ what need.1SG for travel.INF
'I know what you need.' SPANISH

H2 provides a straightforward explanation for this. In the relevant interpretation, the quantifier *all* in French/Spanish obligatorily takes a DP as its restrictor, cf. (21) (Rigau, 1999; Matthewson, 2001; Haslinger, 2024). The fact that *lo que/ce que* can be combined with *all* simply means that they are DPs too – regardless of whether the embedding verb is extensional or Q-embedding.

(21) a. J'ai vu tous ces films.
I=have seen all.PL DEM.PL movie
'I have seen all these movies.' FRENCH

b. Vi todas las películas.
saw.1SG all.F.PL DEF.F.PL movie.F.PL
'I have seen all the movies.' SPANISH

***Diagnostic 5: Spanish superlative.*** In Spanish, the only way to form superlatives is by combining a definite determiner with *más* ('more'), cf. (22a). The definite is obligatory, and adverbial superlatives like *the most* do not exist in Spanish: as a result, *más* in other combina-

tions triggers other interpretations, like comparative readings or the equivalent of 'else' in *wh*-interrogatives, cf. (22b) (cf. discussion in Bosque and Brucart 1991; Rohena-Madrazo 2007; Coppock and Strand 2019).

(22) a. La sopa es [**la comida que más** le gusta a Anna].
the soup is the food COMP more DAT.3SG pleases to Anna.
'Soup is the food Anna likes the most.'
≈ 'Anna likes soup the most.' ⇒ *Superlative reading obligatory*

b. Sé [**qué más** le gusta a Anna].
know.1SG what more DAT.3SG pleases to Anna
'I know what else Anna likes.'
≠ 'I know what Anna likes the most.' ⇒ *Superlative reading impossible*

When combined with *más*, *lo que* obligatorily triggers a superlative reading both with regular headless RCs and with the nominal Q-strategy, cf. (23), contrasting with the combination of the interrogative *qué* with *más* presented in (22b). The fact that the Spanish nominal Q-strategy receives a superlative reading indicates that we are dealing with a definite DP construction analogous to (22a). Note that this test only applies to Spanish, as French *le plus* gets a superlative reading in both nominal and clausal structures: thus, the availability of a superlative reading with *ce que* is not a DP diagnostic.

(23) Compraré / Sé [**lo que más** le gusta a Anna].
buy.FUT.1SG / know.1SG DEF.N COMP more DAT.3SG pleases to Anna
'I will buy/I know what Anna likes the most.'
≠ 'I will buy/I know what else Anna likes.' ⇒ *Superlative reading obligatory*

***Diagnostic 6: Heim's Ambiguity.*** The nominal Q-strategy in Spanish and French gives rise to a semantic ambiguity associated with DPs. In "nested" constructions like (24) – namely, when the RC itself contains a Q-embedding verb like *know* –, two readings are possible, illustrated in (25) (cf. also Contreras 1999: 1950 for Spanish).

(24) a. Giuliano sait [**ce que** Peter sait].
Giuliano knows DEM COMP Peter knows
'Giuliano knows the thing(s) Peter knows.' ⇒ *Reading A/Reading B* FRENCH

b. Giuliano sabe [**lo que** sabe Peter].
Giuliano knows DEF.N COMP knows Peter
'Giuliano knows the thing(s) Peter knows.' ⇒ *Reading A/Reading B* SPANISH

(25) a. **Reading A**: Giuliano knows the same things that Peter knows – namely, the content of *Semantics in Generative Grammar*. They both know it because they both read the book (but they may not have talked about it to each other).

b. **Reading B**: Giuliano knows which things Peter knows – namely, that Peter knows the content of *Syntactic Structures*. He knows it because he saw Peter reading the book (but he may not have read the book himself).

Heim's ambiguity is typical of concealed questions (definite DPs with question meaning, cf. (6)): for instance, (27a) exhibits the two readings, as discussed extensively by Romero (2005); Frana and Rawlins (2011). By contrast, (27b) shows that constructions that are unambiguously interrogative only have one reading – the one corresponding to Reading B (Baker 1968, see

also Harris (2008) for a syntactic treatment). Similarly, interrogative constructions in French and Spanish only have Reading B, cf. (28)[7], contrary to *lo que/ce que* in (24).

