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Non-exhaustive connectives

Abstract: This paper provides the first cross-linguistic study on non-exhaustive connectives. After defining non-exhaustivity and briefly exploring the range of linguistic strategies encoding it across languages, the methodology underlying the study will be discussed. Based on the analysis of 35 languages, for which at least one non-exhaustive connective was found, it will be argued that non-exhaustive connectives exhibit quite homogenous distributional properties and derive from a restricted set of recurrent diachronic sources. Speakers are indeed likely to mobilize *i*) elements already encoding or implying non-exhaustivity, *ii*) elements expressing an epistemic condition of uncertainty, or *iii*) elements expressing exemplification.

Keywords: diachronic typology; exemplification; list construction; non-exhaustive connectives

1 Introduction

1.1 Overview

Coordinating connectives have been widely studied in a typological perspective, as witnessed by the large amount of literature available (see Haspelmath 2004, 2007; Longacre 1985; Mauri 2008a; Mithun 1988; Payne 1985; Stassen 2001 among others). Yet, their classification has been mainly organized on the basis of the semantic relation they encode, typically leading to identify conjunctive, disjunctive, adversative and in some cases conclusive connectives, roughly corresponding to 'and', 'or', 'but', and 'so', respectively. The cross-linguistic variation that can be observed, once the analysis becomes more fine-grained, has led scholars to distinguish between different subtypes within each type, with disjunctive connectives being classified as 'interrogative' or 'simple' (cf. Haspelmath 2007;

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Mauri 2008b) or adversative connectives being classified as 'counterexpective', 'corrective' and 'oppositive' (cf. Malchukov 2004). However, little if no attention has been devoted to those coordinating connectives whose semantic core is not a specific semantic relation, but rather a property having to do with the set they create, which can be a closed or an open set. Despite their shy presence in the literature, such connectives do exist and constitute a challenge for the existing accounts of coordinating connectives.

The aim of this paper is to provide the first systematic description and typological study on non-exhaustive connectives, that is, coordinating connectives encoding the openness of the set they create. Based on a 215-language sample, we will *i*) provide a semantic and structural definition of non-exhaustive connectives, *ii*) we will describe their cross-linguistic distribution and variation, and *iii*) we will describe the attested diachronic patterns leading to their development.

We will start by discussing the notion of non-exhaustivity in purely semantic terms (Section 1.2), briefly exploring the linguistic strategies that can be employed to express this function. Section 2 will be devoted to the methodological issues raised by the definition and search for non-exhaustive connectives across languages. Special attention will be paid to the problems that the analysis of an underdescribed phenomenon such as the one at issue may raise, discussing in detail the language sampling technique adopted and the criteria we followed to manage borderline cases, namely cases in which the grammar was not clear or consistent in the description of the phenomenon.

Once the theoretical and methodological premises are set, we will provide a synchronic picture of the actual distribution of non-exhaustive connectives in our sample (Section 3). Based on the analysis of the 35 languages for which at least one non-exhaustive connective has been found, it will be argued that non-exhaustive connectives show quite homogenous distributional properties and frequently consist of multifunctional morphemes. Such multifunctionality is explored in its diachronic implications in Section 4, where the attested sources are exemplified and discussed. Some of the diachronic patterns identified appear to be frequent, while others are attested in a few languages, but they all point to a unitary consistent picture, that will be the object of Section 5. Based on the synchronic and diachronic evidence of this study, we will argue that list constructions play a crucial role in the development of non-exhaustive connectives. In particular, we will argue that they arise in lists which first express non-exhaustivity as a construction, and only later the markers are reanalyzed as non-exhaustive connectives themselves. Furthermore, the attested sources reveal the close connection between non-exhaustivity on the one hand, and epistemic uncertainty and exemplification on the other hand, which address respectively the motivations and the tools

underlying the expression of non-exhaustivity in discourse. Some conclusory remarks are sketched in Section 6.

1.2 The notion of non-exhaustivity and its linguistic expression

A definition of non-exhaustivity is difficult to find in the literature, where this notion has been mainly referred to as opposed to exhaustivity, especially within formal approaches to focus particles and negative polarity items (cf. Chierchia 2004, 2006; Chierchia et al. 2009; Giannakidou 2016; Lin and Giannakidou 2015). In the literature on focus markers we find a definition of exhaustive identification which provides us with an operational starting point: Kiss (2010, on exhaustive focus operators in Hungarian) defines exhaustive identification as operating "on the set of contextually determined elements for which the predicate of the sentence can potentially hold", exhaustively identifying "the proper subset for which the predicate actually holds, excluding the complementary subset" (Kiss 2010: 68).

Non-exhaustivity is explicitly examined by Giannakidou (2016), who analyzes it in terms of referential vagueness, whereby a given referential expression is indeterminate as far as the value of a given indefinite element is concerned. Moreover, she argues that non-exhaustivity is closely linked to the speaker's epistemic stance, either because of indifference or because of ignorance. A more comprehensive discussion is provided by Xiang (2016) on non-exhaustive answers, who distinguishes three types of non-exhaustivity: *i*) *mention-some,* where only one of the possible answers for a given question is provided; *ii*) *partial readings*, namely answers to questions including *for example*; *iii*) *choice readings*, that is, answers where the speaker is free to choose one referent out of many.

In the light of the existing literature, we define *non*-exhaustivity as a referential property of a plural set (cf. also Mauri et al. 2019a). The set comprises contextually determined elements for which a specific predication holds, and non-exhaustivity operates on the set by opening it to referentially vague additions. If we call 'Set' the plural set and $X_1 X_2 ... X_n$ its members, we can say that a non-exhaustive linguistic expression makes reference to a set S comprising X_n items and at least one further implicit and referentially vague additional item X_{n+i} (with i being a natural number ≥ 1):

(1)   NON-EXHAUSTIVE REFERENCE: Reference to Set (X_{n+i})

As argued in detail by Mauri and Sansò (2018, 2019), while non-exhaustivity in itself is only concerned with the quantification of the set denotation, the *interpretation* of non-exhaustivity in discourse requires a further step, namely

accessing context to identify the relevant property shared by the set members, making it possible to identify specific values for X_{n+i}. In other words, the notion of non-exhaustivity as such only implies the existence of additional set members, thus concerning their amount, rather than their identification. However, the communication and interpretation of non-exhaustivity do also require the *possibility* to identify the additional set members, which crucially does not equate to the *necessity* to do so. A non-exhaustive construction can indeed be processed if the hearer identifies the *property* or *frame* that allows to discriminate between possible and impossible set members, but the exact identity of the set members may remain non-specific. Mauri and Sansò (2018) discuss this process in terms of ad hoc categorization, since the abstraction of the contextually relevant property leads to the construction of a contextually determined category.[1]

The identification of X_{n+i} requires what Barotto and Mauri (2018) describe as a process of indexical saturation, whereby what has to be saturated is precisely the value of the shared property P, not the reference of each set member. Let us consider example (2):[2]

(2)   a.   *Please go to the grocery store and buy me {milk, flour, artichokes and so on}.*
      b.   Reference to Set (X_{1_milk} X_{2_flour} $X_{3\_artichokes}$ + $X_{n+i\_??}$)

According to Barotto and Mauri (2018), once the hearer has to react to a sentence like (2), she is aware that X_{n+i} has to be assigned a specific value, her problem is how. The solution comes from context and from the frame it activates, which may lead to identify the specific property or properties that allow X_{n+i} to be part of the set: if the frame is 'we are preparing an artichoke quiche', then the underlying property will be 'ingredient necessary for an artichoke quiche', and *eggs* would be a good candidate for X_{n+i}. Non-exhaustivity thus implies the existence of some exceeding quantity, which can only be interpreted by accessing context, abstracting the relevant property from the explicit set members and identifying the additional one(s) through analogical reasoning.

Non-exhaustivity is involved in a number of different linguistic phenomena, either as an entailment or as the core meaning being coded. Non-exhaustivity is indeed entailed by the semantics of several constructions directly encoding other meanings, such as exemplifying markers (e.g. *for example*, *such as*, *including*, cf. Lo Baido 2018) and additive focus-sensitive particles (e.g. *also, too*, cf. De Cesare 2010; König 1991; Ricca 2017). Although these constructions do not explicitly

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1 Ad hoc categorization is supported by experimental evidence for the existence of ad hoc categories (see Barsalou 2010, 2021) and for the great role that context and discourse play in category construction (cf. Smith and Samuelson 1997; Whittlesea 1997).

2 The example is adapted from Barotto and Mauri (2018).

encode the existence of other elements beyond those mentioned, their core meaning entails non-exhaustivity. This becomes evident if we remove the exemplifying marker in (3b) and the additive focus-sensitive particle in (4b), and if we explicitly deny the reference to Set(X_{n+i}), leading to contradictory statements (3c, 4c):

(3) a. *E-mail spam **for example** has become a major issue.*
     b. *E-mail spam has become a major issue.*
     c. **E-mail spam **for example** has become a major issue, but it is the only thing that has become a major issue*

(4) a. *Catering services for special functions are **also** available.*
     b. *Catering services for special functions are available.*
     c. **Catering services for special functions are **also** available, but they are the only thing available.*

The entailment of *for example* and *also* is that the elements mentioned (*e-mail spam* in (3) and *catering services for special functions* in (4)) are not the only ones for which what is predicated holds true, that is, in both cases the existence of X_{n+i} is entailed.[3] In the case of exemplifying constructions, non-exhaustivity is necessary in order to conceive exemplification in itself, because examples, by their very nature, must be representative of a larger set of similar items.

In addition, languages show a wide range of strategies that directly encode non-exhaustivity, that is, they have it as their core meaning. The strategy that has received more attention in the literature is *general extenders* (see Overstreet 1999), that is, words or small expressions (e.g. *and such*) that occur at the end of a list to indicate the existence of X_{n+i}, as in (5):

(5) *We collect up votes, excerpts from speeches, press releases, **and so on***
     [enTenTen15 Corpus]

Mauri and Sansò (2018) provide a broad typological account of other less common strategies that are used in the languages of the world to encode non-exhaustivity: *i*) heterogenous plurals, such as similative plurals (Daniel and Moravcsik 2013) and associative plurals (Corbett 2000: 101; Moravcsik 2003), *ii*) a specific type of reduplication called 'echo-reduplication' (see also Barotto and Mattiola 2018), and *iii*) so-called non-exhaustive connectives. Heterogeneous plurals (cf. Mauri and Sansò 2018: 19, 2019) are special types of plural that refer to heterogeneous sets of referents. Let us consider (6).

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3 The non-exhaustivity implied by additive focus-sensitive particles, such as *also*, has been discussed in the literature mainly as their ability to evoke a paradigm of further alternatives (cf. De Cesare 2010; Ricca 2017).

(6)   Cavineña (Tacanan)   [Guillaume 2008: 482]

  *Karetu=**kwana** ka-risi-ti jadya ju-atsu i-ke*

  cart=PL   REFL-tie-REFL thus be-SS 1SG-FM

  ne-kemi-na-kwe…!

  IMP.NSG-take.out-COME.TEMP-IMP.NSG

  'After you prepare (lit. tie) the cart (*carts) and everything (the oxen, the load, etc.), come (dl) and pick me up…!'

In Cavineña, the plural marker *-kwana* does not make reference to many *karetu* 'carts', but to a wider set of elements X_{n+i} that are not identical but only similar to the one mentioned ('cart and everything'). In our view, as will become clear in Section 1.3, general extenders and similative plurals are only distinguished based on syntactic and distributional features, having to do with the ability of the marker to take scope over a single noun (similative plurals) or a whole list (general extenders).

  Echo-reduplication is rather different, in that it involves the "reduplication of a word, with replacement of the onset or, sometimes, vocalism or internal material in one copy" (Inkelas 2014: 170; Stolz 2008). Let us consider an example from Kannada, where this construction involves the reduplication of an element through the replacement of the first consonant and vowel of the noun with the sequence *gi-* or *gi:-*.

(7)   Kannada (Dravidian)   [Lidz 2000: 148–149]

  a. *pustaka* → *pustaka-gistaka*

    book   book-RED

    'book'   'books **and related stuff**'

  b. *ooda* → *ooda-giida* *beeda*

    run   run-RED   PROH

    'run'   'Don't run **or do related activities**.'

Similarly to heterogeneous plurals, echo-reduplication has scope over a single item and makes reference to a wider set of elements that are semantically related to the one mentioned (cf. Inkelas 2014: 171). What is different is the phono-morphological mechanism at work.

  In addition to the linguistic constructions described above, there is (at least) one more attested strategy to explicitly encode non-exhaustivity, the so-called *non-exhaustive connectives*, to which the rest of this paper is dedicated. Whereas reduplication and similative plurals have been described in the typological literature, albeit not extensively as far as non-exhaustivity is concerned, non-exhaustive connectives are characterized by a descriptive and theoretical gap, which makes it especially interesting and urgent to provide a comprehensive cross-linguistic study.

2 Definitions and methodology: looking for non-exhaustive connectives

Consider the following examples from Japanese and Koasati.

(8) Japanese (Japonic)[4]   [Chino 2001: 41]

    a. *Watashi no   heya   ni   wa,   konpyuta   ya   sutereo   ga*
        I   GEN   room   LOC   TOP   computer   **NEX**[5] stereo   NOM
        oite   arimasu.
        place:GRD   AUX:POL
        'In my room there is a computer, a stereo, **and such**.'

    b. *Watashi no   heya   ni   wa,   konpyuta   **to**   sutereo   ga*
        I   GEN   room   LOC   TOP   computer   **and**   stereo   NOM
        oite   arimasu.
        place:GRD   AUX:POL
        'In my room there is a computer and a stereo.' (invented from (8a))

(9) Koasati (Muskogean)   [Haspelmath 2007: 24; original gloss of *ó:t* EX]
    *akkámmi-t ow-i:sá-hci   hahci-f-**ó:t**   oktaspi-f-**ó:t**   kámmi-fa*
    be.so-CONN   LOC-dwell.PL-PROG   river-in-**NEX**   swamp-in-**NEX**   be.so-in
    'So they live in rivers and in swamps **and in suchlike places**.

In (8a), the non-exhaustivity of the list 'computer, a stereo, and such' is encoded by means of the connective *ya*. To formulate the exhaustive version of the same list, the connective *to* should have been used instead of *ya* (see example 8b). This means that non-exhaustivity is part of the semantics of *ya*. Similarly, in (9), the connective *-ó:t* is used to make reference to additional items (i.e. 'and suchlike places'). Therefore, we define as non-exhaustive connectives

> a specific type of connectives that link two or more items into a conjunctive or disjunctive list and further specify that the list is open to potential additions. The semantics of non-exhaustive connectives thus encodes reference to Set (X_{n+i}).

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4 Examples from Japanese, Kanuri, Dyirbal, Sedang, Andoque and Italian have been glossed by the authors of this paper on the basis of their personal knowledge, dictionaries, grammars and/or other glosses provided by the author of the descriptive grammar.

5 For sake of clarity, markers that are analyzed as non-exhaustive connectives will be glossed as NEX. We would like to thank the reviewer for this suggestion. Nevertheless, to be as truthful as possible to the original source, we also provide for each example the information about the original gloss, if provided by the descriptive grammar.

