Rhetorically-based scalar-additivity:
The view from Italian *addirittura**

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Abstract *Even*-like particles have widely been analyzed as inducing scalar and additive presuppositions (cf. Horn 1969; Karttunen & Peters 1979; Rooth 1992; Gast & van der Auwera 2011). However, the additivity of *even* has been controversial since at least Horn 1992 and increasingly called into question (see Greenberg & Umbach 2021 for references); Greenberg specifically argues that scalar *even*-like particles can vary in additivity. This claim is surprising in light of the typological study in Gast & van der Auwera 2011, which subsumes *even* and similar expressions under a larger class of additive particles. Against this background, we present an analysis of Italian *addirittura*, which with *perfino* has been described as scalar-additive (Visconti 2005) – but only optionally so – and is chosen preferentially over *perfino* precisely in those contexts that Greenberg takes to challenge the additivity of *even*. We argue, drawing on observations in Atayan 2017, that *addirittura* contrasts with *perfino* in deriving its scalar alternatives from rhetorical structure rather than focus structure. Once this is recognized we can view *addirittura* as additive, after all, in a rhetorical sense we describe below.

Keywords: *even*, Italian, *perfino*, *addirittura*, rhetorical structure, scalar-additive particles

1 Introduction

According to an established tradition in semantics, *even*-like particles induce both a scalar and an additive presupposition (cf., e.g., Horn 1969; Karttunen & Peters 1979; Rooth 1992; cf. also Gast & van der Auwera 2011). An expression of the form $even(p)(w)$ is taken to assert that p is the case in world w, and to presuppose that p is higher on a certain relevant scale and that there is an alternative focus proposition q that is also the case in w. A representative entry for *even* (adapted from Greenberg 2016), which could be extended to other *even*-like particles, is given in (1), where C

is a contextually salient alternative set, f is the focus semantic value of p and o is the ordinary semantic value of p (Rooth 1985). Thus, in the typical case, for e.g. *Even Jo voted* to be felicitous, there must be some set of salient alternative propositions of the form *x voted*, and at least one of these must be true; moreover, the prejacent proposition *Jo voted* must be higher on some contextually salient scale than all of these alternative propositions.

(1) $[\![\text{even}]\!]^{g,c} =$
$\lambda C \lambda p \lambda w : \exists q(q \neq p \wedge q(w) = 1) \wedge \forall q \in C[q \neq p \rightarrow p >_c q].p(w) = 1$
Where $C \subseteq [\![p]\!]^f \wedge [\![p]\!]^o \in C \wedge \exists q[q \neq p \wedge q \in C]$

However, the additive nature of at least some *even*-like particles has been questioned for some time now (cf. e.g. Horn 1992, Rullmann 1997, Greenberg 2016). One crucial piece of evidence comes from the fact that some such particles can be used felicitously when interacting with mutually incompatible alternatives. Take rank orders as an example.[1] In the discourse reported in (2) (adapted from Rullmann 1997: 45), the first response reinforces the preceding assertion by saying that a higher proposition on the relevant order holds. But since these propositions are incompatible (i.e., the same individual cannot at the same time be both an assistant and associate professor), they cannot be true simultaneously. This is taken to show that *even* is felicitous when associating with incompatible alternatives, making an additive presupposition unsatisfiable. That this is indeed a non-additive scenario is clearly shown by the infelicity of the second response, where the necessarily additive particle *also* is intended to add the alternative, incompatible proposition to the prejacent.

(2) I heard that Claire is doing great. She is an assistant professor, right?

a. She's *even* an [associate professor]$_f$!

b. #She's *also* an [associate professor]$_f$!

The additive nature of *even*-like particles has been subject to discussion also from a cross-linguistic perspective. Specifically, it has been argued that additivity is among the parameters along which *even*-like particles vary across languages (cf. e.g. Giannakidou 2007; Greenberg & Orenstein 2016; Greenberg & Umbach 2021). In this paper, we add to the cross-linguistic picture with a focus on the distinction between the Italian particles *perfino* and *addirittura* (hereafter glossed as 'PER' and 'ADD', respectively; cf. Andorno 2000; Atayan & Moretti 2016; Atayan 2017).

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1 For discussion of other cases involving potentially incompatible alternatives, e.g. *It is more for aesthetic reasons that leather seats in automobiles are mainly coloured dark grey, indeed mostly even black* or *There are very few, or even no, kosher restaurants in Barcelona*, see Gast & van der Auwera 2011, Greenberg & Umbach 2021.