(27) a. Giuliano knows **the thing(s)** that Peter knows. ⇒ *Reading A/Reading B* CQ
b. Giuliano knows **which things** Peter knows. ⇒ *Reading B only* *wh*-Q

(28) a. Giuliano sait [**qu'est-ce que** Peter sait].
Giuliano knows what=is=DEM COMP Peter knows
*(Colloquial)* 'Giuliano knows what Peter knows.' ⇒ *Reading B only* FRENCH
b. Giuliano sabe [**qué** sabe Peter].
Giuliano knows what knows Peter
'Giuliano knows what Peter knows.' ⇒ *Reading B only* SPANISH

The presence of Heim's ambiguity with the nominal Q-strategy is easy to account for with H2: unlike the interrogative in (28), *lo que/ce que* constructions are definite DPs, that behave like concealed questions when they appear with Q-embedding verbs in nested configurations.

**Summary.** We have shown evidence that the nominal Q-strategy is not an interrogative CP (contra H1), but indeed a definite DP (supporting H2), patterning with headless RCs and unlike *wh*-interrogatives in all our tests. This supports an analysis that treats them them as one single definite construction, which may be combined with extensional and Q-embedding verbs alike.

Before concluding, it is important to delimit *lo que* from a superficially similar construction in Spanish, illustrated in (29), where the interrogative pronoun *qué* ('what') may be optionally accompanied by a masculine/neuter definite article in sluicing, echo-questions, clarifying questions, etc. (Eguren and López, 2023; Eguren and Sánchez López, 2024). This construction is distinct from the nominal Q-strategy: first, in many Peninsular varieties, the definite is masculine, rather than neuter; and second, *qué* in *el qué* is accented, which indicates we are dealing with an interrogative pronoun (Suñer, 1999). Confirming this diagnostic, *el qué* (unlike *lo que*) passes our tests for interrogative CPs: it appears in matrix questions, it may coordinate with other *wh*-elements, and it may be a remnant in sluicing. Indeed, previous analyses treat this constrution as a complex *wh*-DP (Eguren and Sánchez López, 2024). To put it in our terms the *el qué* construction instantiates Option A in (7a), unlike *lo que*.

(29) ¿Que Sara se compró **(el) qué**?
COMP Sara REFL bought DEF.M what
'(That) Sara bought what?' (Eguren and Sánchez López, 2024: (3))

## 3. Internal structure and composition

In the previous section, we concluded that there is only one *lo que/ce que* construction, which is the same in headless RCs and in our nominal Q-strategy. We will now focus on its internal make-up and show how, despite their different internal structure, *lo que/ce que* encode the same

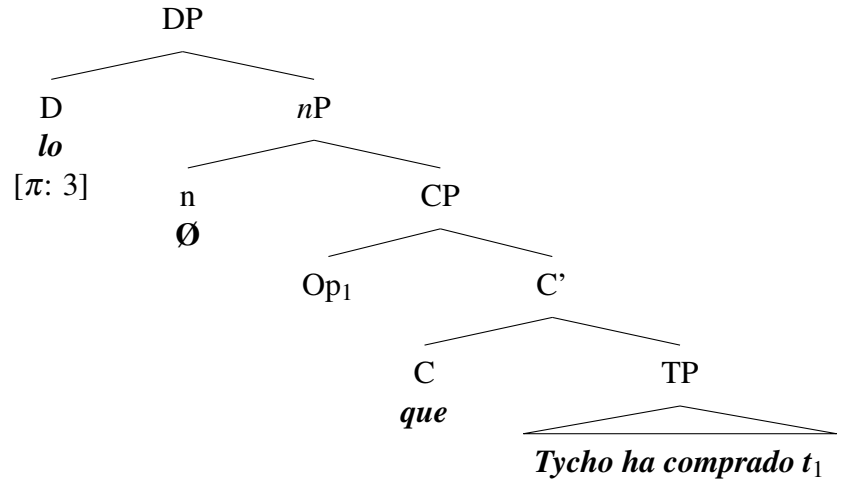
[7]The attentive reader may have noticed that the English translation of (28), *Giuliano knows what Peter knows*, is also ambiguous between the two readings (contrary to Spanish and French). This is because English *what* is syntactically ambiguous between an embedded interrogative and a free relative construal (Baker, 1968, 1970). Following Baker (1970), we propose it is the FR construction that gives rise to Reading A: when *what* is unambiguously interrogative, it can only trigger Reading B, cf. (26) (see Harris 2008 for more discussion).
(26) Giuliano knows {**what else / what it is that**} Peter knows.
⇒ *Unambiguously interrogative, Reading B only*

number-neutral maximality semantics, analogous to that of *what*-free relatives (FRs) in English (Jacobson, 1995). We first discuss the internal syntax of each construction (*lo que* and *ce que*) before turning to their semantic analysis.