Non-exhaustive connectives differ from heterogeneous plurals and general extenders not in terms of functions, but rather in terms of syntactic structure and distributional properties. Similative plurals indeed attach to a nominal base and, consequently, only allow for one item in their scope. General extenders occur at the end of a list (although the list may be simply evoked starting from just one item) and, consequently, they allow scope over a potentially infinite number of items. Furthermore, while similative plurals are restricted to nominal bases, general extenders typically show no restrictions on the syntactic types on which they operate, and this is due to the syntactic flexibility of lists, which can encompass words, phrases (of any type) and clauses (cf. Masini et al. 2018). Connectives by definition link at least two elements, possibly more than two, in a list. It follows that, just like general extenders, they do not have syntactic restrictions (although they may specialize for specific syntactic levels) and may have scope over a set of items. However, non-exhaustive connectives differ from general extenders because, instead of closing the list, they encode the connection between its members.

It is indeed the coding of a referential property such as non-exhaustivity (cf. Section 1.2) by means of a coordinative connective that makes the study of non-exhaustive connectives especially worthy of interest. Traditionally, coordinative connectives used in listing have been analyzed on the basis of the relationship they establish between the linked items, mainly in the light of the logical distinction between 'and' and 'or'. However, as noted for subordinative connectives, such as conditionals or concessives (cf. Mauri and Sansò 2016 on the subjective functions of conditional markers), to connect does not preclude from encoding also other functions. In this case, we observe the merge of the relational meaning typical of connectives with the referential function typical of noun phrases (cf. Croft 2001): the use of a non-exhaustive connective indeed implies reference to a larger set or category to which the entity (or entities) explicitly listed belong, in such a way that further non-specific members can potentially be added (cf. discussion in Section 1.2).

Despite this peculiarity, non-exhaustive connectives are rather underdescribed in the literature, except for some sketchy observations in typological studies on conjunctions. Stassen (2000: 5) refers to them as 'enumerative coordinators'. Haspelmath (2007: 24) briefly mentions this type of connectives using the label 'representative conjunction'. This label is motivated by the fact that "in this construction, the conjuncts are taken as representative examples of a potentially larger class" (Haspelmath 2007: 24). Focusing on disjunctive linking, Dixon (2009: 31) recognizes the existence of two types: closed disjunction and open disjunction. Although the labels may suggest a type of relationship similar to that between exhaustive and non-exhaustive conjunction/disjunction, this is not the case.

While closed disjunction explicitly discounts other alternatives beyond those mentioned, open disjunction does not signal overtly the non-exhaustivity of the list, but merely leaves open the possibility of other alternatives. According to Dixon, closed disjunction "is not an appropriate reflection of how the world works" (Dixon 2009: 31), since in the real world, further alternatives can often be found or at least can be imagined. In this regard, open disjunction can be considered the default type of disjunctive relation, while closed disjunction is marked.

A more in-depth description of the phenomenon has been provided by Mauri (2017: 310; cf. also Mauri and Sansò 2018), who uses the term non-exhaustive connective, following the terminology traditionally employed in the literature of the Eastern and Southeast Asian languages (cf. the label 'non-exhaustive' in Chino 2001 for Japanese and Zhang 2008 for Mandarin Chinese). Nevertheless, since Mauri's interest is linked to the ability of non-exhaustive connectives to communicate context-dependent categories, by referring to non-exhaustive sets of elements, her discussion is strongly focused on the comparison with other functionally equivalent strategies (e.g. similative plurals, general extenders, etc.).

The lack of a systematic account of the phenomenon inevitably leads also to a lack of a shared and accepted terminology. In our analysis, we use the term 'non-exhaustive connectives' (henceforth nEx connectives), for two reasons. First, it is very transparent as to the reference and the contexts of use of these connectives, that is, non-exhaustive lists. Second, it is neutral with respect to the type of relation encoded (i.e. conjunction vs. disjunction), only indicating that the purpose of the marker is to link one or more elements, implying the presence of other similar items. Third, as noted, the label 'non-exhaustive' is frequently used in descriptive grammars of Eastern and Southeast Asian languages (e.g. Haiman 1980; de Vries and de Vries-Wiersma 1992).

Since we are analyzing a presumably rare phenomenon, in building the language sample we kept the quality of grammatical descriptions as our priority, though aiming at a high degree of geographical and genealogical diversity. This led us to build a convenience 215-language sample, whose internal composition is illustrated in Appendix A.

The first important methodological question we need to answer is how to find nEx connectives in the languages of the world. Descriptive grammars are the main tool for typological investigations, but the phenomenon we want to investigate is under-described in the literature, as noted above, and this causes significant terminological variation, together with a low awareness of its very existence. As a consequence, it is possible (if not likely) that nEx connectives are not acknowledged as such by descriptive grammars. However, we can assume in our survey that the author of a descriptive grammar always recognizes the meaning of *non-*

exhaustivity conveyed in a given utterance, and this becomes evident in translations (e.g. *and so on*) and/or ad hoc glosses.

Therefore, the first problem to face is how to deal with languages where data suggest the presence of a nEx connective but there is no explicit discussion of the phenomenon. In such cases, the main challenge is to distinguish instances of nEx connectives from other strategies encoding non-exhaustivity (e.g. similative plurals and general extenders) or from other types of connectives (cf. Haspelmath 2007).[6] To solve this issue, we use three parameters. First, the use of the alleged connective must be consistent with the definition of non-exhaustivity outlined in Section 1.2. Second, we monitor whether the linguistic element under examination can be considered a connective at all, namely whether it is attested to join at least two elements in a list. Third, we consider whether it shows syntactic and distributional properties that are consistent with the system of coordinating connectives of the language (e.g. if in a given language conjunctive and disjunctive connectives are suffixed to each element of the list, it is likely that the nEx connective will behave accordingly).

To illustrate how these parameters were used, let us consider the case of Kanuri (Saharan). In his description of Kanuri, Lukas (1937: 146) identifies a suffix *-so* that is used to indicate "incomplete enumeration of plurals or collectives":

(10)   Kanuri (Saharan)   [Lukas 1937: 146]
     súro   *fátò*   *bórì-ve-**so***   *kûl*   *kəská-vè-**so***
     interior   compound   forsaken-GEN-**HET.PL**   cavity   tree-GEN-**HET.PL**
     *kâu-vè-**so**-n*   *kargâ*
     stone-GEN-**HET.PL**-ABL   live.3SG.PAST[7]
     'it dwells in deserted compounds, hollows of trees, and rocks'

Although there is an explicit recognition of the non-exhaustive meaning, the status of the marker as connective is less certain. Lukas indicates that *-so* derives from the associative/similative plural *-so* (e.g. *féroá-sò* 'the girls and others', *kanyî-sò* 'goats and other animals', Lukas 1937: 16–17). Therefore, it is crucial to understand if *-so* can be used as a connective to indicate non-exhaustive lists or else if the list in example (10) should be considered a juxtaposition of similative plurals (which, by their own nature, invite a non-exhaustive interpretation). At this point, we shall consider the system of connectives in Kanuri as a heuristic tool: Kanuri has a wide

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6 It might be the case that the grammar provides examples of conjunctive or disjunctive connectives only in nEx contexts without explicitly noting this, and it is necessary to understand whether non-exhaustivity is actually part of the connective semantics or not.

7 The expression *súro X-ve-n* (interior N-GEN-ABL 'in X') is used to express the locative meaning 'in' (see Lukas 1937: 19). In (10), all the list members are marked with the genitive *-ve*, but only the last one is marked (after the plural/connective *-so*) with the ablative ending *-n*.

range of connectives (for instance, it has three connectives to encode different types of disjunctive relations, Lukas 1937: 144–145), and simple juxtaposition is not explicitly mentioned as a strategy for coding coordination between elements (cf. Lukas 1937: 145). Furthermore, the most common coordination strategy in Kanuri is what Lukas calls "correlative conjunction" (Lukas 1937: 145), that is, the usage of a suffix repeated after each element of a list (e.g. the suffix -*a* is used as a connective to mark simple conjunction, Lukas 1937: 145).

The application of the three parameters thus allowed us to recognize with reasonable certainty -*so* as an instance of nEx connective, because *i*) its meaning and use are consistent with our definition of non-exhaustivity, *ii*) it is systematically employed to join two or more elements in a list, and *iii*) its syntactic and distributional properties are consistent with the system of connectives of the language. These parameters therefore allow us to identify potential nEx connectives even when grammars are ambiguous or not explicit about the actual status and function of the strategy.

The second problem to face concerns those languages for which the grammar explicitly recognizes the existence of non-exhaustive lists and appears to suggest specific non-exhaustivity markers, but the data provided are not clear about the actual status of the strategy under examination. For instance, Dixon (1972: 363) argues that "English 'or' refers only to closed disjunction. Dyirbal, on the other hand, deals mainly with open disjunction, through the particle *yamba* 'might be'". With reference to example (11), he further argues that "the Dyirbal sentence leaves open the possibility that it was some other type of fish":

(11)   Dyirbal (Pama-Nyungan)   [Dixon 1972: 363]
        ŋaḍa   guya   buṛan/   gila-baydi   miṇa/
        I   fish   see.PRES/PAST somewhere-downhill what
        yuguṛ   **yamba**/ yaŋgal   **yamba**/
        barramundi perhaps red.bream   perhaps
        'I saw a fish, what was it down there? – it might have been a barramundi, or it might have been a red bream'

Dixon's words could lead us to analyze *yamba* as a nEx connective, but a closer look at his discussion and the use of the three parameters above will drive us to the opposite conclusion. Based on the actual examples supporting Dixon's analysis, the use of *yamba* does not seem different from that of a dubitative strategy, marking potential options in a juxtapositive list of alternatives. This is of course compatible with non-exhaustivity, but it is not enough to support the analysis of this particle as a nEx connective. What we observe in (11) is indeed a language lacking a disjunctive connective, which conveys the meaning of 'or' through the repetition of a dubitative particle. As argued by Mauri (2008a, 2008b), this is a

rather frequent pattern in the world's languages, revealing the inherently modal nature of disjunction. Furthermore, Dyirbal is characterized by a large use of juxtaposition in coordination, therefore an analysis of *yamba* as nEx connective would pose a problem for parameter *iii*) above. Parameters *i*) and *ii*) point to the same conclusion, because the examples provided by Dixon do not show a clear non-exhaustive semantics (no markers of non-exhaustivity are employed in the translation of (11)) and show instead the systematic use of *yamba* as a normal dubitative particle. As a result, we could not include Dyirbal *yamba* in our count of nEx connectives.

3 Non-exhaustive connectives: a synchronic overview

Based on the methodology described in Section 2, we identified 35 languages that have at least one nEx connective (representing the 16.3% of the 215-language sample examined), and a total of 42 nEx connectives. The discrepancy between the number of languages and the number of nEx connectives is due to the fact that four languages in our sample (Central Moroccan Berber, Italian, Japanese and Kombai) have more than one nEx connectives. The most peculiar case is Japanese with five nEx connectives. Nevertheless, the most frequent tendency in our sample is still one nEx connective per language.

Map 1 shows the distribution of nEx connectives across the world. From our data, nEx connectives appear to be attested in all the macro-areas of the world. Nevertheless, they do show a slightly higher frequency in Papunesia,[8] and more generally in East Asia and Australia.

Interestingly, despite their scattered distribution across families and areas of the world, nEx connectives show quite homogenous distributional properties.[9] In particular, *i*) they are more frequently employed in lists of nouns, and *ii*) they tend to follow each member of the list, including the last one. Let us see these patterns in detail.

Table 1 illustrates the syntactic restrictions observed for the nEx connectives attested in our sample:

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8 The term *Papunesia* was originally created by the team of Glottolog (see Hammarström et al. 2020; Hammarström and Donohue 2014, https://glottolog.org/) to make reference to a geographic area that encompasses Insular Southeast Asia and Oceania, while excluding Australia.

9 All these properties are monitored by looking at explicit information provided by descriptive grammars. When information is not available or is not explicit enough to indicate a clear usage pattern, we signal the absence of information regarding that specific property (i.e. value 'no info').

Map 1: Distribution of non-exhaustive connectives across the world.

Table 1: Syntactic restrictions of nEx connectives.

Syntactic restrictions	N. of nEx connectives	Percentage
only NP	23	55%
only VP	1	2%
mainly NP	2	5%
no specific restrictions	13	31%
no info	3	7%
Total	42	100%

The most frequent situation attested in our sample is the one where a nEx connective is restricted to the coordination of noun phrases, as exemplified by Dan in (12). The connective *oo* in Dan (Mande) is indeed used to "lier des groupes nominaux en énumération non-exhaustive"[10] (Vydrine and Kességbeu 2008: 74):

(12)   Dan (Mande)   [adapted from Vydrine and Kességbeu 2008: 74, original
                            gloss of *oo* et 'and')[11]
         =Yaoba   *-nu*   *-wo*   *-dhɛ*   *=gban*   *"pɛpɛ*   *'gü :*
         Yacouba   PL   3SG.EXI   place   tout   chaque   dans

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10   English translation: 'to link nominal groups in a non-exhaustive enumeration'.
11   In the grammar, the symbol before words is used to indicate low tone, - indicates a extra-low tone, "a high tone and" an extra-high tone (cf. Vydrine and Kességbeu 2008: 10).

'Biyadhɛ **oo**, "*Sanngpedloodhɛ* **oo**, "*Daloaadhɛ* **oo**, -*wo* *mü*
Abidjan.CMM **NEX** San-Pedro.CMM **NEX** Daloa.CMM **NEX** 3SG.EXI là
'Il y a des Yacouba partout: à Abidjan, à San-Pedro, à Daloa…'
(English 'There are Yacouba everywhere: in Abidjan, San-Pedro, Daloa…')

There is only one nEx connective explicitly restricted to verbal phrases and clauses, namely the converb -*tari* in Japanese, as shown in (13).

(13)   Japanese (Japonic)   [Chino 2001: 108]
*Nichiyōbi wa taitei   tomodachi-to tenisu o   shi-**tari** eiga   o*
sunday   TOP usually friend-COM   tennis ACC do-**NEX** movie ACC
*mi-ni   it-**tari**   shimasu.*
see-to go-**NEX**   do:POL
'On Sundays I usually do such things as play tennis with my friends or go to see movies.'

NEx connectives without any syntactic restriction are common (13 out of 42). For instance, *toka* in Japanese can be used with both noun phrases and verbal phrases, as shown in (14a) and (14b).

(14)   Japanese (Japonic)   [Chino 2001: 42]

    a.   *kinō   depāto   de   sēta   **toka** kutsu **toka** o   katta.*
          yesterday store   LOC sweater **NEX** shoe **NEX** ACC buy:PAST
          'I bought a sweater, shoes and some other things'
    b.   *Yasumi   ni   wa jogingu   o   suru **toka**, tenisu o   suru*
          vacation in   TOP jogging ACC do   **NEX**   tennis ACC do
          ***toka**   shiteimasu.*
          NEX   do:STA:POL
          'When I'm off work, I do things like jogging and playing tennis.'