Perfino is taken by Gast & van der Auwera to correspond perfectly to English *even*, though only to the extent that it is interpreted as a so-called "BEYOND"-operator.[2] In addition, it has been described as being "inherently additive" (Andorno 2000: 84; cf. also Visconti 2005). *Addirittura*, which Gast & van der Auwera leave out of their typological study, has been described as being "additive compatible" (again in Andorno 2000: 84), i.e. not necessarily additive, and is typically used to translate into Italian exactly those cases in which the additivity of English *even* fails.

We draw on suggestions in e.g. Atayan 2017 that these two particles are used for slightly different forms of argumental reinforcement and provide new insight into the division of labor between them, as well as their relation to English *even*. We argue, in particular, that *even*, *perfino* and *addirittura* all share that their prejacent is the strongest among a set of scalar alternatives, but they crucially differ in how the relevant scalar alternatives are determined and, as a consequence, in the exact nature of the strength relation. To date, accounts of *even*-like particles have derived these alternatives exclusively through focus; that is, all of the alternatives share an open proposition, whether overt or covert (see, e.g., Greenberg 2020 on the latter). In contrast, we propose that the alternatives associated with *addirittura* need not be based on a shared open proposition, although this option is not excluded.

If the scalar alternatives that *addirittura* works with are not overt or covert focus alternatives, the question arises as to how the relevant alternatives are identified. We propose that they are determined by the rhetorical relation in which the prejacent to *addirittura* participates. The proposition marked by *addirittura* forms part of a complex discourse unit (CDU) (cf. e.g. Hunter & Abrusán 2017) with at least one other proposition. The shared rhetorical relation forms the basis for establishing a scale of rhetorical strength between each element of the CDU and the proposition to which the CDU is related. The fact that the alternatives are drawn from a CDU

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2 According to these authors, scalar additive operators can be subdivided into BEYOND- vs. BENEATH-operators (cf. Gast & van der Auwera 2011: §4.1). With the former, they take what we call the prejacent proposition to be higher on a certain scale. With the latter, the prejacent is lower on the relevant scale. As they illustrate with examples like (i), English *even* can be used as a BENEATH-operator, though *so much as* is also an option in this case, while neither Italian *perfino* nor, we add, *addirittura* are acceptable as BENEATH-operators – the expression *anche solo* should be used instead.

(i)　E una vergogna #*perfino* / #*addirittura* / *anche solo* parlare delle cose　che certa　gente
　　 is a　　shame　　PER　　 / ADD　　　　 / also　 only speak　of.the things that certain people
　　 fa　di nascosto.
　　 do in secret

　　 'It is a shame to even / so much as speak about the things that many people do in secret.' (Gast & van der Auwera 2011: (47), adapted)

For this reason, in what follows we set aside BENEATH-operators and any consideration of BENEATH uses of *even*.

effectively entails a kind of additivity: If at least one other proposition besides the prejacent of a felicitous *addirittura* contributes to the CDU, that proposition must be taken as true. We take the specific contribution of *addirittura* to be that its prejacent is the rhetorically strongest member of the CDU, as we will explain in section 3.

We begin with an overview of the data in section 2. In section 3 we present our analysis. Section 4 concludes.

2 The data

We begin by presenting the Italian adaptation of (2), in (3). This example with rank orders shows that *perfino*, like *anche* 'also', is marginal in this case, while *addirittura* is felicitous. Recall that English *even* can be used felicitously in these cases.

(3) Ho   saputo dei   successi di Chiara. È diventata professore
     have.1sg known of.the successes of Chiara is become   professor
     associato, giusto?
     associated right

     'I've heard about Chiara's success. She's become an assistant professor, right?'

     a. È diventata *addirittura* [professore ordinario]$_f$!
        is become   ADD   professor   ordinary

        'She's even become an associate professor!'

     b. #È diventata *perfino* [professore ordinario]$_f$!

     c. #È diventata *anche* [professore ordinario]$_f$!

These data highlight our first observation: Only *perfino* carries an additive presupposition of the sort originally suggested (and later questioned) for *even*. In contrast, *addirittura*, like *even*, may occur in nonadditive contexts. Indeed, it is worth pointing out that sometimes *addirittura* even resists contexts where additivity is satisfied. Consider the following example, taken from Atayan 2017: (7) (our gloss). Atayan notes that *addirittura*, unlike *perfino*, is unacceptable in contexts like (4), showing that, despite the claim of "additive compatibility", *addirittura* is not always felicitous when more than one focus alternative is simultaneously true.

(4) Dakar ... è considerata, *perfino* / #*addirittura* negli Stati uniti, la   nuova
     Dakar ... is considered   PER   / ADD   of.the USA   the new
     capitale di questo genere musicale.
     capital of this   genre   musical

     'Dakar...is considered, even in the USA, the new capital of this musical genre.'

We will suggest an explanation for this infelicity in section 3.