### 3.1. Syntactic structures

***Spanish.*** We treat Spanish *lo que* as an empty *n* construction headed by the definite article *lo*, cf. the structure in (30), reminiscent of the one in Kornfeld and Saab (2004: 14).[8] We thus depart from previous analyses of *lo que* as a light-headed RC (Caponigro, 2024; Citko, 2004) or as a FR (Ojea, 2013).

(30)




Our analysis is supported by different arguments. First, a similar empty *n* may be required for constructions such as (31), where the neuter definite combines with an AP and a PP, respectively (Bosque and Moreno, 1990; Kornfeld and Saab, 2004; Villalba, 2009). From this lens, the *lo que* construction is a specific case of a more general nominalisation strategy in Spanish.

(31) a. No me gusta [**lo verde**].
NEG 1SG like the green
'I don't like the green stuff.'

b. Ha pasado [**lo de siempre**].
Has happened the.N of always
'The same thing as always happened.'

Further, alternative analyses of *lo* do not fully capture our data. One might argue, for instance, that *lo* should be analysed as a relative pronoun, which is homophonous with the definite in P-RCs (cf. Arregi 2000). However, this would not capture the superlative reading of *lo que*, which requires a proper definite determiner (cf. Section 2, Diagnostic 5). The relative pronoun *lo* also has a different distribution: it is only found in prepositional RCs (when the RC is restrictive), whereas *lo* in *lo que* is found in subject/object RCs. Thus, only the definite analysis of *lo* is viable.

Finally, our analysis also captures behaviour that, on first sight, may suggest a more traditional

[8] Kornfeld and Saab (2004) link the presence of gender/human features to *n*; thus, their neuter headless RC lacks *n*. In our analysis, the same effect is achieved by the absence of gender/number features on *n*.

FR treatment. Indeed, Spanish *lo que* shows behavior typically associated with FRs, namely sensitivity to mismatches (Plann, 1980): it is ungrammatical in some configurations in which the selectional requirements of the embedded verb differ from those of the matrix verb, as in (32b) (cf. Caponigro 2003, a.o.).[9] However, we think that the effect has partly independent sources, which also apply to definites in other constructions. One way to repair mismatches is to have a demonstrative head, as in (32c): this repair is unavailable with the definite in *lo que*, see (32b). However, the repair is also unavailable with definites in another empty *n* construction, namely ellipsis: PP-RCs cannot be the sole remnant of NP ellipsis in Spanish, cf. (33b) – a restriction that demonstratives do not have, cf. (33c). Although the source of this restriction is unclear, the crucial observation is that the pattern is the same for ellipsis and for *lo que*. Thus, *lo* in our construction behaves like other definite articles without an overt noun – supporting our analysis.

(32) *Context: 'What did you buy?'* EMPTY N CONSTRUCTION

a. Compré$_{[_DP]}$ [$_{DP}$ **lo** **n** que vimos$_{[_DP]}$].
bought.1SG DEF.N COMP saw.PST.1PL
'I bought what we saw'. *(Match)*

b. *Compré$_{[_DP]}$ [$_{DP}$ **lo** **n** con lo que soñaba$_{[_con]}$].
bought.1SG DEF.N with REL.N COMP dream.IMP.1SG
*Intended:* 'I bought the thing(s) of which I dreamed' *(Mismatch)*

c. Compré$_{[_DP]}$ [$_{DP}$ **aquello** con lo que soñaba$_{[_con]}$].
bought.1SG DEF.N with REL.N COMP dream.IMP.1SG
'I bought the one I dreamed of.' *(*DEM *repair)*

