Exemplification, with disjunction*

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This paper points out naturally-occurring examples, primarily in Hungarian but also to a more limited extent in English, in which disjunction (i) has a conjunctive force but (ii) its use highlights that the list is not intended to be exhaustive. The preliminary analysis is in terms of recursive proposition strengthening by exhaustification without a scalar alternative, assimilating exemplifications to known cases of conjunctively interpreted disjunctions in other languages.

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1. A novel piece of data: conjunctive *vagy* `or'

The meaning difference between the connectives *és* `and' and *vagy* `or' seems quite simple at first glance: *p és q* requires both *p* and *q* to be true, *p vagy q* is satisfied if one of them is true. However, we know from recent literature that some cross-linguistic counterparts of *vagy* may systematically carry conjunctive interpretations; see Singh et al. (2016) on child English and Bowler (2014) on Warlpiri. My paper adds a new item to this inventory, to be dubbed disjunction of exemplification.

We start with naturally-occurring data. Each of the following sentences was accessible on the internet in April 2019. (1)-(6) come from the websites of sports, commercial, or news organizations, and (7) from Pinterest. They are carefully worded, idiomatic, and natural.

(1) A Kiss Imre által vezetett Tatabányában pályára lépett többek között <u>Szabó György,</u> **vagy** <u>Csapó Károly</u>, akik még ma is jó játékerőt képviselnek. Az Esztergomi Öregfiúkban olyan legendák játszottak, mint <u>Markó Béla, Varga Tibor</u> **vagy** <u>Ormándi Imre</u>, hogy csak néhányukat említsünk.

`Playing in [the soccer team] Tatabánya, led by Imre Kiss were, among others, <u>György Szabó</u> **or** <u>Károly Csapó</u>, who continue to be strong players even today. Esztergom Old Boys was represented by legends like <u>Béla Markó, Tibor Varga</u> **or** <u>Imre Ormándi,</u> to mention just a few of them.'

https://tinyurl.com/skoch6b

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(2) ... többek között <u>Chris Brown, Rihanna **vagy** P. Diddy</u> is megjelent már a furcsa aranyráccsal a fogain.

`... among others <u>Chris Brown, Rihanna **or** P. Diddy</u> have appeared with the strange gold grill on their teeth'

https://tinyurl.com/srugog9

(3) A politikus tíz pontos „Hazaváró-kiáltványt" tett az asztalra, amelyet a következő hetekben többek között <u>Berlinben, Párizsban, Bécsben **vagy** épp a szintén sokezer magyarnak új otthont adó Máltán</u> fog megvitatni és kibővíteni az érintettekkel.

`The politician put on the table a ten-point "Come Home Manifesto," which he will discuss and expand in the coming weeks with the help of those concerned <u>in Berlin, Paris, Vienna **or** even Malta, a new home of many thousands of Hungarians</u>.'

https://tinyurl.com/y8gerr4x

(4) A szerződésbe[sic] rögzíteni kell többek között, hogy <u>mekkora a bérletidíj összege, **vagy** mikor fizetendő a bérletidíj</u>.

`The contract must specify, among other things, <u>what the amount of the rent is, **or** when the rent is due</u>.'

https://tinyurl.com/sesoghn

(5) Magyarországon fel sem merül, hogy például a közösségi oldalakon ne lehetne ingyenesen közzétenni képeket középületekről, de az EU több tagállamában, többek között <u>Belgiumban, Franciaországban **vagy** Görögországban</u> a terjesztésük egyáltalán nem, vagy csak erős korlátokkal legális.

`In Hungary, it does not occur to anyone that pictures of public buildings could not be posted on social media pages without a fee, but in multiple EU member countries, among others <u>in Belgium, France **or** Greece</u>, their distribution is not legal or is severely restricted.'

https://tinyurl.com/y7etf9xm

(6) ... további emblematikus épületeik Budapesten többek között <u>a Science Park **vagy** éppen a Népliget Center</u>.