We now turn to evidence that *addirittura* contrasts not only with *perfino* but also with *even* in not requiring association with focus; put differently, the members of the alternatives for *addirittura* need not share an open proposition. First, *addirittura*, unlike *perfino* and *even*, can function felicitously as a clause-level modifier, for example adjoined sentence-initially, as in (5). Note that here the example avoids a scale involving rank orders so as to rule out the possibility of attributing the oddness in (5b-i) to mutually incompatible focus alternatives (cp. also the acceptability of (5b-ii) and (6b)).

(5)   Ho saputo dei successi di Chiara. È diventata professore associato, giusto?

       a. i. *Addirittura*, è diventata direttrice del   corso di studi!
            ADD   is become   director   of.the course of studies

          'She's even become the head of studies!'

        ii. È diventata *addirittura* direttrice del corso di studi!

       b. i. #*Perfino*, è diventata direttrice del corso di studi!

        ii. È diventata *perfino* direttrice del corso di studi!

(6)   I heard that Claire is doing great. She is an assistant professor, right?

       a. #Even, she's become the head of studies!

       b. She's even become the head of studies!

Addirittura can also appear with presumably the same function as a sentence-internal parenthetical, again unlike both *perfino* and *even*, as shown in (7), taken from Atayan 2017: (10) (again, here and below, our gloss).

(7)   Ammette anche [...] che le   Auc sono finanziate dal   traffico di droga
       admits   also   [...] that the Auc are   financed   from.the traffic   of drug
       e   che, *addirittura* / #*perfino*, lo dirigono.
       and that ADD   / PER   it run.3pl

       '[He a]lso admits that the Auc are financed by drug trafficking and that, moreover/??even, they run it.'

The ability of *addirittura* to appear on its own is consistent with the fact that it does not require association with focus.

Second, only *addirittura* can function as the sole expression in a question, as shown by the data in (8) and (9). The infelicity of *perfino* and *even* in this use is again arguably due to the unavailability of association with focus when no other material appears in the sentence.

(8)   A: Chiara è diventata professore associato!
        B: *Addirittura*?
        B': #*Perfino*?

(9)   A: Claire has become an associate professor!
        B: #*Even*?

Third, Atayan 2017: 88 claims that sometimes *addirittura* can appear in "purely rhematic" sentences, such as in (10); again, *perfino* is not possible in such contexts, although *even* can be used if some kind of association with focus is available, as here in the contrast between *three to one* and *ten to one* in the translation.

(10)   Se il   rapporto tra   le   guardie private di sicurezza e   le   forze di
        if the ratio   from the guard   private of security   and the force of
        polizia ufficiali è di tre   a uno nei   paesi   industrializzati,
        police official is of three to one in.the countries industrialized
        arriverebbe   *addirittura* / #*perfino* a dieci a uno [...] in alcuni paesi
        reach.3sg.cond ADD   / PER   to ten   to one [...] in some   countries
        in crisi.
        in crisis

        'If the ratio of private security guards to official police forces is three to one in industrialized countries, it would even reach ten to one in some countries in crisis.' (Atayan 2017:(12))

Finally, Atayan further observes that in some non-additive uses, "[*addirittura*] no longer seems to take a specific focus but to work as a sentence connector" (Atayan 2017: 91, fn. 14), as in (11). Here again, *even* is not easily accepted unless rephrased as *it is even the case that*.

(11)   Quanto allo   smantellamento dei ... paradisi del   crimine ..., è fuori
        as   to.the dismantling   of ... havens of.the crime   ... is out
        discussione.... Fuori discussione è anche la   possibilità di mettere in piedi
        discussion.... out   discussion is also   the possibility of place   in foot
        un meccanismo di cooperazione internazionale permanente ... *Addirittura* /
        a   mechanism of cooperation   international   permanent   ... ADD   /
        #*Perfino* si   sta sviluppando, sotto l'egida   degli Stati uniti,
        PER   refl is developing   under the.aegis of.the States United
        principale partner della criminalità finanziaria internazionale ...
        principal   partner of.the crime   financial   international   ...

        'As for the dismantling of ... crime havens ... it is out of the question. Also out of the question is the possibility of setting up a permanent international

> cooperation mechanism... What is more, there is developing, under the aegis of the United States, principal partner of international financial crime[, a rationalization operation, or an Americanization, of corruption techniques...]'
> (Atayan 2017: (14))

We will return to this seemingly different use of *addirittura* in section 3.

As a last observation to highlight the differences between *addirittura* and *perfino*, note that in some contexts the two can appear felicitously together in the same discourse.