For two connectives, namely *ka* in Papuan Malay (Austronesian, see Kluge 2017) and -*o* in Hatam (Hatam-Mansim, see Reesink 1999), descriptive grammars do not indicate specific syntactic restrictions, however they do note that these connectives tend to occur more frequently with noun phrases. For instance, Reesink (1999: 44) argues that -*o* in Hatam "attaches mainly to nominal elements".

Finally, we were not able to find explicit information about the syntactic restrictions of three connectives (-*añe* in Andoque, *tya* in Momu-Fas, and *kanía* in Mpade). Nevertheless, it is interesting to note that the examples provided in the grammars to describe these connectives involve only lists of noun phrases.

As far as the syntactic pattern of nEx connectives is concerned, we monitored their position with respect to the linked elements, and whether they are repeated for each list item. Table 2 illustrates the relative frequency of the structural patterns attested in our sample:

Table 2: *Syntactic patterns of nEx connectives* (C =conjuncts; nEx =connective; ( ) =optionality).

Syntactic pattern	N. of nEx connectives	Percentage
C_1 nEx C_2 nEx	34	81%
C_1 nEx C_2	3	7%
C_1 nEx C_2 (nEx)	3	7%
no info	2	5%
Total	42	100%

According to our data, nEx connectives show a clear preference for the pattern [C_1 nEx C_2 nEx], that is, the syntactic pattern in which the connective follows each element of the list, including the last one. This pattern is exemplified in (15):

(15)   Burmese (Sino-Tibetan)   [Okell 1969: 446; original gloss of *ṭoú* plural]
*Myei-auʔ-yăhtà-**ṭoú**   baʔsăkà-**ṭoú***
ground-under-train-**NEX**   bus-**NEX**
'underground train, bus, and that sort of thing'

Example (16) from Japanese shows the pattern [C_1 nEx C_2], whose frequency is rather low. In this pattern, the nEx connective follows each list item except for the last one:

(16)   Japanese (Japonic)   [Kaiser et al. 2001: 594]
*chīki   funso   wa   ōshū   **ya**   afurika   de   tsuzuku*
area   conflict   TOP   europe   **NEX**   africa   LOC   continue
'Regional conflicts continue in Europe and Africa (among others).'

Only three nEx connectives seem to be used in both ways, according to the pattern [C_1 nEx C_2 (nEx)]: *piuttosto che* in Italian (cf. Section 4.7), *-o:t* in Koasati and *toka* in Japanese (cf. (17a) and (17b)).

(17)   Japanese (Japonic)

 a.   [C_1 nEx C_2 nEx]   [Chino 2001: 42]
  *kinō   depāto de sēta   **toka** kutsu **toka** o   katta.*
  Yesterday   store LOC sweater **NEX**   shoe **NEX**   ACC   buy:PAST
  '[…] I bought a sweater, shoes and some other things'

 b.   [C_1 nEx C_2]   [Barotto 2018: 60]
  *kenka   **toka**   arashi   mo   ōi   yo   ne*
  fight   **NEX**   troll   also   many   PP   PP
  'There are also many fights and trolls and such.'

There is no clear information about the syntactic pattern of *-óot* in Alabama (Muskogean, Hardy 2005: 105), therefore we could not take it into account for this specific parameter. Although, it is likely that it might be used in both ways, like the genetically-related connective *–o:t* in Koasati. Finally, there is no clear information about the pattern of use of *ula* in Central Moroccan Berber either, since the examples provided are not glossed.

It is noteworthy that the [C₁ nEx C₂ nEx] pattern can also be found with some non-dedicated connectives in spoken interactions, when they are used in non-exhaustive contexts. This pattern is recognized in Northern Pumi (Sino-Tibetan, Ding 2014) for the general conjunctive connective (and comitative marker) *ni*. When *ni* is used between two conjuncts, it means closed conjunction (cf. 18a), when it occurs consecutively after each list item, it suggests an incomplete list, as in (18b). A similar situation is attested in Leti (Austronesian, see van Engelenhoven 1995: 210–212) and Tetun Dili (Austronesian, see Williams-van Klinker et al. 2001: 104).

(18)   Northern Pumi (Sino-Tibetan)   [Ding 2014: 102]

    a.   *ba^{L}l3j^H=ge^H*   *ni^L*   *ɣo^{L}de^L=ge^H=bo^L*

        snake=TOP   COM   tiger=TOP=DSC

        'the snake and the tiger'

    b.   *mja^F*   *ni^L*   *n̥i^{L}dʒjõ^H*   *ni^H*   *n3^{H}dʒju^H*   *ni^L*   *kʰə^{H}ni^L*   *ni^L*

        eye   COM   nose   COM   ear   COM   mouth   COM

        'eyes, nose, ears, and mouth, …'

All in all, as Tables 1 and 2 show, the syntactic patterns and restrictions of the attested nEx connectives are rather consistent across different language families and regions.

4 Diachronic typology of non-exhaustive connectives

The nEx connectives attested in our sample frequently are multifunctional elements. In some cases, it is possible to identify a diachronic directionality, whereby one of the attested functions can be analyzed as the source for the other(s). In what follows, we will discuss the multifuctionality patterns shown by the 42 nEx connectives attested in our sample, sorting them by decreasing frequency of occurrence and treating them as diachronic clines where the data allow us to do so. For 8 connectives out of 42, we have no clear diachronic information (cf. Appendix B).

4.1 Heterogeneous plural > nEx connective

We observe a recurrent multifunctionality pattern involving plural markers and nEx connectives, with clear evidence supporting a diachronic change from the former to the latter. The plural markers involved are mainly 'heterogeneous plurals', which Mauri and Sansò (2019 and 2021) define as plural markers referring to heterogeneous sets of items, i.e. items that are similar or associated to the one(s) explicitly mentioned (contrary to additive plurals, commonly referring to homogeneous sets). This label encompasses both associative plurals (i.e. expressions meaning 'X$_{[person]}$ and associates') and similative plurals (i.e. expressions meaning 'X and things like that', see Daniel and Moravcsik 2013). We can observe this multifunctionality pattern in example (19) from Burmese (Sino-Tibetan), where the marker *toú* is used with non-human referents to signal similative plural (cf. 19a) and with human referents to signal associative plural (cf. 19b),[12] but it is also attested as nEx connective to link elements in open-ended lists (cf. 19c).

(19)   Burmese   [Okell 1969: 446; original gloss of *toú plural*]
    a.   *sauñ-ṭoú*
       blanket-**HET.PL**
       'blankets and the like'
    b.   *cuñṭo-ṭoú*
       I-**HET.PL**
       'we' (I and my e.g. friends, compatriots, family, etc.)
    c.   *myei-au-yăhtà-ṭoú*   *basăkà-ṭoú*
       ground-under-train-**NEX**   bus-**NEX**
       'underground trains, buses, **and that sort of thing**'

In two cases, namely in Jamsay Dogon and Mundari, we can identify a plural source for the connective, but we do not have clear evidence supporting the heterogeneous nature of the set it creates. In the case of Jamsay Dogon, we were indeed not able to find examples of *bé* as heterogeneous plural, although we know that in other Dogon languages (e.g. Tommo So) additive plural and heterogeneous plural are encoded by means of the same element (cf. *mbe*, diachronically related to *bé*). In the case of Mundari, we observe that *-ko* is attested as third person plural clitic pronoun ('they'), as additive plural primarily used with animate nouns (e.g. *hoṛo* 'man' *hoṛo-ko* 'the men, people', lit. 'man-they', see Cook 1965: 120), and as nEx connective primarily used with inanimate entities. Nouns denoting inanimate entities indeed usually do not take the plural suffix, unless they are used in

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12 On the contrary, in Burmese, additive plurality can be expressed by the plural marker *tei/twei*, as in *nwà-ṭei* (cow-plural) 'cows' (Okell 1969: 430).

enumerations and -*ko* is "suffixed to each of the objects in the whole series enumerated" (Cook 1965: 120). Mauri and Sansò (2021) argue that third person plural pronouns are a frequent diachronic source for additive and associative plurals. Therefore, it is likely that the pronoun is the original source out of which the plural function first and the nEx connective later on developed.

Table 3 illustrates the languages for which the pattern at issue is observed, indicating the connectives and the diachronic source identified. As the column 'Synchronic layering' shows, in 12 out of 13 connectives the source and the target function co-exist in synchrony (see Hopper 1991), and only for Alabama we were not able to find explicit information on synchronic layering.

The diachronic pattern leading from (heterogeneous) plurals to nEx connectives is the most frequent in our sample. The high frequency of this pattern can (at least partially) explain why nEx connectives are often restricted to noun phrases (cf. Section 3) and are rarely used to link verbal phrases and clauses.

As noted in Section 2 for Kanuri, the development of nEx connectives out of heterogeneous plurals likely requires an intermediate step, in which speakers create lists of juxtaposed plurals. This intermediate step can be observed for instance in Tommo So (Dogon, McPherson 2013), where we find a similative

Table 3: NEx connectives originated from additive plurals and heterogeneous plurals.

Language	Top-level family	NEx connective	Source function	Synchronic layering
Alabama	Muskogean	*-óot*	Similative plural	No info
Apalaí	Cariban	*tõkehko*	Associative plural (*tõ*)	Yes
Burmese	Sino-Tibetan	*toú*	Similative/Associative plural	Yes
Central Kanuri	Saharan	*-so*	Similative/Associative plural	Yes
Haka Chin	Sino-Tibetan	*teè*	Similative plural	Yes
Jamsay Dogon	Dogon	*bé*	Additive Plural	Yes
Koasati	Muskogean	*-o:t*	Similative plural	Yes
Mizo	Sino-Tibetan	*tê (te1)*	Similative/Associative plural	Yes
Momu-Fas	Baibai-Fas	*tya*	Similative plural	Yes
Mundari	Austroasiatic	*-ko*	Third person plural/ Plural	Yes
Tommo So Dogon	Dogon	*=mbe*	Similative plural	Yes
Tshangla	Sino-Tibetan	*-te*	Similative plural	Yes
Yidiñ	Pama-Nyungan	*-ba*	Associative plural	Yes

plural[13] marker *mbe* (cf. 20a), which can be repeated after each list item in enumerations (20b), favoring its reanalysis as nEx connective (see Section 5).

(20)   Tommo so (Dogon)   [McPherson 2013: 601, original gloss of *mbe* PL]
   a.   *Árá=**mbe**.*
        rice=PL
        'rice, etc.'
   b.   *tùmbùtù   nɛm̌=**mbe**   nàmá=**mbe**   kɛm̃   kánà-dìŋ.*
        timbuktu   salt=NEX   meat=NEX   all   do-IPFV.3PL
        'Timbuktu salt, **etc.**, meat **etc.**, they would do [it] all.'

While McPherson (2013) does not acknowledge the status of *mbe* as nEx connective and only provides examples like (20b), showing its repeated use within lists, the discussion by Corbett (2000, citing Plungian 1995) makes the functional extension more evident, with the use of the general extender 'and similar things' in the translation of (21):

(21)   Tommo So (Dogon)
         [Corbett 2000: 239, citing Plungian 1995:11; original glosses of *mbe* PL]
         *ibɛ   ya-ɛ-w   yo,   isu   **mbe**   nie   **mbe**   bawiɛ*
         market   go-AOR-2SG   if   fish   NEX   oil   NEX   buy.IMP.2SG
         'if you go to the market, buy fish, oil **and similar things**'

Interestingly, in Jamsay Dogon (Dogon), we can find a morpheme *bé* which originated from a plural marker and is also used to create "open-ended lists", according to Heath (2008: 272):

(22)   Jamsay (Dogon)   [Heath 2008: 273, original gloss of *bé* PL]
         *íjé   [àrá:jô: **bé**]   [cɛ̀:   kó   tímé-sa-∅   **bé**]*
         today   [radio   NEX]   [thing.L   NONH   resemble-RESLT-PPL.NONH   NEX]
         kárⁿ-á:rⁿà-m   yɔ́=kɔ̀
         do-HAB-PPL.PL   exist=be.NONH
         'Today there are those who do the radio and what resembles it (=and so forth)'

Therefore, it appears that in some Dogon languages there is a (similative) plural marker *bé/=mbe* that tends to occur in non-exhaustive lists, which at some point has been reinterpreted as a nEx connective.

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13   As noted by Daniel and Moravcsik (2013), in Tommo So, the similative plural marker is also used to express additive plurals.

A similar phenomenon is also attested in four Sino-Tibetan languages (Burmese, Haka Chin, Mizo, and Tshangla), where we find nEx connectives deriving from related similative (and in some cases also associative) plural markers. The most interesting case is that of Haka Chin. Peterson and VanBik (2004) note the existence of two post-nominal elements *-teè* and *-poòl* that seem to function "as marking collectives" (Peterson and VanBik 2004: 351) and as "representative conjunction" markers (i.e. nEx connectives), even though their exact function is hard to identify due to their low frequency in corpus data. Haka Chin also has a clear plural marker *-hnaà,* which is not used as a nEx connective. Looking at the examples provided by Peterson (2003) and Peterson and VanBik (2004), we believe that only *-teè* is a nEx connective originated from a similative plural:

(23) Haka Chin (Sino-Tibetan)   [Peterson and VanBik 2004: 351]
      làwthlawpaa=niˀ *vok-teè-pool*   *ˀa-tsook*
      farmer=ERG   *vok-teè-hnaa*   3SG.SUBJ-buy$_2$
                      vok-teè-hnaa-pool
                      vok-teè-pool-hnaa
                      pig-
      'The farmer bought pigs and such (e.g. other domesticated animals).'

(24) Haka Chin (Sino-Tibetan)
                 [Peterson and VanBik 2004: 351, original gloss of *teè* COLL]
      làwthlawpaa=niˀ *vok-**teè*** *ˀaàr-**tee***   *tsoo-**tee***   *ˀa-tsook-hnaa*
      farmer=ERG   pig-**NEX**   chicken-**NEX** cow-**NEX** 3SG.SUBJ-buy$_2$-PL.O
      'The farmer bought pigs, chickens cows and so on.'

Example (23) is not easy to interpret. According to Peterson and VanBik, all the listed expressions (*vok-teè-pool, vok-teè-hnaa,* etc.) can be translated as 'pigs and such'. Interestingly, the only element that all these expressions have in common is the marker *-teè*. If we take into account also evidence collected from the other Sino-Tibetan languages (Burmese, Mizo, and Tshangla, see Table 3), we are inclined to think that the 'and such' meaning of the sentence is provided mainly by *-teè*, which behaves here like a similative plural, while the other two markers (*-pool* and *-hnaa*) behave like additive or collective markers. The marker *-teè* is instead clearly employed as a nEx connective in (24).

The change from heterogeneous plurals to nEx connectives is not particularly surprising. As noted in Section 1.3, both strategies encode non-exhaustivity and can be used to make reference to sets of similar elements. In this diachronic path, what allows for the development of nEx connectives is a scope reanalysis, whereby a marker having scope only over one item is reanalyzed as having scope over a list. Interestingly, additive plural markers are attested as sources only in two languages

(Jamsay Dogon and Mundari), but in both cases there are elements suggesting that the markers at issue may function as both additive and heterogeneous plurals (see discussion above). This suggests that it is non-exhaustivity itself, more than plurality, that triggers the change.