`... further emblematic buildings in Budapest are, among others, <u>Science Park **or** even Népliget Center</u>.'

https://tinyurl.com/vlbpvvx

(7) Neki köszönhetjük többek között a <u>Frakkot, **vagy** a Ceruza és a radírt</u>.

`He gave us [the films] <u>Frakk, **or** The pencil and the eraser.</u>'

https://www.pinterest.com/pin/679058450041260955/?autologin=true

The most conspicuous feature that the above examples share is that the authors probably intended the lists to be conjunctive (and they are true as such). Example (1) leaves no doubt that both Szabó and Csapó played in Tatabánya. Example (4) does not say that either the amount or the due date of the rent can be omitted from the contract, and so on.

Another shared feature is that the lists are expressly non-exhaustive, as indicated by the expression *többek között* `among others.' (The internet searches always

contained this expression, to ensure that they picked up relevant examples. Using `for example' would give similar results.)

My impression is that while the presence of this adjunct makes it unambiguous that the connective *vagy* `or' does not indicate choice or uncertainty, it is not necessary for the intended interpretation. Consider slightly modified versions of (7):

(8) a. Neki köszönhetjük többek között a Frakkot, **és** A ceruza és a radírt.
`He gave us among other things Frakk **and** The pencil and the eraser'

   b. Neki köszönhetjük többek között a Frakkot, **vagy** A ceruza és a radírt.
`He gave us among other things Frakk, **or** The pencil and the eraser'

(9) a. Neki köszönhetjük a Frakkot, **és** A ceruza és a radírt.
`He gave us Frakk **and** The pencil and the eraser.'

   b. Neki köszönhetjük a Frakkot, **vagy** A ceruza és a radírt.
`He gave us Frakk, **or** The pencil and the eraser.'

(8a,b) show that *többek között* `among others' combines equally well with *és* and *vagy*, and the results mean the same thing in both cases. By contrast, the interpretations of (9a) and (9b) differ. (9a) makes it likely that the author is listing every contextually relevant creation of Gyula Macskássy; omission of `among other things' proves significant here. On the other hand, even in the absence of `among other things' it is easy to interpret (9b) as saying that both films are due to Macskássy (conjunctive interpretation) but the author only mentions them as examples (a non-exhaustive list).[1] This is why I dub this use of *vagy* **disjunction of exemplification**.

Disjunction of exemplification is not a Hungarian specialty. It also exists in English, although to my knowledge it has not been discovered. In distinction to Hungarian, it mainly occurs in scientific or legal texts. (I have not tried to collect data from other languages.)

(10) That speakers of Latvian, German, **or** Spanish, for example,
perceive the pronouns and determiners of the *kaut-*, *irgendein* **or** *algún* series as existentials would now no longer mean that those expressions are themselves existentials.
https://scholarworks.umass.edu/linguist_faculty_pubs/182/

(11) Some examples include a person's age **or** whether a person smokes.
http://www.cdc.gov/socialdeterminants/Definitions.html

(12) Such cells are, for example, cells like mucosal cells **or** intestinal cells.
https://patents.google.com/patent/US9243293

(13) The label must state, for example, the nature of a nutritional **or** compositional change, **or** the presence of an allergen.
https://tinyurl.com/agmuvka

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[1] Naturally, (9b) can also carry the classical disjunctive interpretation, which the author would use if (s)he were uncertain about which of the two films was created by Macskássy.

2. Theoretical background for the analysis

In this short paper I am not undertaking a full-depth analysis of the new phenomenon introduced above, but I outline, based on the literature, how an analysis might begin.

One might think that our examples fall into a well-known class of conjunctively paraphrasable disjunctions:

(14)   It is not the case that the suspect is in Nizza or Paris. =
         It is not the case that the suspect is in Nizza and it is not the case that the suspect is in Paris.

(15)   It is possible that the suspect is in Nizza or Paris. ⇒
         It is possible that the suspect is in Nizza and it is possible that the suspect is in Paris.