(12) Ma chi conosce bene gli ingranaggi   delle istituzioni europee
      but who knows   well the inner workings of.the institutions European
      spiega   che è *addirittura perfino* poco dipendente dall'inquilino di turno
      explains that is ADD   PER   little dependent on.the.resident of turn
      a Palazzo Chigi.
      to Palazzo Chigi

      'But those who are familiar with the inner workings of the European institutions explain that they are even not very dependent on whoever is occupying the Palazzo Chigi.'[3]

(13) Il provvedimento ha suscitato critiche e   polemiche fra   le
      the provision   has aroused criticism and controversy between the
      diverse   associazioni di categoria, che parlano di una maxi sanatoria per
      different associations of category   that speak   of an   amnesty   for
      gli abusivi   e, *addirittura*, *perfino* di un pericolo per la   salute
      the unauthorized and ADD   PER   of a danger for the health
      collettiva della popolazione.
      collective of.the population

      'The provision has aroused criticism and controversy among the various trade associations, which speak of amnesty for the unauthorized [health professionals] and even a danger to the collective health of the population.'[4]

The fact that the two can appear together shows that they are neither in complementary distribution nor incompatible. Moreover, it seems unlikely that they are fully redundant with each other, given that in (13) *addirittura* is set off parenthetically, while *perfino* associates with the prepositional phrase headed by *di* 'of.'

Summarizing, in this section we have observed that *addirittura* contrasts with *perfino* in being acceptable with focus alternatives derived from rank orders, and it

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3 https://ilmanifesto.it/sospensione-dei-brevetti-pressing-su-draghi-per-dire-no-a-big-pharma
4 https://www.studiolegalestefanelli.it/it/approfondimenti/professioni-sanitarie-senza-titolo-legge-di-bilancio

contrasts with both *perfino* and *even* in that it can appear in sentence initial position or as a parenthetical, as well as stand alone as a question. Further evidence we considered shows that *addirittura* sometimes plays a role in the discourse which cannot be played by the other particles. It is even possible for both *addirittura* and *perfino* to appear in the same sentence, with the former serving as a parenthetical and the latter associating with focus alternatives and carrying an additive presupposition.

3   Analysis

Our discussion in the previous section reveals that the prejacent of both *perfino* and *addirittura*, like that of *even*, must be the strongest among a set of alternative propositions ordered along some semantically or pragmatically determined scale. Let us call this requirement *Strongest Scalar Alternative*.[5]

(14)   *Strongest Scalar Alternative*
A proposition π is the strongest alternative in alternative set $\mathscr{C}$ on scale σ iff for all $\pi' \neq \pi \in \mathscr{C}, \pi >_\sigma \pi'$.

We assume that one proposition is semantically stronger than another if the former entails the latter. For pragmatic strength, we adopt the definition in Gast & van der Auwera 2011: (16).

(15)   *Pragmatic strength*
A proposition π is pragmatically stronger (relative to a given quaestio Q) than a proposition ρ ($\pi >_Q \rho$) iff the relevant contextual implications of π (with respect to Q) entail the relevant contextual implications of ρ (with respect to Q).

However, the differences begin here. In the case of *perfino* and *even*, the relevant set of alternatives is a subset of the focus alternatives of the prejacent. Let us call this condition *Focus-Based Alternatives*.

(16)   *Focus-Based Alternatives*
The alternative set $\mathscr{C}$ for a proposition π is focus-based iff $\mathscr{C} \subseteq [\![\pi]\!]^f$.

Moreover, *perfino* is more restrictive than *even* in that one of the propositions in the (focus-based) alternative set besides the prejacent must also be true. Let us call this *Strong Additivity*.

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5 Recall that we are not considering BENEATH uses of scalar additive particles here, which *even* has, but *perfino* and *addirittura* lack.

(17) *Strong Additivity*

A propositional operator ω associated with alternative set $\mathscr{C}$ is strongly additive iff $\omega(\pi)$ presupposes that there is at least one true proposition $\rho \neq \pi \in \mathscr{C}$.

Neither of the conditions in (16) and (17) applies to *addirittura*: As we have seen, *addirittura* does not necessarily derive its alternatives via focus and, like *even*, it can appear felicitously in contexts where no other scalar alternative besides the prejacent is true. We propose to derive the scalar alternatives for *addirittura* from the rhetorical relations its prejacent participates in.

To make our proposal concrete, we will assume Segmented Discourse Representation Theory (SDRT, Asher & Lascarides 2003) as our theory of rhetorical structure, though this is not crucial (see, e.g., Jasinskaja & Karagjosova 2020 for an overview of rhetorical relations, including some discussion of different theoretical approaches). In SDRT, rhetorical structures for discourse are built out of elementary discourse units (EDUs), typically corresponding to individual events. Each discourse unit is connected to at least one other via different possible discourse relations. Though the inventory of such relations remains a matter of debate, there is broad consensus that this set includes the following (notation adapted from Hunter & Abrusán 2017, definitions taken with minor modifications from Jasinskaja & Karagjosova 2020). In any event, these relations will suffice for the moment.