4.2 Irrealis (interrogative and dubitative marker) > nEx connective

The second most frequent multifunctionality pattern is that in which nEx connectives derive from *irrealis* markers, in particular interrogative markers and dubitative markers (e.g. 'maybe', 'perhaps'). With the term 'irrealis marker' we refer to any linguistic element that marks a given state of affairs as belonging "to the realm of the imagined or hypothetical", thus constituting "a potential or possible event but [...] not as an observable fact of reality" (Elliot 2000: 67, cf. also Mauri and Sansò 2012).

This pattern is attested in 8 languages, and we have enough evidence to treat it as diachronically oriented. Table 4 illustrates the languages for which the pattern at issue is observed, showing the connectives, the diachronic source identified and the presence of synchronic layering.

Let us consider the case of Ambonese Malay and Papuan Malay, where the interrogative marker *ka* has developed into a nEx connective, as shown in (25a–b) and (26a–b):

Table 4: NEx connectives originated from irrealis markers.

Language	Top-level family	NEx connective	Source function	Synchronic layering
Ambonese Malay	Austronesian	*ka*	Interrogative	Yes
Japanese	Japonic	*ya*	Interrogative	No
Japanese	Japonic	*toka*	Interrogative (*ka*)	No
Japanese	Japonic	*yara*	Dubitative	Yes
Martuthunira	Pama-Nyungan	*wii*	Dubitative	Yes
Murriny Patha	Southern Daly	*kamayya*	Dubitative	Yes
Papuan Malay	Austronesian	*ka*	Interrogative	Yes
Yagaria	Nuclear Trans New Guinea	*-ve*	Interrogative	Yes

(25) Ambonese Malay (Austronesian)

[van Minde 1997: 261; 145; original gloss of *ka* QUES]

a. *Bagitu   ka?*
   like that   Q
   'Is that really so?'

b. *Srunding   **ka,**   acar   **ka,**   bete   rab'us   **ka**…*
   S.   NEX   a.   NEX   taro   boiled   NEX
   '[take whatever you like.] *Srunding* (grated, seasoned and fried
   coconut), *acar* (k.o. pickles), boiled taro…'

(26) Papuan Malay (Austronesian) [Kluge 2017: 642; 543; original gloss of *ka* or]

a. *ko gila   ka?*
   2SG be.crazy or
   'are you crazy?'

b. *nanti   banjir   **ka,**   hujang   **ka,**   guntur   **ka***
   very.soon   flooding   NEX   rain   NEX   thunder   NEX
   '[it's not allowed to kill the snake otherwise] later (there'll be) flooding,
   or rain, or thunder (or something else)'

The pattern above is noteworthy because the interrogative marker *ka* develops into a disjunctive marker in several languages of the Vehicular Malay sub-family (Austronesian), such as Baba Malay (Lee 2014; Lim 1988) and North Moluccan Malay (Hayami-Allen 2001).[14] However, its use as a dedicated nEx connective is apparently attested only in Ambonese Malay and Papuan Malay. Interestingly, along with *ka*, some of these languages have another disjunctive marker *ato/atau*. According to Lee (2014: 311), *ka* is derived from Min Nan Chinese (Sino-Tibetan), while *ato/atau* is derived from Malay (Austronesian). Looking at the examples provided by descriptive grammars, it seems that different languages have assigned to these markers different types of disjunctive functions. For instance, in Baba Malay (see Lee 2014: 312), they are used interchangeably or even together to mark disjunction. On the other hand, in Papuan Malay they are clearly different, with *ato* being used as a marker of exhaustive disjunction (cf. 27) and *ka* being used as a marker of non-exhaustive disjunction (cf. 26b, see Kluge 2017: 542–543). In Ambonese Malay, *ato/atau* is not attested.

(27) Papuan Malay (Austronesian)   [Kluge 2017: 542]
   *Dong   bilang,   a,   tunggu   minum   dulu,   **ato**   makang   dulu*
   3PL   say   ah!   wait   drink   first   or   eat   first
   'they said, "ah, wait, please drink or eat"' (lit. 'drink first or eat first')

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14 The diachronic path 'interrogative > disjunctive' is well attested in the world's languages, see Mauri (2008a: ch. 5 and 2008b) for a detailed discussion.

Beyond interrogative markers, also dubitative markers can develop a non-exhaustive connective function. In Martuthunira (Pama-Nyungan), the conditional marker *wii* 'if, maybe', expressing epistemic doubt (cf. 28a), can also be used as a nEx connective, employed by speakers to indicate "a progressive widening of the set of objects out of which something may be chosen" (Dench 1995: 181) as shown in (28b).

(28)   Martuthunira (Pama-Nyungan)

                       [Dench 1995: 180; 182; original gloss of *wii*= maybe]

    a.   *ngaliwa nhawu-layi ngurnaa kanyara-a ngartil* **wii,** *punga*
        1PL.INC   see-FUT   that.ACC man-ACC again if   guts
        pangkira-a   paju-rru
        round-ACC   REAL-NOW
        'If [we] see him again he'll be very round in the guts.'

    b.   *mirntirimarta-a* **wii,** *tharnta-a* **wii,** *jankurna-a* **wii.**
        goanna-ACC   NEX   euro-ACC   NEX   emu-ACC   maybe
        '[My uncle left me a knife so I could cut things up;] goannas maybe, or euros maybe, or emus maybe.'

The same pattern is attested in Murriny Patha (Southern Daly), where dubitative elements are described as following each item within a list encoding non-exhaustive disjunction (cf. Walsh 1976: 245–246):

(29)   Murriny Patha (Southern Daly)

                       [Walsh 1976: 246; original gloss of *kamayya* perhaps]

    a.   *nukunu-∅* **kamayya** *pɯɯ-nu*   *tʸipinʸɭɩe*
        3SG.MASC-ABS perhaps   3SG.move-FUT tomorrow
        'Perhaps he will come tomorrow'

    b.   *ŋayl*   *ŋam-yekum, ku*   *munduwlguwl* **kamayya** *ku*
        1SG   PERF-forget NC:meat bustard   NEX   NC:meat
        kulerkurk **kamayya** *ku*   *kanaŋandaŋ* **kamayya**
        brolga   NEX   NC:meat emu   NEX
        'I forgot; maybe [it was] a bustard, maybe a brolga, maybe an emu'

At first sight, the patterns attested in Martuthunira and Murriny Patha may resemble the one described in Section 2, where we argued that Dyirbal *yamba* should not be considered a nEx connective, on the basis of the defining parameters we employed. Nevertheless, the same parameters suggest that *kamayya* in Murriny Patha and *wii* in Martuthunira are instead cases of nEx connectives. Contrary to Dyirbal, Murriny Patha indeed has a fully-fledged system of connectives, including the conjunctive connective *yi* 'and' and, more importantly, an exhaustive disjunctive connective *a* 'or'. In Martuthunira too, the picture is relatively clear,

because the status of *wii* as a (disjunctive) connective is not controversial as that of Dyirbal *yamba*, as witnessed by the fact that in some occurrences it is even glossed as 'or' (cf. Dench 1995: 79).

While all the cases discussed so far are instances of multifunctionality, thus showing synchronic layering, there are also elements that have fully developed into nEx connectives and have completely lost their original function. This is the case of Japanese *ya*, which is one of the most grammaticalized connectives in our sample. In Old and Early Middle Japanese, *ya* was indeed used in yes/no questions to seek the hearer's confirmation and in rhetorical questions (Frellesvig 2010: 253), for instance:

(30)   Old Japanese (Japonic)   [Frellesvig 2010: 71]
         saku   *be-ku*   *nari-nite*   *ara-zu*   ***ya***
         bloom.CONCL   NEC-ACOP.INF   become-PERF.GER   exist-NEG.CONCL   Q
         'shouldn't it have started to bloom?'

Through Late Middle Japanese, it was then reinterpreted as a marker of uncertainty 'I wonder', frequently used in combination with modal forms (Frellesvig 2010: 359, e.g. *ya* in combination with modal forms of the existential verb *ar-* > *yaraŭ* 'is it, I wonder' > nEx connective *yara*), although by the end of the period, *ya* had developed into a nEx connective. In Contemporary Japanese, the function of *ya* is to indicate non-exhaustive lists of items (cf. Chino 2001: 41).

Another nEx connective that does not show synchronic layering is *toka* in Japanese. *Toka* should be analyzed as the combination of the comitative marker *to* and the interrogative and disjunctive marker *ka* (see Ohori 2004: 50). While there is no question that the meanings of these components have an important role in determining the overall meaning of *toka*, its main function in Contemporary Japanese is to encode non-exhaustivity.

4.3 Additive marker (>) nEx connective

Another pattern attested in our sample (albeit with a lower frequency compared to the previous two) concerns elements that can be used both as additive markers ('also/too', 'even') and nEx connectives. Four unrelated languages, namely Matsés, Ingush, Sedang and Southern Aymara, show this type of multifunctionality.

In Matsés (Pano-Tacanan) *chedo* functions as an additive marker ('too/also') "indicating that the noun phrase is adding to a listing commenced in a preceding sentence" (Fleck 2003: 806), as shown in (31).

(31)   Matsés (Pano-Tacanan)   [Fleck 2003: 805]
     aid   *bacuë*   *capa-n*   *pe-quid*
     that.one   fruit   squirrel-ERG   eat-HAB
     'Squirrels eat those fruits.'
     [mëcueste **chedo***]-n*   *pe-e-c*
     agouti   too-ERG   eat-NPST-INDIC
     'Agoutis eat them, too.'

The additive marker *chedo* 'too' is also attested together with the emphatic suffix *-bi*, leading to the scalar meaning 'even' (cf. 32a) and, in some cases, the sequence *chedo-bi* may also function as a connective to perform what seems to be an emphatic conjunction ('both A and B' cf. 32b, see Haspelmath 2004: 10).

(32)   Matsés (Pano-Tacanan)   [Fleck 2003: 811]
    a. *[cachina-n*   *intac]* *chish-e-c*   *[Matsés-n-a* **chedo-bi***]*
       chicken-GEN blood suck-NPAST-INDIC Matsés-GEN-3 too-EMPH
       'They [vampire bats] suck chickens' blood, even people's.'
    b. *[cania-bo*   **chedo-bi***]*   *[bacuë-mpi* **chedo-bi***] tëshë*
       young.man-PL too-EMPH   child-small too-EMPH   piece
       mene-ban-quid   *tsësio-dapa-n*
       give-ITER-HAB   old.man-large-ERG
       'The old man gives out pieces [of meat] to the young men and to the little kids.'

In addition, *chedo* is also employed as a non-exhaustivity marker, that is, to explicitly indicate that the marked element(s) is part of a larger category (cf. Fleck 2003: 714).[15] In particular, *chedo* can be used as a nEx connective following each element of the list (cf. 33a) and as a general extender following the last element of the list (cf. 33b).

(33)   Matsés (Pano-Tacanan)
                      [Fleck 2003: 804; 803; original gloss of *chedo* too/etc.]

    a. *[mëcueste* **chedo***]*   *[tsatsin* **chedo***] [tambis* **chedo***] pe-quid*
       agouti   NEX   acouchi NEX   paca   NEX   eat-AGT.NZR
       bëdimpi   *ne-e-c*
       ocelot   be-NPAST-INDIC
       'Ocelots are ones that eat agoutis, acouchis, pacas, and animals like that'

---

15 It should be noted that, in some cases, it is not easy to distinguish the instances of *chedo* used as an additive marker from the instances of *chedo* used as a non-exhaustive marker (cf. Fleck 2003: 714). This can be due to the fact that an implication of non-exhaustivity is present in both forms.

b.   *[pinchuc*   *bacuë]*   *[budëd*   *bacuë]*   *[catsuin*   *bacuë*
palm.species fruit   palm.species fruit   palm.species fruit
chedo]   *pe-quid*   *capa*   *ne-e-c*
too/etc   eat-AGT.NZR squirrel   be-NPAST-INDIC
'Amazon red squirrels are ones that eat pinchuc palm fruits, buded
palm fruits, and catsuin palm fruits (and other types of palm fruits).'

A similar multifunctionality is also attested in Ingush (Nakh-Daghestanian), where the
clitic =*'a* can be used as coordinative conjunction to mark "incomplete, distributive, or
exemplifying listing" (Nichols 2011: 525) as shown in (34a), but it can also function as
an additive marker, having the meaning 'also', 'too', 'even' and occurring "in this
emphatic or focal sense as a singleton" (Nichols 2011: 527), as shown in (34b).

(34)   Ingush (Nakh-Daghestanian) [Nichols 2011: 528; 527; original gloss of *'a* &]

a.   *Oaxa*   *gatagh='a,*   *kisegh='a,*   *dearegh='a*   *ju*
1P.EXC.ERG   linen.LAT=**NEX**   muslin.LAT=**NEX**   silk.LAT=**NEX**   J.make.PRS
axkan   *koch*
summer.GEN   dress
'We make summer dresses from linen, muslin, silk, etc.'
b.   *Shok*   *jettazh*   *sagata*   *uughar*   *xiira*   *darc='a.*
whistle   J.LV.CVsim   mournful   howl.IMPF   alien   sleet=&
'And an alien sleet hissed and howled mournfully.'
(Even the sleet that howled and hissed mournfully was alien.)

According to Nichols (2011: 525), =*'a* is also employed for emphatic coordination
('both…and'). However, there are no clear examples of this use.

     Finally, a similar situation is observed in Sedang (Austroasiatic), where the
marker *hiã* appears to have both the meaning of 'also'[16] and the meaning of
'etcetera' (cf. Smith 1975: 130). The gloss 'etc.' is probably an attempt by Smith to
convey the non-exhaustivity meaning, because *hiã* is indeed employed as a nEx
connective following each element of the list, rather than as a general extender:

(35)   Sedang (Austroasiatic)   [Smith 1975: 155]
Klei   *mot*   *tung kong*   *vai*   *péng*   *chêm* **hiã***,*   *ra*   *chói* **hiã***,*
after   enter   in   jungle   they   shoot   bird   **NEX**   ambush   deer   **NEX**
xé   *ká*   **hiã***.*
catch   fish   **NEX**
'After entering the jungle they shot birds **and** ambushed deer **and** caught
fish, **etc.**'

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16   Unfortunately, no clear example of the additive meaning is provided.

Finally, the same multifunctionality pattern is attested also in Southern Aymara, where the nominal suffix *-sa* can be used as an additive (emphatic) marker (e.g. *ut-sa* 'even (your) house', see Coler 2014: 550), but also as a means to achieve non-exhaustive listing of items (cf. *Ilsa-s(a) Justina-s(a)* 'Elsa and Justina (among others)', Coler 2014: 679).

As already noted, in the three cases discussed above we do not have explicit information about the diachronic development of the nEx connectives. Nevertheless, across languages we find evidence of additive markers developing into coordinators (cf. Mithun 1988: 341–342). For instance, in Vlax Romani (Indo-European,), the additive focus-sensitive marker *vi* can be used as a coordinator "to mention another entity of concern to the actual statement" (Wagner 2012: 410), and is employed within open lists in discourse, as in (36).