The equivalence in (16) is due to De Morgan's law, and the inference in (17) was associated with free choice in Zimmermann (2000):

(16) $\neg(p \vee q) = \neg p \wedge \neg q$
(17) $\Diamond(p \vee q) \Rightarrow \Diamond p \wedge \Diamond q$

But disjunction of exemplification does not require either a negation (or, more generally, a monotonically decreasing context) or a possibility modal. We must look for another model.

Singh et al. (2016) argued in connection with child English *or* and Bowler (2014) in connection with Warlpiri *manu* that although their basic meanings are disjunctive, in certain well-delimited contexts they assume conjunctive interpretations.[2] Singh et al. (2016) were investigating the phenomenon, well-known from the acquisition literature, that English-speaking children before the school age systematically judge sentences like *The boy is holding an apple or a banana* false when only one of the disjuncts is true; but they treat *or* identically to adults in negative contexts. Bowler (2014) documents that the same connective *manu* plays the role of conjunction and disjunction in Warlpiri, exhibiting a specific pattern; roughly, conjunctive in positive and disjunctive in negative contexts. Bowler argues that the distribution indicates that the lexical meaning of *manu* is disjunctive, and the conjunctive one is due to the recursive application of a silent O operator. Although Singh et al. and Bowler investigate different linguistic data, their analyses are entirely convergent and, with some simplification, can be summarized as follows.

The analyses belong to the school of thought that assigns certain conversational implicatures (Grice 1975) to the recursive semantic component instead of pragmatics (Chierchia et al. 2012). According to this approach, the fact that sentences receive the strongest possible interpretation is not, or not only, a consequence of cooperative behavior by speaker and hearer. Logical form contains silent exhaustifiers similar to *only* (notated as O or as Exh) that negate alternative propositions and thus strengthen literal meaning. The most important argument to the effect that such strengthening can

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[2] Similar phenomena were pointed out in other languages by Mitrović (2014) and Bar-Lev – Margulis (2014). However, these authors are not concerned with direct counterparts of *vagy* `or' but with constructions whose formal semantic analysis is based on abstract disjunction or existential quantification.

be semantic and is not just pragmatic comes from the fact that the O operator can be detected within the scope of other sentence-internal operators, not only affixed to the whole sentence in the last step. In such cases its occurrence is regulated by the following hypothesis (Chierchia et al. 2012: 2327):

(18)   Strongest Meaning Hypothesis
        Let S be a sentence of the form [$_S$ . . . O(X) . . .]. Let S' be the sentence of the form [$_{S'}$ . . .X . . .], i.e., the one that is derived from S by replacing O(X) with X, i.e. by eliminating this particular occurrence of O. Then, everything else being equal, S' is preferred to S if S' is logically stronger than S.

Similarly to pragmatic strengthening, this hypothesis predicts that the use of O in decreasing contexts is restricted to special cases, e.g. the presence of focus accent, because in the general case O would weaken the proposition in a decreasing context.[3] All this predicts the patterns observed by Singh et al. and Bowler. The lexical meaning of child English *or* and Warlpiri *manu* is the disjunctive one attested in negative contexts. The conjunctive interpretation attested in positive contexts is a result of strengthening.

A bit more formally, the basic meaning of *p manu q* is $p \vee q$ and its alternatives are the elements of the set ALT={p, q, p$\vee$q}. If the Warlpiri hearer interprets the utterance without operator O, (s)he has to conclude that the speaker does not know which of p and q is true (ignorance). If this is implausible, the hearer can apply O:

(19)   O(ALT)(p manu q) = O({p, q, p$\vee$q})(p manu q)

Operator O can only negate elements of ALT without contradicting the original *p manu q*, i.e. p$\vee$q. In our case neither p nor q can be negated while keeping *p manu q* true. The assertion thus remains p$\vee$q, but the set of alternatives changes. This becomes relevant if the persistent hearer applies O again:

(20)   O(ALT')(O(ALT)(p manu q)), where
        ALT' ={O(ALT)(p), O(ALT)(q), O(ALT)(p$\vee$q)}

Skipping details of the calculation, ALT' = {(p$\wedge\neg$q), ($\neg$p$\wedge$q), (p$\vee$q)}. The elements of this set that are distinct from p$\vee$q can be negated without contradicting p$\vee$q:

(21)   O(ALT')(O(ALT)(p manu q)) =
        (p$\vee$q) $\wedge$ $\neg$(p$\wedge\neg$q) $\wedge$ $\neg$($\neg$p $\wedge$ q) = p$\wedge$q

This is how the recursive application of O produces a conjunctive interpretation for Warlpiri *p manu q* and child English *p or q* before school age.