(18) a. *Elaboration*(π_i, π_2) holds where [π_2] describes the same state of affairs as [π_1] (in different words) or, at a certain level of abstraction, says the same thing.

b. *Explanation*(π_i, π_2) holds where π_2 gives the cause or reason why the state of affairs presented in [π_1] takes place..., or why the speaker believes the content of that sentence..., or why the speaker chose to utter it.

c. *Narration*(π_i, π_2) holds when the events π_1 and π_2 describe (are to) take place one after the other, the order of events matching the textual order of utterances.

d. *Result*(π_i, π_2) holds when [the event described by π_2] not only follows [that described by π_1] in time, but is also caused by it.

Although these relations are first defined between EDUs, as Hunter & Abrusán (2017) note, either member of a rhetorical relation can be a complex discourse unit (CDU). A CDU is defined as a collection of elementary or other complex discourse units that together serve as an individual argument to a discourse relation. Thus, a relation such as Explanation could hold between an elementary discourse unit π_1 and a complex unit π_2–π_3, as follows.

(19)   Claire is doing great.$_{\pi_1}$ She has a permanent position.$_{\pi_2}$ She has even been promoted.$_{\pi_3}$

(20)   L'Europa   attraversa   una grave crisi.$_{\pi_1}$ Il tasso di disoccupazione
        the.Europe crosses.through a   serious crisis   the rate   of unemployment
        è molto elevato.$_{\pi_2}$ Addirittura, la   guerra è arrivata alle   sue porte.$_{\pi_3}$
        is very   high   ADD   the war   is arrived at.the its   doors

        'Europe is going through a serious crisis. The unemployment rate is very high. What is more, war is on its doorstep.'

In the first example, holding a permanent position and being promoted are two reasons why Claire is doing great. In the second example, the current unemployment rate and a war are two reasons why Europe is in a crisis. In other words, π_2–π_3 constitutes a complex discourse unit that stands in the Explanation relation to π_1.

   Now, note that we have included *even* and *addirittura* in π_3 in the respective English and Italian examples. Intuitively, *even* and *addirittura* as used here imply that in each case π_3 is a stronger argument than is π_2 for the respective claims that Claire is doing great or that Europe is in a crisis. In the case of *even*, π_2 and π_3 are focus-based alternatives which share an open proposition $P(\mathbf{c})$, where $\mathbf{c}$ is the translation of *Claire*: {Claire has a permanent position, Claire has been promoted}. In contrast, with *addirittura*, there is no association with focus and no structural overlap between π_2 and π_3. Nonetheless, the rhetorical structures of the discourses in (19) and (20) are parallel insofar as in both cases, the elements of the CDU that stands in the Explanation relation to π_1 can be ordered on a scale of strength, and in both cases, the particle marks the stronger EDU in the set that makes up the CDU.

   Although we have used the Explanation relation to illustrate, we hypothesize that the phenomenon observed in (19–20) generalizes to other rhetorical relations. We therefore posit the maximally general definition of a *rhetorically-based alternative set* in (21).[6]

(21)   *Rhetorically-based Alternatives*
        The rhetorically-based alternative set $\mathscr{C}$ for a proposition π that forms part of a Complex Discourse Unit $\mathscr{U}$ is the set of immediate constituent elementary and complex discourse units, including π, that make up $\mathscr{U}$.

Note that nothing would prevent a set of rhetorical alternatives from also satisfying the conditions for being focus-based alternatives. This is, we suggest, what happens with *even* in cases like (19).

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6 It is a separate question whether such a set of rhetorical alternatives can be ordered on a scale. We discuss one such case with *addirittura* below, but more extensive discussion of the conditions on rhetorical alternatives is beyond the scope of this paper.

If the scalar alternatives for *addirittura* are rhetorically-based, then the specific notion of pragmatic strength that will be relevant for the satisfaction of the Strongest Scalar Alternative condition in (14) will be rhetorical strength. Though we do not know of an explicit previous discussion of rhetorically-based alternatives, the notion of rhetorical strength, as distinct from informative (entailment-based) strength, has been discussed in the literature.

Horn (2009), citing observations in Anscombre & Ducrot 1983 and by Michael Israel, points out that the first clause in (22a) (his (15a)) is rhetorically stronger than (22b) (his (15b)), and thus serves as a better argument for the conclusion in the second clause, even though *I've graded some of the exams* is informatively weaker than (i.e., entails less than) *I've graded some, but not all, of the exams*.