(36)   Vlax Romani   [Wagner 2012: 412]
        Andá   tute šutem šaláto, **vi** *paradičomi* **vi** *papriki* **vi** *sa.*
        because.of you I.put salad   also tomatoes   also peppers also all
        'I have offered also salad, tomato salad, pepper salad, everything, to do
        you a favor.'

However, in the case of Vlax Romani, the available data do not allow us to decide whether we are faced with a discourse pattern or with a nEx connective at full right. For this reason, contrary to the cases discussed before, it was not considered in our analysis.

4.4 Similative marker > exemplification > nEx connective

A further diachronic source attested in our sample are similative markers, that is, linguistic elements that encode an approximate similarity between two items (cf. Haspelmath and Buchholz 1998; Treis and Vanhove 2017). This pattern is attested in two languages: *come* in Italian and *khale* in Kombai. In both cases, we can still observe synchronic multifunctionality.

According to de Vries (1993: 49–50), *khale* is a noun meaning 'kind, sort'. When it is used in combination with another noun, it may mean 'like, as, resembling' thus behaving like a similative marker, as shown in (37).

(37)   Kombai   [de Vries 1993: 50]
        Kho   khenoduf-o **khale** *abo-n-o*   *rumu*…
        man   child-conn   **like**   be.3sg.nf-tr-conn   person
        'A man who is like a child,…'

Nevertheless, *khale* has also developed "a conjunction-like grammatical meaning" (de Vries 1993: 50), to encode an inclusive non-exhaustive disjunction:

(38)   Kombai   [de Vries 1993: 49; original gloss of *khale* or]

Lã	*khumo*	*ba-kha-ro*		*kho*	*khumo*
woman	die.SS	DUR-go.3SG.NF-SUB/thing		man	die.SS

ba-kha-ro		*miyo*	*muno*	***khale***	*lã*	*muno*	***khale***
DUR-go.3SG.NF-SUB/thing	child	young	NEX	woman	young	NEX

kho	*muno*	***khale***	*khumo-ra*
man	young	NEX	die.SS-and

macho	*Romalü*	*bürü*	*khane-neno*
there	romalü	place	go.3PL.NF-QUOT.PL

'About the dying of a man or a woman, **a young child or a young woman or a young man**, they said that they go to the place of Romalü after they have died.'

In Italian, we observe a parallel pattern, with the similative marker *come* 'like' being used in non-exhaustive lists to link the list items (cf. Goria and Mauri 2018):

(39)   Italian (Indo-European)   [KIParla corpus][17]

capire	*i*	*media*	*per*	*esempio*	*significa*	*capire*
understand	DEF.PL	media	for	example	mean.3SG	understand

l'	*uso*	*della*	*parola*	***come***	*significa*	*capire*	*l'*	*uso*
DEF	use	of.DEF	word	NEX	mean.3S	understand	DEF	use

di	*facebook*
of	facebook

'To understand the media means for example to understand the use of word, [it] means understand the use of facebook, **and so on**'

Contrary to the diachronic paths discussed in the previous sections, the relationship between similative markers and non-exhaustivity may seem less straightforward. We have indeed to identify an intermediate step, necessary to explain this development, which in our view coincides with the function of exemplification. Similative markers are indeed often employed to signal a relation of similarity between a hypernym and one or more hyponyms, which are taken as exemplars (Barotto and Mauri 2018: 117). In turn, as noted in Section 1.2, exemplifying markers entail the notion of non-exhaustivity, since the item marked as example has to be conceived as representative of a larger set.

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17   The KIPArla corpus is a corpus of Spoken Italian, freely available at the website www.kiparla.it (Mauri et al. 2019b).

Let us consider the case of Italian in detail, for which we have corpus evidence from spoken language. In (40), the similative marker *come* indicates that 'cats' is an example of the larger set 'animals':

(40)   Italian (Indo-European)
         *animali **come** i gatti*
         'animals **like** cats'

The usage of *come* to express exemplification is also found in lists, as in (41), where the speaker repeats *come* before each list member in order to stress the relationship with the hypernym, thus preparing the ground for its reanalysis as nEx connective:

(41)   Italian (Indo-European)   [ItTenTen16 Corpus][18]
    a.   *criminali **come** Frometa o **come** Luis Posada Carriles*
          'criminals **like** Frometa or **like** Luis Posada Carriles'
    b.   *leaders **come** Bush, **come** Sharon*
          'leaders **like** Bush, **like** Sharon'

Starting from list constructions as the ones in (41a), we can assume two intermediate steps: *i)* first, the speaker omits the coordinating connective (as in (41b)), then *ii)* she omits the hypernym and, consequently, the first *come* (i.e. the one linking the hypernym to the list members, as in 39). The resulting construction is a list of two examples linked by *come*. This process can be schematized as follows:

(42)   Italian (Indo-European)
    a. $X_{[hypernym]}$ *come* $Y_{[example]}$ CONNECTIVE *come* $Z_{[example]}$
    b. $X_{[hypernym]}$ *come* $Y_{[example]}$ *come* $Z_{[example]}$
    c. $Y_{[example]}$ *come* $Z_{[example]}$

All these stages are attested synchronically in spoken (and some of them also in written) Italian. Such corpus-based evidence is of great help in explaining the development of *come* in Italian and provides a key to interpret the data attested for *khale* in Kombai, for which less information is available.

4.5 'Say' > exemplification > nEx connective

Exemplification is likely to play a role also in the case of Usan (Nuclear Trans New Guinea), where the verb *qâmb* may be used both with its lexical meaning 'to say' and as a nEx connective. As already observed for many of the cases described until

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18   The ItTenTen16 Corpus (Italian Corpus from the Web) is available through SketchEngine, www.sketchengine.eu.

here, as a nEx connective *qâmb* follows each member of the open list. Let us consider three examples:

(43)   Usan (Nuclear Trans New Guinea)
                        [Reesink 1987: 258; 84; 345; original gloss *qâmb* say.ss)
   a. *ne   wo   in-in   **qâmb**   ebet-erei*
       and   he   sleep-1SG.UF   say.SS   do-3SG.FP
       'And he did saying I may sleep'
   b. *wo   mi   âib   ye-s-eib   **qâmb**   qâm-arei*
       he   thing   big   me-give-SG.FUT.SS   say.SS   say-3SG.FP
       'He said that he would give me something big'
   c. *di-âb   mâni **qâmb** mugam **qâmb** eng u-t-âb   wogub […]*
       come.up-SS yam NEX   mugam NEX   the him-give-SS cease.SS
       'They came up and after they had given him the yam, the mugam etcetera […]'

In (43a) *qâmb* is used with its lexical meaning 'to say', while in (43b) it is used to introduce indirect speech, showing the development of "conjunctive-like" functions. Interestingly, in (43c), *qâmb* is used to indicate the existence of further similar items beyond 'yam' and 'mugam'. Reesink (1987: 84) notes that this usage of *qâmb* "resembles the use of English 'say' when one wants to give an example".

   Instances of 'say' verbs employed to mark exemplification are indeed attested across languages, albeit with different degrees of grammaticalization. For instance, in Japanese, the expression *to itta* 'said, such as' (a combination of quotative marker *to* and the past tense of the verb *iu* 'to say', cf 44a) has grammaticalized into an exemplifying marker that can be used to link a hypernym to its exemplifying hyponym, as in (44b):

(44)   Japanese (Japonic)
   a. *kun'ichi   wa   fumiko   ni   "nihon-jū   de   ichiban*
       kun'ichi   TOP   fumiko   DAT   japan-middle   LOC   best
       *shiawasena   tsuma   ni   shite   yaru"   **to**   **itta**.*
       happy   wife   DAT   do:GRD   make   QUOT   say:PAST
       'Kunichi said to Fumiko, "I'll make you the happiest wife in Japan."'
       (Kaiser et al. 2001: 522)
   b. *dokyumento   ya   seishiga   **toitta**   fairu*
       document   NEX   still-image   such.as   file
       'files such as documents or still-images.' (Barotto 2018: 41)

In Italian, *diciamo* 'we say' and *per dire* '(in order) to say' are frequently used to mark exemplification (Lo Baido 2018). For instance,

(45)   Italian (Indo-European)   [CORIS corpus][19]
        *vuol   comunicare   una   cosa   precisa, **per dire***
        want:PRS.3SG communicate INDEF thing precise   to   say
        un   comportamento che   non va bene.
        INDEF behavior   that   NEG be.correct:PRS.3SG
        '[she] wants to communicate a precise message, **let's say/for example** a
        behavior that is not correct.'

Interestingly, while in the cases just mentioned, 'say' verbs develop into exem-
plifying markers (that is, in exemplifying contexts, they can be paraphrased as 'for
example'), in Usan *qâmb* developed into a connective linking examples, that is, a
nEx connective (Reesink 1987: 84).

4.6 Heterogeneity marker > nEx connective

NEx connectives may also develop from linguistic elements that explicitly encode
a variety of elements (e.g. 'various'). This pattern is attested in Hokkaido Ainu
(Ainu). In Hokkaido Ainu, the noun *usa* 'various' is commonly used as a prefix
before other nouns meaning 'various X'.

(46)   Hokkaido Ainu (Ainu)   [Batchelor 1905: 87]
        Usa   *wen-buri*
        various   bad-habit
        'a **variety** of bad habits.'

According to Refsing (1986: 164), when *usa* is used after two or more nouns in a
row, it indicates "an open-ended string of elements":

(47)   Hokkaido Ainu (Ainu)   [Refsing 1986: 164; original gloss of *usa* and]
        *amip   **usa** saranpe **usa** oyaykino okaype poronno an hok*
        clothes NEX cloth   NEX various   things   a.lot   I   buy
        'I buy various clothes and cloth **and a lot of different other things**.'

Although we were not able to find further evidence of this pattern in other
descriptive grammars of Ainu languages, the usage of *usa* 'various' as a nEx
connective is indeed attested in the Glossed Audio Corpus of Ainu Folklore
(Nakagawa et al. 2016), an annotated corpus of Ainu folktales with translations

19 The CORIS corpus (Corpus di riferimento dell'italiano scrittto) is available at http://corpora.
dslo.unibo.it/TCORIS/.

into Japanese and English, recorded between 1977 and 1983.[20] Let us consider the occurrences in (48) and (49):

(48)   Ainu   [Glossed Audio Corpus of Ainu Folklore]

usa	*cikap-po* …	***usa***	*cikap*	***usa***	*isepo*	*kor*	*wa*
various	bird-DIM	**various**	bird	**various**	hare	have	and
iwak	*pa*	*wa*, […]					
return	PL	and					

'they caught birds **and** rabbits and brought them home, [….]'
Jp. 'tori **dano** usagi **dano** o totte kaette kite,'

Two aspects are particularly interesting about this occurrence. First, in the English translation, the meaning 'various' is completely absent, even though *usa* is repeated three times. Even more importantly, in the Japanese translation, the list of animals (which is marked by *usa* in Ainu) is marked by the nEx connective *dano* in Japanese. Let us consider another instance from the corpus:

(49)   Ainu   [Glossed Audio Corpus of Ainu Folklore]

usa	*cikap*	***usa***	*iesepo*	*cironnup* […]
various	bird	**various**	hare	fox

'birds, rabbits and fox'
Jp. 'tori **ya** usagi **ya** kitsune'

Again, as in (49), in the English translation there is no evidence of the meaning 'various' and in the Japanese translation, the list is marked by the nEx connective *ya*. Thus, evidence from the Glossed Audio Corpus of Ainu Folklore confirms that when *usa* is used to join two or more elements, it loses its original meaning 'various' and functions as a nEx connective, indicating the existence of further similar elements. The absence of non-exhaustivity in the English translation is probably due to the attempt to provide a faithful, almost literal translation, which led the translator to choose among the connectives available in English (none of which conveys non-exhaustivity).

The relationship between nEx connectives (and non-exhaustivity in general) and heterogeneity is noteworthy. First of all, as argued for heterogeneous plurals, nEx connectives are used to designate inherently heterogeneous sets, where set members are not identical but are grouped together on the basis of some kind of similarity (often contextually dependent, see Mauri 2017 for the usage of nEx

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20 We thank Ana Bugaeva for suggesting using this corpus and for the precious exchange we had in Pavia (ALT 2019) on Ainu nEx connective. The corpus is available at https://ainucorpus.ninjal.ac.jp/en/.

connectives to make reference to ad *hoc categories*). Secondly, since words like 'various' encode not only heterogeneity but also numerosity (that is, their meaning can be paraphrased as 'many different X', cf. Garassino 2009), their repetition inside lists seem to suggest that the set encompasses more members than those explicitly stated. Barotto (2019) indeed suggests that the function of 'various' in the context of listing is employed to further highlight the non-exhaustive nature of the encoded set. Interestingly, the mechanism she observes is the same for nEx connectives, although performed by lexical means. In this regard, the fact that, over time and in specific contexts, words conveying heterogeneity can grammaticalize into nEx connectives confirms Barotto's account of their role as markers of non-exhaustivity.

4.7 Preference > exemplification > nEx connective

Recently, Italian developed a nEx connective, which is still restricted to the colloquial variety, namely *piuttosto che* (cf. Brucale 2012, Mauri and Giacalone Ramat 2015 for a detailed diachronic analysis). Originally this connective had a preferential meaning 'rather than' but is nowadays attested both with its source value and as a marker of non-exhaustivity in lists. It can only be used when the speaker aims to name some potential exemplars of an open set, as in (50), in order to construct (or imply) a higher-level category ('old nostalgic things' in 50). As a nEx connective, *piuttosto che* cannot occur in alternative questions aimed at a choice, which by definition imply an exhaustive list of alternatives.

