Additive Presuppositions Are Derived Through Activating Focus Alternatives

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Abstract

The additive presupposition of particles like *too*/*even* is uncontested, but usually stipulated. This paper proposes to derive it based on two properties. (i) *too*/*even* is cross-linguistically focus-sensitive, and (ii) in many languages, *too*/*even* builds negative polarity items and free-choice items as well, often in concert with other particles. (i) is the source of its existential presupposition, and (ii) offers clues regarding how additivity comes about. (i)-(ii) together demand a sparse semantics for *too*/*even*, one that can work with different kinds of alternatives (focus, subdomain, scalar) and invoke suitably different further operators.

1 The plot

The particles *too* and *either* are classically recognized as hard triggers of additive presuppositions, and even as a soft(er) trigger.

(1) (It's not the case that) Bill yawned **too**.
hard presupposition: someone other than Bill yawned

(2) (It's not the case that) Bill didn't yawn **either**.
hard presupposition: someone other than Bill didn't yawn

(3) (It's not the case that) **even** Bill yawned.
hard presupposition: Bill was very unlikely to yawn
soft presupposition: someone other than Bill yawned

The additive presuppositions are typically stipulated, not compositionally derived (Abrusán 2011 is an exception). Recent literature has even ignored them (Chierchia 2013:148) or treated them as part of the assertion (Ahn 2014:29, Gajić 2016). While following Chierchia, Ahn and Gajić in various other respects, this paper attempts to account for the source, shape, and presuppositional nature of the additive component.

The account will be presented in two parts. The particles *too*, *either*, and *even* are focus-sensitive (associate with a focused host). This property seems cross-linguistically stable. It is therefore safe for the analysis to rely on focus alternatives; indeed, the analysis would be missing an important generalization if it did not do that. Section 2 outlines the benefits of working with focus alternatives. (i) Following Geurts & van der Sandt (2004) and Abusch (2010), we recognize that focus is a soft existential presupposition trigger, (ii) we explain why that soft presupposition becomes a hard one in the case of *too* and *either*, but not in the case of *even*, and (iii) we trace the anaphoricity of the additive presupposition to the contextual relevance of focus alternatives.

If we only had to account for the behavior of these three particles, we would be almost done. But there are other pertinent cross-linguistic generalizations that a smaller set of languages makes readily visible. Hungarian, Serbo-Croatian, and Hindi are among them.

Section 3 observes that in those languages, a single particle, to be dubbed TOO, expresses, or participates in expressing, the meanings corresponding to *too*, *even*, and *either*, which are realized by three distinct items in English. But the same particle TOO plays a critical role in building **negative polarity items** and possibly **free-choice items** out of indefinites and lexical expressions. We propose that the contribution of TOO must be fundamentally similar in all the contexts where its presence is critical; triggering an additive presupposition and building NPIs/FCIs are but special cases.

Negative polarity and free-choice items are standardly understood to be disjunctions of subdomain alternatives or scalar alternatives. Fox (2007) and Chierchia (2013) argue that free choice and negative polarity involve the exhaustification of such alternatives. But just like TOO cannot be a specialized additive presupposition trigger, it cannot be a specialized exhaustifier; in Hungarian it clearly acts in concert with other particles that plausibly act as exhaustifiers. TOO must have a sparse semantics. We propose that it seeks out alternatives and activates them: forces them to be figured into meaning, with assistance from other operators.

The additive presupposition, then, should be obtained by a suitable operation on some set of alternatives. In view of Section 2, this should be the set of focus alternatives, at least one of which is presupposed to be true. Section 4 proposes to obtain **additivity** by restricting that set to the alternatives distinct from the prejacent using **recursive exhaustification**, plus **local accommodation** of part of the presupposition. Proceeding this way is intended to replicate the standard construal in a somewhat roundabout, but more generally applicable and thus more explanatory manner. The resulting semantics in each TOO-construction depends on what kind of alternatives and what kind of other operators are involved.

2 Additive presuppositions are grounded in focus alternatives

Focus sensitivity. Sentences like (1-2) can be used in at least two kinds of context. In both contexts, *too*/*either* associates with focus and indicates parallelism, although in the first, focus is narrow (4) and in the second, broad (5). The same holds in languages where the counterpart of *too*/*either* (in Hungarian, *is*/*sem*) always attaches to the phrase that bears intonational prominence and not to the end of the sentence. (Similarly for *even* and *még . . . is*.)