(33) *Context: 'Which house did you buy?'* ELLIPSIS

a. Compré$_{[_DP]}$ [$_{DP}$ **la** **~~casa~~** que vimos$_{[_DP]}$].
bought.1SG DEF.F casa COMP saw.PST.1PL
'I bought the one we saw.' *(Match)*

b. *Compré$_{[_DP]}$ [$_{DP}$ **la** **~~casa~~** con la que soñaba$_{[_con]}$].
bought.1SG DEF.F house with REL.F COMP dream.IMP.1SG
*Intended:* 'The one of which I dreamed.' *(Mismatch)*

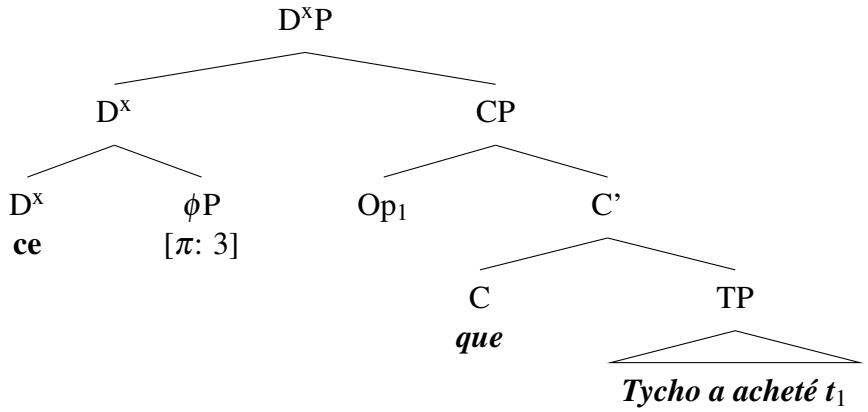
c. Compré$_{[_DP]}$ [$_{DP}$ **aquella** **~~casa~~** con la que soñaba$_{[_con]}$].
bought.1SG DEF.F house with REL.F COMP dream.IMP.1SG
'I bought the one I dreamed of.' *(*DEM *repair)*

***French.*** On the other hand, French features a canonical light-headed relative (LHR) construction (Citko, 2004), which is headed by a demonstrative pronoun, cf. (34).

As expected from a LHR, French *ce que* does not show matching effects (Citko, 2004): in (34), the demonstrative can satisfy the selectional requirements of the main clause, while the relative pronoun can satisfy the selectional restrictions of the RC, similar to what happens with the demonstrative in Spanish in (32c). We discuss other aspects of the structure in the next section, alongside its semantic composition.

[9] Mismatches may occur under question-embedding verbs, as noted by Plann (1980). Note, however, that the repair in this case involves preposition pied-piping (*P-lo-RC*), rather than the insertion of the P-RC after *lo* (*lo-P-RC*). With Plann (1980), we assume we this is a distinct construction, and leave a more in-depth investigation to future research.

(34)




(35) a. Je sais / J'ai entendu$_{[_DP]}$ [$_{DP}$ **ce** **dont** tu parlais$_{[gen]}$].
I know / I=have heard DEM REL.GEN you talked
'I know/I heard what you were talking about.'

b. Je sais / J'ai exprimé$_{[_DP]}$ [$_{DP}$ **ce** **avec quoi** j'étais en désaccord$_{[_avec]}$].
I know / I=have expressed DEM with what I=was in disagreement
'I know/I expressed what I was disagreeing with.'

## 3.2. Semantics

***Properties.*** Despite their different structures, the Spanish and French constructions have the same (external) semantics, cf. (36) where P stands for the RC property: they are both number-neutral (referring to singular and plural inanimate entities), and they both encode maximality.

(36) $[\![lo\ que/ce\ que\ P]\!] = \sigma x\ [\text{THING}(x) \wedge P(x)]$

'THING' in (36) indicates the expression applies to inanimate plural or singular entities. This follows from the feature specification of *lo que/ce que*. As shown in the structures in (30) and (34), the constructions lack gender and number features (Picallo, 2002; Gil and Gutiérrez, 2021). Absence of gender leads to reference to inanimate entities. In turn, absence of number leads to number-neutrality: we assume that a singular setting of number would be required to restrict the domain to atoms (Chierchia, 1998). A consequence of number-neutrality is that *lo que/ce que* may refer to one or multiple cupcakes in (37).