(50)   Italian   [Corpus KIParla]

pure	*io*	*a volte*	*adoro*	*andare*	*a*	*riguardare*	*le*	*vecchie*
also	I	sometimes	love	go	to	look.again	DEF	old.PL

foto	***piuttosto che***	*vecchi*	*ricordi*
picture.PL	NEX	old.PL	memory.PL

'Me too, I sometimes love to go and look again at old pictures, old memories **or things like that**'

How does a preferential marker, which is typically used to oppose two alternatives (in a closed set) happen to encode non-exhaustivity? As argued by Mauri and Giacalone Ramat (2015), the change took place in free-choice contexts where the two alternatives refer to non-specific, replaceable items, as the ones exemplified in (51) and (52), by two famous Italian authors of the 19th century:

(51)　　Italian　　　　　　　　[Giacomo Leopardi – *lo Zibaldone*,19th century]
　　　　[…] *non　　avendo nessun　possibile　fondamento　per　　attribuire ad*
　　　　　　　　NEG　　having　any　　possible　foundation　to　　attribute　to
　　　　un　　　essere　posto　　fuori　della　materia,　una proprietà
　　　　INDEF　creature　located　out　　of.DEF　matter　INDEF property
　　　　piuttosto che　　un'　　altra,　una maniera　di　　esistere, la
　　　　rather　　than　　INDEF　another　NDEF manner　of　　exist　　DEF
　　　　semplicità o　　la　　composizione,　l'　　incorruttibilità o la
　　　　simplicity or　　DEF　compositionality DEF　incorruptibility or DEF
　　　　corruttibilità. (4. Feb. 1821.).
　　　　corruptibility
　　　　'[…] not having any possible foundation to attribute to a creature outside
　　　　matter **one property rather than the other**, a way of existence, simplicity
　　　　or compositionality, incorruptibility or corruptibility'

(52)　　Italian　　　[Alessandro Manzoni – *Della lingua italiana* (19th century)]
　　　　E　　è　　dunque　dimostrato […] *che ogni　effetto grammaticale può*
　　　　and is　　thus　　demonstrated　that every effect　grammatical may
　　　　essere ottenuto　con mezzi　diversi; e　　che,　per conseguenza,
　　　　be　　obtained　with means　different and that　for consequence
　　　　*l'　applicazione d'　uno　**piuttosto che**　d'un　altro　di　essi,*
　　　　DEF　application of　one　rather　than of.INDEF other of　them
　　　　dipende　da　　un　arbitrio
　　　　depend.3SG from　INDEF free.choice
　　　　'and it is thus demonstrated that every grammatical effect may be
　　　　achieved through different means; and that, as a consequence, the
　　　　application **of one rather than another** depends on a free choice'

In these cases, by virtue of the free-choice context and their non-specific reference, the two alternatives are interchangeable: the preference of *a* over *b* is equivalent to preference of *b* over *a*: 'one property or the other', 'one or another'. The free-choice context further implicitly conveys that they are randomly picked exemplars within a larger set. The assumption of a larger set is made explicit in (52), where the two alternatives are preceded by the overt indication '*con mezzi diversi*' 'through different means', among which the author picks 'one or another'. Preference between mutually replaceable items in a free-choice context is thus interpreted as exemplification, and the preferential connective is reanalyzed as a connective linking examples of a larger set, i.e. a nEx connective.

4.8 Other cases

This section is devoted to cases that are not supported by clear diachronic evidence, either concerning the source or concerning the path, despite the presence of potential hints. In two languages, non-exhaustive connectives appear to originate from a verbal suffix encoding aspectual categories, namely Andoque and Japanese, and in both cases the diachronic path that led to a nEx connective is not straightforward to understand.

In Andoque, Landaburu (1979: 153) notes that the progressive suffix *-añe/-eñe* (exemplified in (53a)) can be attached to nouns to encode "les termes successifs d'une énumération", as in (53b):[21]

(53)   Andoque (Isolate)   [Landaburu 1979: 209; 154]
     a.   *náʌ–**añe**-ʌ*   *baya*
           exist-**PROG**-NZR   he
           'il existe encore' (En. 'he still exists')
     b.   *[…] koata–**añe**-ʌ*   *tasúmi-**éñe**-i*   *tami-**éñe**-i*
               guacures-**NEX**-NZR   caimitos-**NEX**-NZR   wild.grapes-**NEX**-NZR
           *tomi-**éñe**-i*
           pineapple-**NEX**-NZR
           'des guacures, des caimitos, des raisins savages, des ananas, … **etc.**'
           (En. 'guacures, caimitos, wild grapes, pineapples, etc.')

As can be observed in (53), the progressive suffix *-añe/-eñe* can only be used together with the nominalization marker *-ʌ*. Interestingly the enumerative function of *-añe/-eñe* can be performed only with nominal bases and cannot be used to enumerate verbs. Furthermore, the same structure is attested to denote free-choice reference, that is, to designate a random element within the base's denotation (*hí-ʌ* 'thing', *hí-**añe**-ʌ* 'anything, whatever', cf. Landaburu 1979: 154).

We can put forward two hypotheses. In the first one, we can think of an intermediate step between the progressive and the enumerative function, in which the element acquires an additive meaning 'again' (i.e. progressive > 'again' > additive > nEx connective), thus resembling the path described in Section 4.3. The second hypothesis sees the free-choice meaning as the intermediate step, which comes to be reanalyzed as an exemplification marker and ultimately as nEx connective stage (i.e. progressive > free-choice > exemplification > nEx connective), through a process that is reminiscent of the one described in Section 4.8 for Italian *piuttosto che*. Yet, despite many pages devoted to the description of this marker,

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21 English translation: 'the successive terms of an enumeration'.

Landaburu (1979) does not provide enough diachronic evidence to make one of these hypotheses something more than speculation.

The case of Japanese is different, because here the source meaning is not progressive, but rather perfective aspect. The converb *-tari* indeed originates from a perfect auxiliary that was used to denote the completion of an event in Old Japanese (cf. Frellesvig 2010; Narrog 2012; Shinzato 2005). In Contemporary Japanese, *-tari* has lost its aspectual perfective meaning, developing into what Narrog (2012: 145–148) calls a 'subordinating mood'. He notes that *tari* "is not specifically an irrealis subordinate mood", but it leads nonetheless "to a lower factuality of the event portrayed, since through *-tari* the event becomes marked as unspecific" (Narrog 2012: 147). This lower factuality is probably what enables the modern functions of *tari* to emerge, namely non-exhaustive enumeration and hedging. Once again, this may be reminiscent of the pattern described in Section 4.2, where we discussed how irrealis markers, that is, markers encoding a low factuality of the item in their scope, come to be reanalyzed as nEx connectives.

It is noteworthy that *tari* is the only nEx connective restricted to verbal phrases and clauses, as noted in Section 3, and this is clearly a direct consequence of its being a verbal suffix. Nevertheless, it should be noted that this is not a general rule: as noted above, *-añe* in Andoque originated from a verbal suffix as well, but, as a connective, it can be used to link noun phrases.

Moving away from verbal suffixes, an isolated case is the one attested in Mpade, where the consequential marker *kanía* ('therefore', 54a) can be employed to mark non-exhaustive lists (Allison 2012: 529, 54b). It is likely that some intermediate discourse function of progression or sequentiality has allowed the successive development of *kanía* into a nEx connective, through reference to a general concept of 'there is more to come', which may in turn have been reinterpreted as a marker of non-exhaustivity. Unfortunately, the grammar does not provide enough diachronic data to confirm this.

(54)   Mpade (Afro-Asiatic) [Allison 2012: 332; 529; original gloss of *kanía* therefore]

   a.   *kanía*   *kadə̂*   *n*
        therefore   IMP:2SG:follow   1SG:do
        'therefore follow me'

   b.   *[ʃá-e* **kanía** *hə́ŋgwé* **kanía]**ᴄꜱ   *nde*   *[lə]*ᴄᴄ   *fogə̂*
        COW-PL   **NEX** goat:PL   **NEX**   be.at:PL   PRO   all
        'Cows, goats, **and so forth** are all there (within my grasp)'

The last case that is worth mentioning is Mandarin Chinese, where *a* is described as a nEx used to indicate open sets (cf. Zhang 2008: 137):

(55)   Mandarin Chinese (Sino-Tibetan)   [Zhang 2008: 137; original gloss of *a* and]
           *Shu-**a**,*   *baozhi-**a**,*   *bai-man-le*   *zhengge*   *shujia.*
           book-NEX newspaper-NEX put-full-PRF   whole   bookshelf
           'Books and newspapers, **among other things**, occupied the whole
           bookshelf.'

Beyond marking open-ended lists, *a* is also frequently used as an interjection or as a final-sentence particle conveying pragmatic meanings (see Po-Ching and Rimmington 2004). This may point to a diachronic path in which the interjection at some point starts to be systematically employed as a hesitation marker in contexts where the speaker has processing difficulties or is uncertain of what she is saying. The speaker's uncertainty marker may then have been reanalyzed in lists as a nEx connective.

5 A unitary account: list constructions and non-exhaustivity in discourse

The synchronic and especially the diachronic patterns described in the previous section allow us to provide a unitary account of nEx connectives. The observed sources indeed show a non-random set of linguistic strategies, associated to the speakers' aims and attitudes in expressing non-exhaustivity in discourse. Furthermore, data are clear in pointing to list structures not only as the natural context of connectives, but also as the *locus* where the diachronic change is triggered.

     As is well known, frequency of use is a determining factor triggering and boosting language change (cf. Bybee 2006; Bybee and Hopper 2001; Traugott 2003; Traugott and Trousdale 2010 among others), therefore if a specific discourse context or pattern tends to be recurrently associated to a specific function, it is likely to play a role in the diachronic changes leading to the coding of that function. As far as non-exhaustivity is concerned, several corpus-based studies have convincingly demonstrated that non-exhaustivity is frequently conveyed in discourse by means of enumeration in open lists (see Barotto and Mauri 2018; Goria and Masini 2021; Mauri et al. 2019a).[22] Therefore, in the light of the literature on list constructions and based on the diachronic typology discussed in Section 4,

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22   It has been demonstrated that lists behave in languages as fully-fledged constructions in the Construction Grammar sense (Goldberg 1995, 2006), and their manifestation in discourse can be studied in the light of a constructional network (LCxns, according to Masini et al. 2018; cf. also Kahane and Pietrandrea 2012).

we can reasonably identify listing as the critical context for the development of nEx connectives, where their reanalysis and grammaticalization occurs (see Diewald 2002). The contextual frequency of the source markers for nEx connectives in non-exhaustive enumerations is, in other words, the likely trigger for their change.

All the sources that we described are indeed reanalyzed as nEx connectives once they enter into a non-exhaustive list construction. Initially, the source element has scope over a single item and is repeated before or after each list member (in a juxtapositive list 56a). Subsequently, the source element starts to be associated in a more stable way to the larger context, namely we observe a gradual constructionalization (Traugott and Trousdale 2013): the repetition of the source element before or after each item is systematically interpreted as indicating a non-exhaustive list, and the scope of the source item is not fully transparent anymore, because it is the construction as a whole being processed and interpreted as non-exhaustive (56b). The final stage is the one in which the source element is rean-alyzed as a non-exhaustive list marker,[23] in particular a nEx connective. The three-stage process of reanalysis is summarized in (56):

(56) a. $[X_1 \text{ SOURCE}], [X_2 \text{ SOURCE}], \dots [X_n \text{ SOURCE}]$
      b. $[X_1 \text{ SOURCE}, X_2 \text{ SOURCE}, \dots X_n \text{ SOURCE}]$
      c. $[X_1 \text{ NEX } X_2 \text{ NEX } \dots X_n \text{ (NEX)}]$

Stage b) is a necessary step toward stage c), and the two stages show differences in terms of syntactic structure and prosodic pattern.[24] However, once we are faced with the often-concise discussion of data in descriptive grammars, it is not always possible to find distinct examples for the two stages. Therefore, whereas we have clear evidence for stages a) and c), as widely shown in the preceding section, stage b) is in many cases not directly observed.

As noted in Section 4, not all nEx connectives share the same relationship with their original source. In some languages, the marker loses its original meaning and is fully reanalyzed as a nEx connective, as is the case for Japanese, whose nEx connectives have all fully grammaticalized and do not encode their original function any longer (with the exception of *yara*, cf. Frellesvig 2010; Narrog 2012). In most languages, however, nEx connectives still co-exist with their original sources in a layering situation, even though they are recognized (by the author of the grammar and likely by the speakers) as two separate strategies. This is the case, for

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23 The term 'list marker' is employed by Masini et al. (2018) in their constructionist account of lists, to refer to connectives and list completers (i.e. general extenders).
24 It has been shown that non-exhaustive listing shows specific prosodic patterns, within which connectives play a role (cf. Matalon 2021; Selting 2007). However, further dedicated research is needed to provide specific evidence, since information available in grammars rarely, if ever, makes reference to prosody.

instance, of *ka* in Papuan Malay, which is used and recognized as a specific type of connective but can still be employed with its original interrogative meaning.

Interestingly, the diachronic process described in (56) for the development of nEx connectives can be observed independently of the specific semantics of the source, which can be one already encoding non-exhaustivity or may have a different meaning. Let us now go through the attested sources, to understand the mechanisms and the steps through which the communication of non-exhaustivity in discourse may give rise to the specific type of connectives we are interested in.

The diachronic path described in Section 4.1 (heterogeneous plural > nEx connective) concerns structural reanalysis, keeping the semantic core of non-exhaustivity unchanged: as already argued in Section 2, nEx connectives indeed differ from heterogeneous plurals not in terms of function, but rather in terms of syntactic structure and distributional properties. What we observe in this path is that speakers mobilize a linguistic strategy that already conveys reference to Set (X_{n+i}), using it within enumerative contexts (cf. example 20b, repeated here for convenience in 57). The repeated use in open lists paves the way for the reinterpretation of heterogeneous plurals as nEx connectives: heterogeneous plurals indeed undergo a scope reanalysis expanding their operational domain from a single nominal base to a whole list (see example 23b from Haka Chin, repeated here for convenience in 58).

(57)   Tommo-so (Dogon)   [McPherson 2013: 601]
         [X₁ HET.PL X₂ HET.PL]
         [*tùmbùtù   nɛ̌m=**mbe**   nàmá=**mbe***]
         timbuktu   salt=PL   meat=PL
         '[Timbuktu salt, **etc.**, meat **etc.**]'

(58)   Haka Chin (Sino-Tibetan)   [Peterson and VanBik 2004: 351]
         [X₁ NEX X₂ NEX X₃ NEX]
         làwthlawpaa=ni² [*vok-**teè*** *²aàr-**tee***   *tsoo-**tee***]   *²a-tsook-hnaa*
         farmer=ERG   pig-NEX   chicken-NEX   COW-NEX   3SG.SUBJ-buy₂-PL.OBJ
         'The farmer bought [pigs, chickens cows **and so on**].'

Also additive particles and heterogeneity markers (discussed in Sections 4.3 and 4.6, respectively) develop into nEx connectives by virtue of their implying some exceeding, non-exhaustive reference. In particular, additive particles meaning 'also' entail the existence of what has been called a 'domain of application' (Andorno 2000), that is, at least one alternative to the element in the particle scope. These elements have also been labeled 'adverbs paradigmatisants' (Nølke 2001) by virtue of their ability to make reference to a paradigm of alternatives, which equates to a set of potential, additional items belonging to the same category.

When repeated in a list, additive particles make the list non-exhaustive, thus paving the way for their reanalysis: example (59) provides evidence for a discourse pattern attested in Spoken Italian showing the repeated use of *anche* 'also' within non-exhaustive enumeration (cf. stage a), while example (33a) from Matsés is here repeated for convenience in (60) to exemplify the reanalysis of *chedo* 'also' as nEx connective.