In both cases it is important to assume that p$\wedge$q is not among the alternatives in ALT. If it were, O would negate p$\wedge$q and és O(ALT)(p manu q) would result in (p$\vee$q) $\wedge$ $\neg$(p$\wedge$q): 'either p or q but not both.' According to Bowler, p$\wedge$q is not contained in ALT

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[3] If the sentence contains an operator (e.g. *must)* whose wider vs. narrower scope relative to O results in logically independent propositions, both versions are allowed. On the focus exception, see Fox – Katzir (2011).This plays no role in connection with the *vagy* `or' in the center of this paper, among other reasons because Hungarian *vagy* can only focused as a correction ("metalinguistic focus").

because Warlpiri has no lexical conjunctive connective. Singh et al. argue that children in the relevant age group cannot reliably retrieve *and* from the mental lexicon.[4]

3. Disjunction of exemplification

I propose that the conjunctive interpretation of Hungarian *p vagy q* is produced in a way analogous to the above: by strengthening a disjunction. Now two questions arise.

One question is why O(ALT)(p vagy q) does not negate p∧q. One reason may be that, despite appearances, Hungarian *és* has no conjunctive meaning. Szabolcsi (2015: 179) argued that *és* is merely the Junction (J) head of JP (Junction Phrase), and so p∧q is not in ALT. On this theory JP merely enumerates the elements of a set of propositions. Disembodied ∩ or ∪ applies to this set to produce conjunctive or disjunctive interpretations (see Szabolcsi 2015 for details). Another possibility is that presence or absence of scalar alternatives is subject to parametric variation. In principle either possibility can explain the observation that disjunction of exemplification is much more natural and prevalent in Hungarian than in English.

The other interesting property of the construction is that our conjunctive interpretation suggests a non-exhaustive list. In this respect (22) and (23) are more similar to each other than to (24). For *too_too*, see Brasoveanu--Szabolcsi (2013).

(22)   Neki köszönhetjük a Frakkot, **vagy** A ceruza és a radírt. (Lehet, hogy mást is.)
        `He gave us Frakk or The pencil and the eraser. (Maybe also other things.)'

(23)   Neki köszönhetjük a Frakkot **is**, A ceruza és a radírt **is**. (Lehet, hogy mást is.)
        `lit. He gave us Frakk **too,** The pencil and the eraser **too**. (Maybe also other things.)' = `He gave us Frakk as well as The pencil and the eraser.'

(24)   Neki köszönhetjük a Frakkot **és** A ceruza és a radírt. (Ezek a releváns esetek.)
        `He gave us Frakk **and** The pencil and the eraser. (These are the relevant cases.)'

It is true that in the Hungarian postverbal field that does not host focus we do not expect classical, semantic exhaustive listing. But Szabolcsi (2010: 149-151) argues that the postverbal field does host Gricean, pragmatic exhaustive listing. It seems that it is more difficult to add a final exhaustification `I have said everything that is relevant' to (22) and (23) than to (24). This kind of contrast is familiar from modified and non-modified numeral indefinites (Krifka 1999):

(25)   We watched at least three / more than two films. (Maybe more than three.)
(26)   We watched three films. (Three is the relevant number.)

Further research will hopefully provide a unified explanation for these facts.

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[4] Fox (2007) and followers use recursive O for free choice disjunctions, cf. (15). But free choice involves a modal and, according to Fox, ALT contains p∧q, the partial similarity does not justify saying that disjunction of exemplification is an instance of free choice.

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