(37) *Context: it was Ari's birthday, and her father bought her {one / many} cupcake(s).*

a. Ari sabe / ha apreciado [**lo** **que** le ha comprado su padre].
Ari knows / has appreciated DEF.N COMP her has bought her father
'Ari knows / has appreciated what her father bought her.' SPANISH

b. Ari sait / a apprécié [**ce** **que** son père lui a acheté].
Ari knows / has appreciated DEM COMP her father 3SG.DAT has bought
'Ari knows / has appreciated what her father bought for her.' FRENCH

⇒ *only ✓ if Ari knows/has appreciated all the cupcake(s) her father bought*

Since they denote the full semilattice, the two constructions show typical plurality behaviour. For example, they give rise to homogeneity effects (Löbner, 1985; Križ, 2016), resulting in a truth-value gap when some but not all entities that are a part of the maximal plurality satisfy the VP property, as shown in (38).

(38) *Context: It's Ari's birthday, and her father bought her several cupcakes.*

a. Ari no sabe / no ha apreciado [**lo** **que** le ha comprado su padre].
Ari NEG know / NEG has appreciated DEF.N COMP her has bought her father
'Ari doesn't know / didn't appreciate what her father bought her.' SPANISH

b. Ari ne sait pas / n'a pas apprécié [**ce** **que** son père lui a acheté].
Ari doesn't.know / didn't.appreciate DEM COMP her father 3SG.DAT has bought
'Ari doesn't know / didn't appreciate what her father bought for her.' FRENCH

⇒ ✓ *if Ari knows/appreciated none of the cupcakes her father bought.*
⇒ # *if Ari knows/appreciated some of the cupcakes her father bought.*

Finally, the two constructions express maximality, captured by $\sigma$ in (36). To illustrate with an example, (37) will be true if Ari appreciated all of the cupcakes. Following Sharvy (1980); Link (1983), we assume maximality translates into uniqueness when applied to atoms, i.e. in the case when Ari only got a single cupcake.

***Derivation.*** In the Spanish case, the derivation is straightforward, cf. (39): here, the RC combines with *n* via Predicate Modification, and D takes the *n*P as its argument.

(39) [[*lo que ha comprado Tycho* 'what Tycho bought']]
$= [\![D]\!]\,([\![nP]\!]) = [\![lo]\!]\,([\![n\ Op_1\ que\ Tycho\ ha\ comprado\ t_1]\!])$
$= \lambda P_{\langle e,t\rangle}.\ \sigma x[P(x)]\ \ (\lambda x_e.[\![n]\!](x) \wedge \lambda x_e.[\![Op_1\ que\ Tycho\ ha\ comprado\ t_1]\!](x))$
$= \lambda P_{\langle e,t\rangle}.\ \sigma x[P(x)]\ \ (\lambda x_e.\textsc{thing}(x) \wedge \text{bought-by-Tycho}(x))$
$= \sigma x[\textsc{thing}(x) \wedge \text{bought-by-Tycho}(x)]$

At first sight, the denotation in (36) might appear more unexpected for French *ce que*, as it is headed by a demonstrative (whose presuppositions and properties usually differ from those of definites). However, it has been observed that demonstratives accompanied by RCs can behave like proper definites (King, 2001; Simonenko, 2014; Ahn, 2022). This behaviour can be explained by assuming an underspecified semantics for the demonstrative as a definite taking two arguments. Specifically, we analyse *ce* as a complex $D^x$ which takes the following arguments: a $\phi$-feature bundle (as argued by Ahn 2022 for pronominal *that*) and a second argument, which may be either an index or a RC. In deictic uses of *ce*, the second argument is an index, sometimes spelled out by the reinforcer *-ci/-là* (Hénot-Mortier, 2024). This index is responsible for the behaviour typically associated with demonstratives: deictic uses, rigidity, wide scope, etc. By contrast, in the *ce que* construction the second argument is an RC, which results in a regular definite behaviour, see (40).

(40) [[*ce que Tycho a acheté* 'what Tycho bought']]
$= [\![D^x]\!]\,([\![\phi P]\!])\,([\![CP]\!])$
$= \lambda P_{\langle e,t\rangle}.\lambda Q_{\langle e,t\rangle}.\sigma x[P(x) \wedge Q(x)]\ (\lambda x_e.\textsc{thing}(x))\ (\lambda x_e.\ \text{bought-by-Tycho}(x))$
$= \lambda Q_{\langle e,t\rangle}.\ \sigma x[\textsc{thing}(x) \wedge Q(x)]\ (\lambda x_e.\ \text{bought-by-Tycho}(x))$
$= \sigma x[\textsc{thing}(x) \wedge \text{bought-by-Tycho}(x)]$

The claim that *ce* in *ce que* behaves like a definite is supported by independent empirical evidence. First, *ce que* may co-vary with situation-based quantifiers, contrary to indexed DEMs, which only take wide scope, as illustrated in (41) (Simonenko, 2014).