(59)   Italian (Indo-European)   [KIParla Corpus]
        [ALSO X_1] [ALSO X_2]

il	*modo*	*in*	*cui*	*le*	*informazioni*	*vengono*	*raggruppate*	*e*
DET	way	in	which	DET	information	come:3SG	divided	and

organizzate [**anche**	*nelle*	*forme*	*artistiche*[**anche**	*in*	*quegli*	*aspetti*
organized ALSO	in.DET	form	artistic ALSO	in	DET	aspect

simbolici	*culturali*	*che*	*inevitabilmente*	*queste*	*piattaforme*	*hanno*]
symbolic	cultural	that	inevitable	these	platforms	have

        'the way in which information is divided and organized [**also** in artistic forms] [**also** in those symbolic cultural aspects that inevitably these platforms have]'

(60)   Matsés (Pano-Tacanan)   [Fleck 2003: 804; 803]
        [X_1 NEX X_2 NEX X_3 NEX]

[*mëcueste* **chedo**	*tsatsin*	**chedo**	*tambis*	**chedo**]	*pe-quid*
agouti NEX	acouchi	NEX	paca	NEX	eat-AGT.NZR

bedimpi	*ne-e-c*
ocelot	be-NPAST-INDIC

        'Ocelots are ones that eat [agoutis, acouchis, pacas, **and animals like that**]'

As for heterogeneity markers (discussed in Section 4.6), the meaning 'various' can be mobilized in discourse to construe an open list because reference to heterogeneity entails reference to plurality, thus widening in a non-specific way the set of items.[25] In the case under exam, the type of quantity being referred to is an exceeding quantity, whose intended meaning is 'there is more': as exemplified in (61) from Spoken Italian, *vari* 'various' is repeatedly employed in the same utterance to convey vague reference to some larger quantity, ultimately conveying non-exhaustivity. In Italian, this is just a usage pattern revealing the discourse

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25 This can be observed also in the recurrent development of the meaning 'many' from the meaning 'diverse' (cf. Italian *diversi* 'different' > 'a lot', *vari* 'diversified' > 'a lot', cf. Garassino 2009), thus deriving a quantitative meaning from a comparative one.

association between hetereogeneity and non-exhaustivity, but in Ainu the heterogeneity marker *usa* has been reanalyzed as a nEx connective (62).

(61)   Italian (Indo-European)   [KIParla Corpus]
        [VARIOUS X_1] [VARIOUS X_2] [VARIOUS X_3]…[VARIOUS X_n]
        [vari   sistemi di] mh si […] dei   [vari   documenti] eh
        VARIOUS system of   mh yes   of.DET VARIOUS document   eh
        quindi i   [vari   records] eh che sono eh caratterizzati da
        so   DET VARIOUS record   eh that are eh characterized by
        [vari   campi] [vari   fields]
        VARIOUS   field   VARIOUS field
        '[**various** systems] of mh yes […] of the [**various** documents] eh so the
        [**various** records] eh that are characterized by [**various** 'campi'] [**various**
        fields]'

(62)   Hokkaido Ainu (Ainu)   [Refsing 1986: 164]
        [X_1 NEX X_2 NEX GENERALEXTENDER]
        *[amip   **usa** saranpe **usa** oyaykino okaype poronno] an hok*
        clothes   NEX cloth   NEX various   things   a.lot   I   buy
        'I buy [various clothes and cloth **and a lot of different other things**].'

Enumeration provides the critical context also for the diachronic path discussed in Section 4.2, which derives nEx connectives from elements encoding the speaker's doubt or interrogative attitude (see Table 4). In this case, in order to convey non-exhaustivity in discourse, speakers mobilize the linguistic strategies expressing the *reasons* underlying their choice to be non-exhaustive, namely uncertainty or indifference regarding the actual composition of the set. Such attitude can be expressed by an interrogative marker or an epistemic element, employed in discourse to convey doubt or an intentional indifference with respect to the exact exhaustification of the set, thus hedging the speaker's commitment. It is in our view the potential status, which irrealis markers project over the whole list, that makes the list itself potential, i.e. not fully determined, be it for lack of knowledge or lack of interest in knowledge. The recurrent development of irrealis markers into nEx connectives thus clearly mirrors the discourse motivations for non-exhaustivity: speakers are non-exhaustive because they lack the necessary information to be exhaustive or they simply need not be precise, and intentionally choose to use uncertainty markers to convey approximation.[26]

     Within a list, speakers tend to repeat the irrealis marker for each item and this is what allows for the reanalysis. Initially, the interrogative or dubitative marker

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26 We thank an anonymous reviewer for raising this point.

has scope over a single list member, encoding its potential rather than actual status: example (63) provides evidence for a discourse pattern showing the repeated use of *maybe* within non-exhaustive enumeration (cf. stage a). Then, due to the repeated use in non-exhaustive lists, in some languages the irrealis element may start to be systematically associated to the expression of non-exhaustivity, ultimately being reinterpreted as a marker of non-exhaustivity, as happens for *ka* in Papuan Malay (see example 26b, repeated here for convenience in 64).

(63)   English (Indo-European)   [EnTenTen15]
        [IRR X_1], [IRR X_2], [IRR X_3]
        *for example, classically, in this literature a young man, used to running wild with his group of friends, [**maybe** some drug using], [**maybe** some drinking], [**maybe** some offending], falls in love*

(64)   Papuan Malay (Austronesian)   [Kluge 2017: 543]
        [X_1 NEX X_2 NEX X_3 NEX]
        banjir   ***ka****,*   *hujang*   ***ka****,*   *guntur*   ***ka***
        flooding   NEX   rain   NEX   thunder   NEX
        'flooding, or rain, or thunder **(or something else)**'

Non-exhaustive sets can indeed be analyzed as being characterized by an inherent epistemic dimension of potentiality since they imply reference to further, potential additions. This, in turn, has consequences for the interpretation of the list items that are instead explicitly mentioned, which are processed as somehow representative of the larger category to which the potential additions belong. In other words, the mentioned items are processed as exemplars, so that Set(X_{n+i}) can be identified through analogical reasoning. It is for this reason that exemplification markers as the ones described in Sections 4.4 and 4.5 can be reanalyzed as nEx connectives: the interpretation of non-exhaustivity requires analogical reasoning based on exemplification and, in turn, exemplification entails non-exhaustivity.

In Section 4.4 we observed the mobilization of similative elements, while in Section 4.5 the semantics of the source is 'say': in both cases, however, the change towards nEx connectives requires an intermediate stage in which the sources start to be employed as exemplification strategies. Once again, it is the list construction that allows for the reanalysis: one of the strategies that speakers have at their disposal to convey non-exhaustivity is indeed exemplification, or, to be more precise, enumeration of examples. Initially, each list item is introduced as an example by means of a single-scope exemplifier: a list of examples is by nature non-exhaustive, being an example by definition one among a larger set, as shown in (65), where the Italian *per esempio* 'for example' is repeated within a non-exhaustive enumeration. In some languages, the repeated use of the exemplifier

within an open list can determine its reanalysis as a nEx connective, as is the case for *qâmb* 'to say' in Usan (exemplified in 43c, repeated here for convenience in 66).

(65)   Italian (Indo-European)   [KIParla Corpus]
        [EXAMPLE X₁], [EXAMPLE X₂],[EXAMPLE X₃]… [EXAMPLE Xₙ]
        i   media sono strumenti in buona parte a   carattere tecnologico
        DET media are   tool   in large part to type   technological
        [per esempio la   radio] [per esempio la   televisione] [per esempio
        FOR.EXAMPLE   DET radio FOR.EXAMPLE   DET television   FOR.EXAMPLE
        questo computer]   […]   [per esempio   questo   microfono]
        this computer   FOR.EXAMPLE   this   microphone
        'media are largely technological tools **for instance** the radio, **for instance**, the television, **for instance** this computer […] **for instance** this microphone'

(66)   Usan (Nuclear Trans New Guinea)   [Reesink 1987: 345]
        [X₁ NEX X₂ NEX]
        di-âb   [mâni **qâmb** *mugam* **qâmb**] *eng   u-t-âb   wogub*
        come.up-SS   yam NEX   mugam NEX   the   him-give-SS cease.SS
        'They came up and after they had given him [the yam, the mugam **etcetera**]'

Exemplification implies another concept, which may help us understand the remaining paths, namely free-choice. Examples are indeed typically freely chosen by virtue of their context relevance or accessibility (cf. Mauri 2021): they are picked up among a larger set and could, by definition, be replaceable with other examples. The close connection between free-choice and exemplification may explain the path discussed in Section 4.7, where we observe an asymmetric preference marker meaning 'rather than' developing into a symmetric nEx connective via recurrent use in free-choice contexts. As examples (51) and (52) clearly show, in free choice contexts the preference between two items or states of affairs turns into indifference, that is, absence of preference: 'one rather than the other' in free choice equates to 'one or the other'. Crucially, indifference for the exact set composition is also one of the motivations for which speakers may choose to be non-exhaustive in discourse (see above). Indeed, Mauri and Giacalone Ramat (2015) argue that the change in Italian took place in contexts where the alternatives are non-specific items or situations, typically indefinite pronouns or bare nouns characterized by a low degree of identifiability. This is explained by the fact that two non-specific alternatives in a free-choice context are mutually replaceable, just like examples are, and this turns the original preference for one alternative over the other into equivalence and replaceability between the alternatives. Free-choice

contexts thus lead to reanalyzing the relation of preference into one of exemplification, which as we know entails non-exhaustivity. As a consequence, in these contexts the preferential connective comes to be used to link equivalent examples in non-exhaustive lists, functioning as a nEx connective at full right.

All in all, the attested sources for nEx connectives outline a consistent picture, within which what speakers mobilize to build non-exhaustive lists are *i*) elements already encoding or implying non-exhaustivity, *ii*) elements expressing the discourse motivations underlying non-exhaustivity, frequently revealing an epistemic condition of uncertainty or indifference, or *iii*) elements expressing the mechanism through which non-exhaustivity can be processed and interpreted, namely exemplification. Once these elements repeatedly occur in non-exhaustive list constructions, they can be reanalyzed as nEx connectives. Figure 1 summarizes what we just said in a unified account of the attested diachronic patterns, showing the three 'doors' through which nEx connectives develop from other sources through reanalysis in list constructions.

Due to the low awareness of the very existence of nEx connectives in the literature, discussed in Section 2, it is likely that for many languages in the world nEx connectives are attested but are not (yet) described. As a consequence, further sources for nEx connectives may be found, in addition to the ones we identified in our sample. However, the picture described in Figure 1 allows us to make some predictions. First, we expect new sources to develop into nEx connectives through one of the three doors, that is, we expect them to be used to express one of the three functions of (*i*) non-exhaustivity itself, (*ii*) epistemic uncertainty or indifference, (*iii*) exemplification.
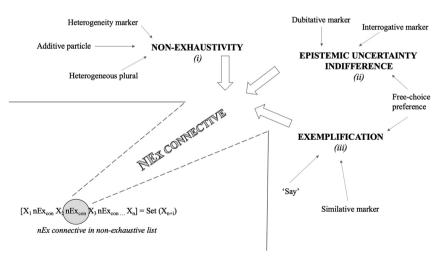

Figure 1: The diachrony of nEx connectives: recurrent diachronic patterns.

Second, we expect them to be repeated in discourse within list constructions, as a necessary step for their reanalysis as nEx connectives to take place, in accordance with the three-stage model described in (56). The cases discussed in Section 4.9, for which little diachronic evidence is available, indeed appear to be compatible with these predictions.

6 Conclusions and future prospects

Our aim was to provide the first comprehensive account of nEx connectives, exploring their cross-linguistic variation and their diachronic development. We started by providing a definition of non-exhaustivity in purely semantic terms and identified the structural properties that characterize nEx connectives with respect to other similar linguistic strategies. Although they have been briefly mentioned in the literature, no systematic description of this phenomenon is available, especially in a typological perspective. As a consequence, descriptive grammars frequently lack the theoretical framework and the terminological awareness necessary to describe a nEx connective, in languages that have one.

Based on the exam of a convenience sample of 215 languages, we were able to identify 35 languages having at least one nEx connective, and we suspect that many more could be found once a comprehensive description of this linguistic strategy comes to the attention of the scientific community, especially the one including field typologists. The total amount of nEx connectives that we could analyze is 42 and they show a rather consistent syntactic behavior across different language families and geographical areas. They tend to be repeated after each list item and show a preference for NPs, in particular denoting inanimate entities, although nEx connectives specialized for VPs are also attested.

Crucially, nEx connectives appear to be largely multifunctional elements, and in most cases their multifunctionality could be explored diachronically. This allowed us to identify a restricted set of diachronic patterns, some of which are attested more frequently than others in our sample. In particular, we observed that heterogeneous plural and irrealis markers are the most frequently mobilized sources. Other sources include additive particles meaning 'also' and heterogeneity markers meaning 'various', both originally entailing reference to larger sets. Finally, similative elements meaning 'like', 'say' verbs, and preference connective meaning 'rather than', may develop into nEx connectives *via* exemplification, that is, by virtue of their ability to act as exemplifiers.

The diachronic typology of nEx connectives highlights two important aspects. First of all, in all the cases we were able to examine, the open-list construction provides the *locus* of grammaticalization, namely the context in which the sources

are reanalyzed as nEx connectives. Initially, the source element is repeated before or after each list member, frequently enough to start being associated to non-exhaustive lists. At some point, this association becomes systematic, leading first to constructionalization and ultimately to a process of reanalysis. Second, the attested paths are revealing of the motivations and interpretation mechanisms underlying the verbalization of non-exhaustivity in discourse. Speakers indeed recur to three types of strategies: elements already encoding non-exhaustivity (as is the case of additive focus-sensitive particles, heterogeneous plurals and heterogeneity markers), elements expressing the speaker's epistemic condition of uncertainty or indifference, that motivates the choice of being non-exhaustive (as is the case of irrealis markers), or elements activating an interpretation of the list items in terms of exemplars, thus triggering the mechanism through which non-exhaustivity can be processed, namely exemplification.

The data we found for the distribution and development of nEx connectives point to a larger picture, in which non-exhaustivity appears to be a functional dimension that is not only relevant to grammar, but is crucially orthogonal to a number of different domains, such as epistemic modality, plural number, exemplification, and coordination. The expression of non-exhaustivity may prove to be more pervasive in speech than has been recognized and is worth a deeper investigation based on corpus data and discourse analysis. A deeper understanding of why and how speakers choose to be non-exhaustive in their every-day communication may indeed shed new light on areas of grammar up to now less explored.

Abbreviations

1, 2, 3	1st, 2nd, 3rd person
&	coordinating or chaining clitic particle
ABL	ablative
ABS	absolutive
ACC	accusative
ACOP	adjectival copula
ADJ	adjective marker
AGT	agent
AOR	aorist
AUX	auxiliary verb
CLIT	clitic
CIVsim	simultaneous converb
CMM	common case
COLL	collective
COM	comitative
COME.TEMP	come.temporarily

CONC	concessive
CONCL	conclusive
CONN	connective element/suffix
DAT	dative
DEF	definite marker
DES	desiderative
DET	determiner
DIM	diminutive
DIREC	directional
DSC	discourse clitic
DUR	durative
EMPH	emphatic
ERG	ergative
EXC	exclusive
EX	exemplary conjunction
EXI	existential pronominal series
FM	formative
FP	far past
FUT	future
GEN	genitive
GER	gerund
GRD	gerundive
HAB	habitual
HET.PL	heterogeneous plural
IMP	imperative
IMPF	imperfect
IMPRS	impersonal
INC	inclusive
INDEF	indefinite
INDIC	indicative
INF	infinitive
ITER	iterative
IPFV	imperfective
J	gender agreement marker – gender class
L	low (tone)
LAT	lative (case)
LOC	locative
LV	light verb
MASC	masculine
NC	noun classifier
NEC	necessitive
NEG	negation
NEX	non-exhaustive connective
NF	non-final verbal suffix
NOM	nominative
NONH	nonhuman
NOW	'now' discourse clitic

NPST	non-past
NSG	non-singular
NZR	nominalizer
O	object
PAST	past tense
PERF	perfective
PL	plural
POL	politeness marker
PPL	participle
PRF	perfect aspect
PRO	non-human/locative pronoun
PROG	progressive
PROH	prohibitive
PRS	present
Q	interrogative/question particle
QUOT	quotative
REAL	really
RED	reduplication
REFL	reflexive
RESLT	resultative
SG	singular
SS	same subject
STA	stative
SUB	subordinator
SUBJ	subject
TOP	topic
TR	transitional sound
UF	uncertain future

Appendix A: Language sample (classification based on Glottolog)

Languages with one or more nEx connectives are highlighted in boldface.