(22) a. I've graded some of the exams, so it's time for a break.

   b. ?I've graded some, but not all, of the exams, so it's time for a break.

Horn (2021) further suggests that rhetorical strength is the notion of strength that is relevant for *even* when its alternatives are drawn from rank orders, as in (2a).

What exactly determines the scalar ordering of rhetorical strength for a given set of alternatives will depend on the specific rhetorical relation involved. For example, if the relation is Explanation, then the scale might be defined in terms of the strength of the evidence that each member of the alternative set offers for π_1. In contrast, if the relation is Result, the scale might be defined by the unlikelihood that the situation described by π_1 leads to a situation described by an element of the alternative set.

Note that the implication that the prejacent to *even* and *addirittura* constitutes the strongest element in the rhetorically-based alternative set holds even when the other elements in the CDU are not made explicit. For example, imagine that the following discourses had been uttered instead of the ones in (19–20):

(23) a. Chiara is doing great.$_{\pi_1}$ She has even been promoted.$_{\pi_2}$

   b. L'Europa attraversa una grave crisi.$_{\pi_1}$ Addirittura, la guerra è arrivata alle sue porte.$_{\pi_2}$

Even though only one proposition is made explicit as an Explanation for π_1, the presence of *even* and *addirittura* seems to suggest that at least one other proposition that could support the Explanation must be true in the context. We can see this by observing the infelicity that results if we attempt to defeat the presupposition that there is more than one reason why Claire could be doing great while still continuing to use *even*. The same holds for *addirittura*.

(24) a. Claire is doing great.$_{\pi_1}$??Specifically/The reason is, she has even been promoted.$_{\pi_2}$

    b. L'Europa   sta attraversando   una grave   crisi.$_{\pi_1}$??Più precisamente,
       the.Europe is crossing.through a   serious crisis   more precisely
       addirittura, la guerra è arrivata alle   sue porte.$_{\pi_2}$
       ADD   the war   is arrived at.the its doors

The observations in (23–24) suggest that *even* and *addirittura* manifest what we will call *rhetorically-based additivity*: One rhetorical alternative besides the prejacent must also be true. We claim that *even* also manifests this kind of additivity, but with the difference that the rhetorical alternatives of the latter are necessarily drawn from its focus-based alternatives. The fact that *perfino* does not appear in contexts where the alternatives constitute rank orders suggests that this distinct form of additivity is not an option for *perfino*.

We now show how rhetorically-based alternatives and rhetorically-based additivity shed light on the facts involving *addirittura* discussed in section 2.

First, consider the examples in which the scalar alternatives of the prejacent are based on expressions in a rank order, as in (2–3). As we have seen, in many such cases strict additivity cannot be satisfied: Chiara cannot typically be simultaneously an assistant professor and an associate professor in the same department, for example. However, it can be the case that the stronger a proposition is according to a given rank order, the stronger it may be rhetorically, as Horn (2021) suggests: Normally, being an associate professor would be a stronger argument for being successful professionally than being an assistant professor. Thus, while *perfino* is excluded with rank orders when strong additivity cannot be satisfied, *addirittura* (and *even*) are licensed if the appropriate rhetorical alternatives and strength relations are found.

Second, recall that *addirittura*, unlike *even* and *perfino*, can stand alone as a sentence adjunct or parenthetical. This is fully expected if *addirittura* can, but need not, associate with focus, while *even* and *perfino* must. *Addirittura*'s lack of dependence on association with focus is unsurprising if its alternatives must be rhetorically based: as long as *addirittura*'s prejacent can be placed in a CDU with some other proposition in a given rhetorical relation and a related rhetorically-based alternative set can be constructed, it will in principle be possible to satisfy the Strongest Scalar Alternative condition. Focus-based alternatives can also serve as rhetorically-based alternatives, but since this is not the only way to identify the latter, *addirittura* is freed from having to find a subsentential constituent to associate with.

Third, recall that only *addirittura* can stand alone as a question, as in (25).

(25)   A: Chiara è diventata professore associato!
        B: Addirittura?

This fact can be directly related to the fact, just discussed, that *addirittura*, unlike *perfino* and *even*, does not need to associate with focus. Note that its counterpart (recall (9)) becomes acceptable if *even* is given an associate, as in (26).

(26)   A: Claire has become an associate professor!
        B: (She's) even (become) an associate professor?

Fourth, the analysis correctly predicts that *addirittura* will be infelicitous, whether alone or in association with focus, when its prejacent cannot be construed as the strongest member of a rhetorically-based alternative set. This is what happens in (4), repeated below in (27).