(41) *Context: When I go shopping, I take a different shopping bag depending on how much I plan to buy.*

a. **Chaque fois** que je fais les courses, je prends [**ce dont j'ai besoin**].
Every time COMP I make the shopping I take DEM REL.GEN I.need
'Every time I go shopping, I take what I need.' (i.e. a different shopping bag)
✓ $\forall >$ *ce* 'CE QUE'

b. **Chaque fois** que je fais les courses, je prends [**ce cabas(-là)**].
Every time COMP I make the shopping I take DEM shopping.bag=REINF
'Every time I go shopping, I take this shopping bag.'
# $\forall >$ *ce* INDEXED DEM

Second, *ce que* does not show anti-uniqueness effects, unlike regular indexed demonstratives (Simonenko, 2014; Dayal and Jiang, 2021). In other words, it may be felicitously combined with a singleton without giving rise to the inference that there is more than one entity, cf. (42a). Third, it does not require an anaphoric or deictic antecedent, cf. (42a). By contrast, the regular demonstrative is excluded from similar environments, cf. (42b).

(42) a. Au restaurant, je mangerai [**ce que** le serveur apportera en premier].
at restaurant I will.eat DEM COMP the waiter will.bring in first
'At the restaurant, I will eat the thing(s) the waiter bring first.' 'CE QUE'

b. #Au restaurant, je mangerai [**ce** premier plat du menu].
at restaurant I will.eat DEM first dish of.the menu
*Intended:* 'At the restaurant, I will eat this first dish of the menu.' INDEXED DEM

To summarise this section, even though they have a different internal syntax, *lo que* and *ce que* are both number-neutral, refer to inanimate entities and express maximality. This results in an external semantics similar to that of *what*-free relatives in English (Jacobson, 1995), despite the absence of typical free relative morphology.

## 4. Combination with Q-embedding predicates

In the previous section we have shown that *lo que* and *ce que* are definite DPs. Next, we explain how they can be combined with Q-embedding verbs such as *know*. Their maximality semantics allows us to treat these straightforwardly as CQs. The idea is the following: just like regular DPs can be combined with extensional (*buy*) and intensional verbs (*know*), cf. (43), so can *lo que* and *ce que*, cf. (44). Thus, (1) and (2) are simply the intensionalised versions of (3a) and (3b). While this has been suggested before (Contreras, 1999; Suñer, 1999; Konrad, 2019), the analysis was not spelled out explicitly.

(43) REGULAR DPS
a. Théo likes [**the temperature of the lake**]. *extensional context*
b. Théo knows [**the temperature of the lake**]. *intensional context/QE verb*

(44) HEADLESS RCS (*ce que/lo que*)
a. Théo likes [***ce que/lo que*** Tycho bought]. *extensional context*
b. Théo knows [***ce que/lo que*** Tycho bought]. *intensional context/QE verb*

### 4.1. The nominal Q-strategy as a Concealed Question

One influential analysis treats CQs as individual concepts (Romero, 2004, 2005), an analysis which we extend to the nominal Q-strategy.[10] The analysis posits that predicates like *know* may take different intensional objects as their first argument – including propositions, questions and, crucially, individual concepts. We provide in (45) the two lexical entries of *know* with the intension of a question and with an individual concept as its argument:

(45) a. $[\![\text{know}_{\text{Q}}]\!]^w = \lambda q_{\langle s,\langle\langle s,t\rangle,t\rangle\rangle}.\ \lambda x_e.\ \lambda w.\ \forall w' \in \text{Dox}_x(w)\ [q(w') = q(w)]$
(Romero, 2005: (16))

b. $[\![\text{know}_{\text{IC}}]\!]^w = \lambda y_{\langle s,e\rangle}.\ \lambda x_e.\ \lambda w.\ \forall w' \in \text{Dox}_x(w)\ [y(w') = y(w)]$
(Romero, 2005: (20))

To capture the CQ in (43b), the Q-embedding predicate (here, *know*) combines with the individual concept *the temperature of the lake*, cf. (46). We apply the same mechanism to the nominal Q-strategy in (44b); here, *know* combines with the intension of the headless RC, cf. (47). The two derivations differ minimally in that *lo que/ce que* involve the $\sigma$ operator which, following Sharvy (1980); Link (1983), could also apply to the singular case.