Family	Genus	Language(s)
ABKHAZ-ADYGE	*Abkhaz-Abaza*	Abkhazian
AFRO-ASIATIC	*Berber*	**Central Moroccan Berber**
	Chadic	Hausa, Marghi Central, **Mpade**, Xamtanga
	Cushitic	Beja, Bilin
AINU	*Hokkaido-Kuril Ainu*	**Hokkaido Ainu**
ALGIC	*Algonquian*	Michif, Ottawa, Plains Cree, Severn Ojibwa
		Yurok
ANIM	*Marind-Boazi-Yaqai*	Marind
ARAUCANIAN		Mapudungun
ARAWAKAN	*Northern Maipuran*	Wayuu
	Southern Maipuran	Yine
ARAWAN	*Madi-Madiha*	Culina, Madi
ATHABASKAN-EYAK-TLINGIT	*Athabaskan-Eyak*	Chilcotin, Slave
ATLANTIC-CONGO	*Mel*	Bullom So, Timne,
	North-Central Atlantic	Wolof
	Volta-Congo	Akan, Chiga, Ewe, Ganda, Gyele, Hausa States Fulfulde, Kusaal, Ngbaka Ma'bo, Sango, Shona, Vengo, Yoruba
AUSTROASIATIC	*Bahnaric*	**Sedang**
	Khasi-Palaung	Khasi
	Mundaic	Korku, **Mundari**
	Nicobaric	Car Nicobarese
	Vietic	Vietnamese
AUSTRONESIAN	*Khmeric*	Central Khmer
	Malayo-Polynesian	Acehnese, **Ambonese Malay**, Balantak, Batak Karo, Biak, Cebuano, Chamorro, East Makian, Fijian, Gayo, Iaai, Indonesian, Kairiru, Kilivila, Kuanua, Kwaio, Leti (Indonesia), Loniu, Maori, **Mbula**, Mokilese, Motu, Neverver, Palauan, **Papuan Malay**, Rotuman, Samoan, Tagalog, Tajio, Tetun Dili, Tigak, Tondano, Yabem
AYMARAN	*Tupe*	Jaqaru
	Central-Southern Aymara	**Southern Aymara**
BAIBAI-FAS		**Momu-Fas**
BUNUBAN		Gooniyandi
CARIBAN		Apalaí
	Guianan	Galibi Carib
	Parukotoan	Hixkaryána
CENTRAL SUDANIC	*Sara-Bongo-Bagirmi*	Mbay
CHIBCHAN	*Core Chibchan*	Teribe
CHUKOTKO-KAMCHATKAN	*Chukotian*	Chukchi
COCHIMI-YUMAN	*Yuman*	Havasupai-Walapai-Yavapai, Mohave, Yavapai
COOSAN		Hanis

(continued)

Family	Genus	Language(s)
Dagan		Daga
Dogon	*Escarpment Dogon*	**Tommo So Dogon**
	Plains Dogon	**Jamsay Dogon**
Dravidian	*Central Dravidian*	Duruwa
	South Dravidian	Kannada, Koya, Tamil
Eskimo-Aleut		Aleut
	Eskimo	Kalaallisut
Gunwinyguan	*Gunwinyguan Bak*	Ngalakgan
Hatam-Mansim		**Hatam**
Indo-European	*Armenic*	Eastern Armenian
	Celtic	Irish
	Germanic	Icelandic, Tok Pisin
	Indo-Iranian	Domari, Sinhala, Vlax Romani
	Italic	**Italian**
Isolate		**Andoque**, Basque, Burushaski, Kwaza, Lavukaleve, Savosavo, Siuslaw, Tiwi
Japonic	*Japanesic*	**Japanese**
Khoe-Kwadi	*Khoe*	Nama
Kiowa-Tanoan		Kiowa
Koreanic		Korean
Kxa	*Ju-Kung*	South-Eastern Ju
Mande	*Eastern Mande*	**Dan**
	Western Mande	Bambara, Zialo
Mangarrayi-Maran		Mangarrayi
Mayan	*Core Mayan*	Popti', Tz'utujil
Miwok-Costanoan	*Costanoan*	Southern Ohlone
Mixe-Zoque	*Zoque*	Rayón Zoque
Mongolic-Khitan	*Mongolic*	Halh Mongolian
Muskogean	*Alabaman-Koasati*	**Alabama, Koasati**
Nadahup	*Eastern Naduhup*	Hup
Nakh-Daghestanian	*Daghestanian*	Avar, Hinuq, Khwarshi, Lezgian
	Nakh	**Ingush**
Nilotic	*Eastern Nilotic*	Bari, Masai, Turkana
	Western Nilotic	Acoli, Lango, Southwestern Dinka
Nuclear Trans New Guinea	*Asmat-Awyu-Ok*	Aghu, Central Asmat, **Kombai**, Mian, **Wambon**
	Finisterre-Huon	Kâte
	Kainantu-Goroka	**Yagaria**
	Madang	Amele, Kobon, **Usan**, Waskia
Nuclear-Macro-Je	*Je*	Canela-Krahô
Nyulnyulan	*Western Nyulnyulan*	Bardi
Otomanguean	*Eastern Otomanguean*	Isthmus Zapotec, Western Highland Chatino

(continued)

Family	Genus	Language(s)
	Western Otomanguean	Mezquital Otomi
Pama-Nyungan		Dyirbal, Muruwari
	Arandic-Thura-Yura	Easter Arrernte
	Desert Nyungic	Pitjantjatjara
	Karnic	Dirari
	Southeastern Pama-Nyungan	Kumbainggar, **Martuthunira**
	Yimidhirr-Yalanji-Yidinic	**Yidiñ**
Pano-Tacanan	*Panoan*	Chácobo, **Matsés**
Quechuan	*Quechua II*	Imbabura Highland Quichua
Saharan	*Western Saharan*	**Central Kanuri**, Dazaga
Salishan	*Central Salish*	Squamish
	Interior Salish	Kalispel-Pend d'Oreille, Lillooet
Sepik	*Ram*	Awtuw
	Sepik Hill	Alamblak
Sino-Tibetan	*Bodic*	**Tshangla**
	Burmo-Qiangic	**Burmese**, Lahu, Lisu, Northern Pumi, Northern Qiang, Sichuan Yi
	Kuki-Chin-Naga	**Haka Chin**, Manipuri, **Mizo**
	Himalayish	Lepcha, Limbu
	Sinitic	**Mandarin Chinese**
Siouan	*Core Siouan*	Dakota
Songhay	*Eastern Songhay*	Humburi Senni Songhay
Southern Daly		**Murriny Patha**, Nangikurrunggurr
Tungusic	*Central Tungusic*	Udihe
	Manchu-Jurchen	Manchu
Turkic	*Common Turkic*	Northern Uzbek, Turkish, Tuvinian
Uralic	*Finnic*	Estonian, Finnish
	Khantyic	Vach-Vasjugan
	Saami	Pite Saami
	Samoyedic	Tundra Nenets
Uto-Aztecan	*Northern Uto-Aztecan*	Serrano, Ute-Southern Paiute
	Southern Uto-Aztecan	Pipil, Yaqui
Wakashan	*Northern Wakashan*	Kwak'wala
Yeniseian	*Northern Yeniseian*	Ket
Yukaghir	*Kolymic*	Southern Yukaghir
Yuki-Wappo		Wappo

Appendix B: Non-exhaustive connectives attested in the languages of the sample

Language	NEX connective	Syntactic level	Structure	Source function	Synchronic layering	Reference
Alabama (MUSKOGEAN)	-óot	NP	no info	similative plural	No info	Hardy (2005: 105)
Ambonese Malay (AUSTRONESIAN)	ka	no specific restriction	C$_1$ NEX C$_2$ NEX	irrealis – interrogative	Yes	van Minde (1997: 131; 261)
Andoque (ISOLATE)	añe (-eñe)	no info	C$_1$ NEX C$_2$ NEX	progressive aspect	Yes	Landaburu (1979: 153)
Apalaí (CARIBAN)	tokehko	no specific restriction	C$_1$ NEX C$_2$ NEX	associative plural (tõ)	Yes	Koehn and Koehn (1986: 52; 54)
Burmese (SINO-TIBETAN)	toû	NP	C$_1$ NEX C$_2$ NEX	similative/associative plural	Yes	Okell (1969: 446)
Central Kanuri (SAHARAN)	-so	NP	C$_1$ NEX C$_2$ NEX	similative/associative plural	Yes	Lukas (1937: 146)
Central Moroccan Berber (AFRO-ASIATIC)	nyd: (ynd:)	no specific restriction	C$_1$ NEX C$_2$	no info	Yes	Johnson (1966: 61; 163)
Central Moroccan Berber (AFRO-ASIATIC)	ula (negative)	no specific restriction	no info	no info		Johnson (1966: 61; 163)
Dan (MANDE)	oo	NP	C$_1$ NEX C$_2$ NEX	no info		Vydrine and Kességbeu (2008: 74; 244)
Haka Chin (SINO-TIBETAN)	teè	NP	C$_1$ NEX C$_2$ NEX	similative plural	Yes	Peterson and VanBik (2004: 350)
Hatam (HATAM-MANSIM)	-o	NP (mainly)	C$_1$ NEX C$_2$ NEX	no info		Reesink (1999: 44)
Hokkaido Ainu (AINU)	usa	NP	C$_1$ NEX C$_2$ NEX	heterogeneity	Yes	Refsing (1986: 164)
Ingush (NAKH-DAGHESTANIAN)	=’a	no specific restriction	C$_1$ NEX C$_2$ NEX	additive marker	Yes	Nichols (2011: 527–528)

(continued)

Language	NEX connective	Syntactic level	Structure	Source function	Synchronic layering	Reference
Italian (Indo-European)	*piuttosto che*	no specific restriction	C_1 NEX C_2 (NEX)	free-choice marker	Yes	Mauri and Giacalone Ramat (2015)
Italian (Indo-European)	*come*	no specific restriction	C_1 NEX C_2	similative marker	Yes	Mauri and Goria (2018)
Jamsay Dogon (Dogon)	*bé*	NP	C_1 NEX C_2 NEX	additive plural	Yes	Heath (2008: 272–273)
Japanese (Japonic)	*ya*	NP	C_1 NEX C_2 NEX	irrealis – interrogative	No	Chino (2001: 41)
Japanese (Japonic)	*toka*	no specific restriction	C_1 NEX C_2 (NEX)	irrealis – interrogative (*ka*)	No	Chino (2001: 42)
Japanese (Japonic)	*tari*	VP	C_1 NEX C_2 NEX	perfective aspect	No	Chino (2001: 108)
Japanese (Japonic)	*dano*	no specific restriction	C_1 NEX C_2 NEX	no info	No	Chino (2001: 116)
Japanese (Japonic)	*yara*	NP	C_1 NEX C_2 NEX	irrealis – dubitative	Yes	Chino (2001: 114)
Koasati (Muskogean)	*-o:t*	NP	C_1 NEX C_2 (NEX)	similative plural	Yes	Kimball (1991: 412–413)
Kombai (Nuclear Trans New Guinea)	*-o*	NP	C_1 NEX C_2 NEX	no info		de Vries (1993: 49–50)
Kombai (Nuclear Trans New Guinea)	*khale*	NP	C_1 NEX C_2 NEX	similative marker	Yes	de Vries (1993: 49–50)
Mandarin Chinese (Sino-Tibetan)	*-a*	no specific restriction	C_1 NEX C_2 NEX	interjection	Yes	Zhang (2008: 137)
Martuthunira (Pama-Nyungan)	*wii*	NP	C_1 NEX C_2 NEX	irrealis – dubitative	Yes	Dench (1995: 181)
Matsés (Pano-Tacanan)	*chedo*	NP	C_1 NEX C_2 NEX	additive marker	Yes	Fleck (2003: 811)
Mbula (Austronesian)	*o*	no specific restriction	C_1 NEX C_2	no info		Bugenhagen (1995: 290)
Mizo (Sino-Tibetan)	*tê (te1)*	NP	C_1 NEX C_2 NEX	similative/associative plural	Yes	Chhangte (1989: 112)

(continued)

Language	NEX connective	Syntactic level	Structure	Source function	Synchronic layering	Reference
Momu-Fas (Baibai-Fas)	*tya*	no info	C_1 NEX C_2 NEX	similative plural	Yes	Honeyman (2017: 112; 477)
Mpade (Afro-Asiatic)	*kania*	no info	C_1 NEX C_2 NEX	consequential marker	Yes	Allison (2012: 529)
Mundari (Austroasiatic)	*-ko*	NP	C_1 NEX C_2 NEX	third person plural/plural	Yes	Hoffmann (1903: 72); Cook (1965)
Murriny Patha (Songhay)	*kamayya*	NP	C_1 NEX C_2 NEX	irrealis – dubitative	Yes	Walsh (1976: 246)
Papuan Malay (Austronesian)	*ka*	NP (mainly)	C_1 NEX C_2 NEX	irrealis – interrogative	Yes	Kluge (2017: 543)
Sedang (Austroasiatic)	*hĩa*	no specific restriction	C_1 NEX C_2 NEX	additive marker	Yes	Smith (1979: 155)
Southern Aymara (Aymaran)	*-sa*	NP	C_1 NEX C_2 NEX	additive marker	Yes	Coler (2014: 679)
Tommo So Dogon (Dogon)	*=mbe*	NP	C_1 NEX C_2 NEX	similative plural	Yes	McPherson (2013: 114)
Tshangla (Sino-Tibetan)	*-te*	NP	C_1 NEX C_2 NEX	similative plural	Yes	Andvik (2010: 427)
Usan (Nuclear Trans New Guinea)	*qâmb*	NP	C_1 NEX C_2 NEX	verb 'to say'	Yes	Reesink (1987: 84)
Wambon (Nuclear Trans New Guinea)	*-o*	NP	C_1 NEX C_2 NEX	no info		de Vries and Vries-Wiersma (1992: 72)
Yagaria (Nuclear Trans New Guinea)	*-ve*	no specific restriction	C_1 NEX C_2 NEX	irrealis – interrogative	Yes	Haiman (1980: 468)
Yidiñ (Pama-Nyungan)	*-ba*	NP	C_1 NEX C_2 NEX	associative plural	Yes	Dixon (1977: 145)

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