(27)   Dakar ... è considerata, perfino / #addirittura negli Stati uniti, la   nuova
        Dakar ... is considered   PER   / ADD   in.the USA   the new
        capitale di questo genere musicale.
        capital of this   genre   musical

        'Dakar...is considered, even in the USA, the new capital of this musical genre.'

Here, the alternative set will be set of propositions corresponding to the form *Dakar is considered by x as the new capital of this musical genre*. In this particular context, where the parenthetical simply addresses the question of where Dakar is considered a musical capital, the most likely salient rhetorical relation it participates in is one of Elaboration with the main clause. Now, the Elaboration relation can hold between some discourse unit π and a CDU. The EDUs within this CDU can even be ordered according to strength, as in (28), inspired in an example from Jasinskaja & Karagjosova 2020.

(28)   I did various things on my birthday.$_{\pi_1}$ I took a day off from work.$_{\pi_2}$ I went out for lunch.$_{\pi_3}$ I even treated myself to an afternoon at the spa.$_{\pi_4}$

In this example, $\pi_2-\pi_4$ form a CDU that elaborates on π_1. They also form an alternative set made salient by the association of *even* with the phrase *treated myself to an afternoon at the spa*. However, while the strength relation in question is pragmatic – there is no entailment relation between $\pi_2-\pi_4$ –, it is not one of *rhetorical* strength insofar as there is no obvious basis for considering any of the propositions in the CDU as constituting a stronger or better elaboration than any of the others. We claim that the same holds in (27): It is not immediately clear how or why being considered a new musical capital by the USA would constitute a *rhetorically stronger* elaboration than any other proposition in the alternative set. Thus, such examples point to the relevance of distinguishing not just semantic from pragmatic alternatives, but also rhetorically-based alternatives from other types of pragmatic alternatives.

Fifth, our analysis sheds light on the fact that, in certain contexts, *addirittura* can appear with *perfino* in the same discourse (cf. (12) and (13) above). We reproduce (13) in (29).

(29) Il provvedimento ha suscitato critiche e   polemiche fra   le
the provision   has aroused criticism and controversy between the
diverse   associazioni di categoria, che parlano di una maxi sanatoria per
different associations of category that speak of an   amnesty   for
gli abusivi   e, *addirittura*, *perfino* di un pericolo per la   salute
the unauthorized and ADD   PER   of a danger for the health
collettiva della popolazione.
collective of.the population

'The provision has aroused criticism and controversy among the various
trade associations, which speak of amnesty for the unauthorized [health
professionals] and even a danger to the collective health of the population.'

The absence of any redundancy in such cases indicates that the two particles are distinct in their contributions. This is again expected if, as we propose, *addirittura* derives its alternatives from rhetorical relations and asserts that its prejacent is the strongest among these, while *perfino* is constrained to derive its alternatives from focus and indicates that its prejacent is semantically stronger than the others. The two sorts of computations are, in principle compatible. Indeed, a crucial observation is that the proposition with *perfino* in (29) serves as prejacent to *addirittura* in such cases. Though more of the discourse and more space would be required to provide a full analysis here, we can hypothesize that the amnesty and there (even) being a danger to public health form a CDU which serves as an Explanation for the criticisms; *addirittura* marks the public health danger as a rhetorically stronger explanation. But *perfino*, in light of its strong additivity, further indicates that there are additional, semantically weaker negative effects being discussed. We speculate that these weaker negative effects also effectively contribute to the CDU, though this is a matter for further investigation.

A related behavior can be observed in combination with the necessarily additive but non-scalar particle *anche*. *Addirittura* is compatible with *anche* in contexts where *perfino* is not, as for example in (30), from Visconti (2005) (her (23)).

(30) Poveri lillà! Sono   *addirittura* / #*perfino* anche impopolari proprio là
poor   lilacs are.3pl ADD   / PER   also unpopular right   there
dove   dovrebbero essere amati e   protetti di più!
where should.3pl be   loved and protected of more

'Poor lilacs! They are furthermore also unpopular right there, where they should be most loved and protected.'

We close this section by returning to two observations about *addirittura* discussed in Atayan 2017 and references cited there. The first, illustrated with examples

such as (10–11) above, is that sometimes *addirittura* is simply a rhematic sentence connector. Atayan contrasts such examples with examples in which *addirittura* associates with focus. However, by developing the notions of rhetorically-based alternatives, strength, and additivity, we raise the possibility of making such examples look less exceptional. Atayan (op. cit, fn. 14) notes that "on the level of argumentation, a paradigmatic structure is generally evoked in which the argument marked by [*addirittura*] is the strongest in comparison to other explicit or implicit parallel reasons backing the same claim." Though space precludes discussing such examples in detail, Atayan's observations are clearly consistent with the proposal that *addirittura*'s prejacent is the strongest in a rhetorically-based alternative set.