(46) a. $[\![\textit{the temperature of the lake}]\!] = \lambda w.\ \iota x[\text{temperature-of-the-lake}(x)(w)]$

b. $[\![\textit{Théo knows the temperature of the lake}]\!]^w$
$= [\![\textit{know}_{\text{IC}}]\!]^w\ ([\![\textit{the temperature of the lake}]\!]^w)\ ([\![\textit{Théo}]\!]^w)$
$= 1$ iff for every world w' compatible with Théo's knowledge in w:
$\iota x[\text{temperature-of-lake}(x)(w')] = \iota x[\text{temperature-of-lake}(x)(w)]$
*(≈ In all of Théo's knowledge worlds, the value of the temperature of the lake is the same as in the actual world)*

(47) a. $[\![\textit{ce que/lo que}\ \text{Tycho bought}]\!] = \lambda w.\ \sigma x[\text{THING}(x)(w) \wedge \text{bought-by-Tycho}(x)(w)]$

b. $[\![\textit{Théo knows}\ \text{ce que/lo que}\ \textit{Tycho bought}]\!]^w$
$= [\![\text{know}_{\text{IC}}]\!]^w\ ([\![\textit{lo que/ce que}\ \text{Tycho bought}]\!]^w)\ ([\![\text{Théo}]\!]^w)$
$= 1$ iff for every world w' compatible with Théo's knowledge in w:
$\sigma x[\text{THING}(x)(w') \wedge \text{bought-by-Tycho}(x)(w')] =$
$\sigma x[\text{THING}(x)(w) \wedge \text{bought-by-Tycho}(x)(w)]$
*(≈ In all of Théo's knowledge worlds, the value of the thing Tycho bought is the same as in the actual world.)*

### 4.2. Consequences of a CQ analysis

Concealed questions have been associated with certain properties, which the nominal Q-strategy also exhibits, providing support for our analysis. First, CQs mostly come as functional nouns or as relativised DPs. Our constructions trivially fall into the second category as headless RCs.

Second, CQs give rise to Heim's ambiguity — the two readings that arise when question-embedding verbs are nested. As discussed in Section 2, our constructions also show this ambiguity. The Individual Concept analysis of CQs (Romero, 2005) was partly developed with Heim's ambiguity in mind. To provide a sketch, in Romero (2005)'s account the interpretation of nested CQs depends on whether *know* takes the extension of an individual concept

[10] We leave it to future research to explore whether alternative CQ analyses (Nathan, 2006; Aloni, 2001; Aloni and Roelofsen, 2011) may be also be applied to French and Spanish.

(type $\langle s,e\rangle$, Reading A) or its intension (type $\langle s,\langle s,e\rangle\rangle$, Reading B). An in-depth overview of this topic exceeds the scope of this paper, but we refer the interested reader to Romero (2004, 2005); Frana (2017) for the full account; see also Harris (2008) for a syntactic extension.

A further property attributed to CQs is that they only allow for specificational copula readings, and exclude predicational copula or other question meanings (Nathan, 2006), cf. (48).

(48) Jordana knows the capital of Italy.
   a. ≈ She knows that it is **Rome**. (= knows the value) *specificational*
   b. ≠ She knows that it is **large**. (= knows a salient property) *predicational*

In the case of *ce que/lo que*, the diagnostic is not as straightforward as for canonical CQs with functional nouns. This is because they often receive a kind interpretation (Frana, 2010: 1991), which are intuitively more difficult to tease apart from predication than the individual reading. Consider (49): in out of the blue contexts, the most salient interpretation seems to be the kind reading in (50a), namely, that Nadine knows *the type of food* she will bring (type $k$). The problem is that this reading is very similar to predication (where Nadine knows that what she will bring has *the property* cheese, type $\langle e,t\rangle$).

(49) *Context: There is a party tonight, and guests have to bring food and drinks.*
   a. Nadine sabe **[lo que** va a traer esta noche].
   Nadine knows DEF.N COMP goes to bring this night
   'Nadine knows what she will bring tonight.' SPANISH
   b. Nadine sait **[ce qu'**elle va ramener ce soir].
   Nadine knows DEM COMP=she goes bring this evening
   'Nadine knows what she will bring tonight.' FRENCH

(50) a. ***Kind reading*:** Nadine knows that she will bring some cheese (but she hasn't bought anything yet).
   b. ***Individual reading*:** Nadine only has a few things at home: a camembert cheese, two carrots and ham. She decided that she will bring the cheese.

Two observations have to be made in this respect. First, this kind reading is also found with regular CQs, a fact which is often overlooked in the literature. Intuitively, the CQ in (51) has the same two readings described in (50). Thus, rather than casting doubts on the CQ analysis, this issue indicates that current analyses of CQs have to be fine-tuned to capture the kind cases. Second, the problem is resolved when the context is restricted to individuals (which can be done with an explicit domain restriction, e.g. *out of these things*), as in (50b). When provided with this context, a predicational reading is out, suggesting that our constructions pattern with regular CQs.

(51) Nadine knows *the food she will bring*.

Finally, it has been observed that CQs do not combine with all question-embedding verbs, in particular with rogative verbs such as *wonder* or *inquire*, cf. (52) (Dor, 1992; Nathan, 2006). However, there is no analysis of the phenomenon that predicts CQs to be cross-linguistically restricted to specific predicates, as most analyses are mainly stipulative (Grimshaw, 1979; Nathan, 2006; Aloni and Roelofsen, 2011), and we think that this restriction is language-specific. For instance, it is possible to combine French *se demander* 'wonder' with both canonical CQs and with *ce que*, cf. (53). Thus, while there seem to be restrictions on the verbs

that embed CQs, this is not a diagnostic that can be applied across the board, considering the cross-linguistic variation.

(52) #I wonder *the temperature of the lake.*

(53) a. Je me demande [**le prix de son ordinateur**].
I REFL ask DEF price of 3SG.POSS computer
≈ 'I wonder (what is) the price of her computer.'

b. Je me demande [**ce qu'**il a acheté].
I REFL ask DEM COMP=he has bought
≈ 'I wonder what he bought.' FRENCH

To conclude, we would like to comment on the widespread use of the nominal Q-strategy compared to regular CQs. There is an implicit perception in the literature that CQs are a secondary phenomenon compared to the primary means to formulate questions, namely interrogatives. This may be the reason why interrogative analyses of the nominal Q-strategy have sometimes primed over CQ analyses (for instance in Kellert 2017; Sportiche 2008): coming from English, it might seem surprising that a concealed question may be used almost interchangeably with an interrogative, as noted in Section 1. However, this wide distribution is not unexpected if we consider a fundamental difference between canonical concealed questions and the nominal Q-strategy: while regular CQs contain overt content nouns (*the temperature of the lake*, *the food she will bring*), headless RC *lo que/ce que* has very underspecified semantics which may refer to any inanimate entity (singular or plural). In the same way that *what*-FRs may be used to refer to anything inanimate, the nominal Q-strategy can be used with Q-embedding verbs to "question" anything inanimate, leading to a distribution similar to that of *what*-interrogatives.

## 5. Conclusion

All our diagnostics point towards the same conclusion: the nominal Q-strategy is syntactically a DP, which may be combined with question-embedding predicates like *know* as an individual concept (type $\langle s, e \rangle$) – thus supporting Hypothesis 2. In other words, the nominal Q-strategy is an intensionalised, concealed-question version of headless RCs in French and Spanish.

This paper contributes to the growing evidence that languages may use nominal constructions in question-embedding contexts, as is also the case for Hausa and Akan (Zimmermann, 2018; Lecavelier and Zimmermann, 2024), Atchan (Jarvis, 2024), Japanese (Li and Tamura, 2024), and Ancient Greek (Faure, 2021), among other languages. More specifically, it shows that mechanisms usually assumed for concealed questions are well-suited to capture the nominal Q-strategy in Spanish and French. The cross-linguistic implication of this analysis is that languages may recruit concealed questions as a generalised alternative to regular question-embedding, with DPs taking up the functional space of *wh*-interrogatives. Another consequence is that concealed questions may have a wider distribution than is generally assumed in the literature. We leave it to future research to examine whether our analysis can be extended to other constructions, in Romance and beyond.

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