The second claim is that *addirittura* is not necessarily additive, but mere "additive compatible." It is of course by now clear that *addirittura* is not necessarily semantically additive. However, facts such as (23–24) could lead one to hypothesize that *addirittura* necessarily conveys rhetorically-based additivity. This possibility seems to be confirmed by the oddness of (31a). Here, the relevant rhetorical relation is Elaboration; the example is a translation of (31b) with *addirittura*, which Jasinskaja & Karagjosova use to illustrate this particular rhetorical relation.

(31)   a. Ho incontrato una grande attrice al ricevimento.$_{\pi_1}$
        ?Ho incontrato addirittura Vanessa Redgrave.$_{\pi_2}$

    b. I met a great actress at the party.$_{\pi_1}$
      I met Vanessa Redgrave.$_{\pi_2}$

This example has been judged by speakers we have informally consulted as being slightly incoherent, on account of the fact that π_2 suggests that Vanessa Redgrave is not the only person that the speaker met at the party. But if the prejacent of *addirittura* is intended as an Elaboration on the first sentence in (31a), the most coherent way to interpret it is as a unique Elaboration. We thus have a conflict between the apparent rhetorical additivity of *addirittura* and the fact that π_2 is a unique Elaboration on π_1 in this context. This conflict is made explicit in the clearly odd (32), where we try to defeat the presupposition that there is only one relevant proposition in the discourse unit that elaborates on π_1 by adding the adverbial *tra le altre* 'among others'.

(32)   Ho incontrato una grande attrice al ricevimento.$_{\pi_1}$
      ??Tra le altre, ho incontrato addirittura Vanessa Redgrave.$_{\pi_2}$

Crucially, if we were to use the same sentence in a context in which the second member in the rhetorical relation need not be unique, as for example in (33), the use of *addirittura* becomes felicitous. Our intuition is that the prejacent of *addirittura* in this case constitutes the strongest among at least two discourse units that serve as an Explanation (i.e., argumentative support for) π_1.

(33) Ho   incontrato diverse grandi attrici   al   ricevimento.$_{\pi_1}$ (Tra
        have.1sg met   several great actresses at.the party   among
        le altre,) ho   incontrato addirittura Vanessa Redgrave.$_{\pi_2}$
        the others have.1sg met   ADD   Vanessa Redgrave

        'I met several great actresses at the party. Among others, I even met Vanessa
        Redgrave.'

It is important to underscore that our argument concerning the rhetorically-based additivity of *addirittura* does not depend on the specific relation involved but merely on whether that relation involves a unique elementary discourse unit. While the relation in (31a) and (32) is Elaboration, in (33) we see it as Explanation. It is clear that complex discourse units can serve as elaborations, but as noted in footnote 6, whether the EDUs that make up a given complex Elaboration can be ordered according to scalar strength is a separate matter; recall the discussion of (27). There is also no reason to exclude in principle that an Explanation could be made up of an EDU, and in such a case *addirittura* would be predicted to be infelicitous. Similar considerations apply to the other rhetorical relations we have not illustrated here.

4   Conclusion

Analyzing the division of labor between *perfino* and *addirittura* in Italian offers a fresh perspective on some aspects of scalar additivity that have been perhaps obscured in discussions of *even*, which subsumes some of the behavior of each of its Italian counterparts.

Specifically, since *perfino* clearly functions as a focus-sensitive, semantically additive particle, while *addirittura* has neither of these characteristics (despite sharing what we called the Strongest Scalar Alternative requirement), we have been forced to consider an alternative source of scalar alternatives and an alternative type of additivity for *addirittura*. Our appeal to rhetorically-based scalar additivity opens the door for reformulating the semantics of *even* so that it can remain in the general family of scalar additive particles, in line with Gast and van der Auwera's analysis and despite the observations that call its additivity into question. Our account also aligns with recent suggestions by Horn (2021) that the occurrence of *even* with rank orders offers a reason to distinguish rhetorical from informative (i.e. entailment-based) strength. That said, the fact that *even* differs from *addirittura* in necessarily associating with focus suggests that a more restricted, degree-based notion of scalarity such as that proposed by Greenberg (2015, 2018) might nonetheless be desirable in the case of *even*.

Our analysis picks up on observations in the argumentation literature and attempts to formalize them in a way that establishes points of contact both with the literature

on rhetorical structure and the literature on focus and the role of scalar alternatives semantics and pragmatics, raising various questions we cannot explore for lack of space. The study highlights the potential usefulness of scalar additive particles as a source of data for investigating the relation between rhetorical structure and focus structure, as well as for better understanding rhetorical structure itself, including the internal composition and features of complex discourse units and the notion of argumentative force.

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