(4) a. Mary yawned. $[\text{BILL}]_F$ yawned, too.
Mari ásított. $[\text{BILL}]_F$ is ásított.

b. Mary didn't yawn. $[\text{BILL}]_F$ didn't yawn, either.
Mari nem ásított. $[\text{BILL}]_F$ sem ásított.

(5) a. Mary was fidgeting. $[\text{BILL yawned}]_F$, too.
Mari fészkelődött. $[\text{BILL is ásított}]_F$.

b. Mary wasn't fidgeting. $[\text{BILL didn't yawn}]_F$, either.
Mari nem fészkelődött. $[\text{BILL sem ásított}]_F$.

In each case, the additive presupposition is that some focus-alternative, not identical to the prejacent, is true. In (4), it is the proposition that someone besides Bill yawned (didn't yawn). In (5), it could be the proposition that besides Bill's (not) yawning, some other sign of boredom was (not) in evidence. In what follows, examples with narrow focus will be used, but the claims carry over to broad focus.

Presuppositionality. Why does the additive component have presuppositional status? The most straightforward answer would be that focus induces an existential presupposition. Unfortunately, this does not go without saying, at least not in English. Rooth (1999) famously argued that no existential presupposition was present in (6B):

(6) *A*: Did anyone win the football pool this week?
B: Probably not, because it's unlikely that [Mary]$_F$ won it, and she's the only one who ever wins.
B′: Probably not, because it's unlikely that it's [Mary]$_F$ who won it, and she's the only one who ever wins.
"In this case, I do find the cleft variant incoherent and contradictory. In contrast, the focus variant is fine. This is an argument against systematically giving focus a semantics of existential presupposition."

Clefts are not well understood; it is not ideal to make a poorly understood construction the gold standard for the existential presupposition. However, for our purposes it suffices if plain focus carries a weaker presupposition than a cleft. That claim has been made both directly about focus, and more generally about constructions involving sets of alternatives.

(7) The Background-Presupposition Rule (Geurts & van der Sandt 2004)
Whenever focusing gives rise to a background $\lambda x.\varphi(x)$, there is a presupposition to the effect that $\lambda x.\varphi(x)$ holds of some individual.

(8) Presupposition triggering from alternatives (Abusch 2010)
Default Constraint L
If a sentence γ is uttered in a context with common ground c, and γ embeds a clause ψ which contributes an alternative set Q, then c is such that the corresponding local context d for ψ entails the disjunction of Q.
For example,
   a. $\big[_\gamma$[if John is in a city], [$_\psi$he is in Syracuse and not Binghamton$_\psi$]
   {$_Q$John is in Syracuse, John is in Binghamton}$_\gamma\big]$
   b. $d = c +$ John is in a city
   c. $\{\text{in}(j,s), \text{in}(j,b)\}$

The Background-Presupposition Rule met with agreement, but how that presupposition projects was not sufficiently clear. The Default Constraint L is on safer grounds: Abusch stresses that it yields soft triggers. Not only can the presupposition be locally accommodated, it can be overridden in discourse. The fact that Abusch attributes the default constraint to alternative sets makes it especially suitable to our purposes. As was anticipated in Section 1, too will be argued to be specifically interested in alternative sets.

Soft vs. hard. In view of the above, focus is a soft presupposition trigger. But *too* is invariably cited in the literature as a hard trigger. How come? *Too* is a functional element whose only mission is to induce an additive presupposition. If that could be canceled in discourse, *too* would be vacuous. A principle proposed in another context sensibly rules that out:

(9) The principle of non-vacuity (Crnič 2011:7) The meaning of a lexical item used in the discourse must affect the meaning of its host sentence (either its truth-conditions or its presuppositions).

The significance of non-vacuity is supported by the fact that the additive presupposition of *even* is softer than that of *too*. Imagine Pooh and friends coming upon a bush of thistles. Eeyore (known to favor thistles) takes a bite but spits it out.

(10) Those thistles must be really prickly! Even Eeyore spit them out!

This may be because the main contribution of *even* is its likelihood presupposition, and so *even* does not become vacuous if its additive presupposition is not satisfied.

The presupposition that one of the focus-alternatives is true is also in place when the particle that associates with focus is *only*. Since *only* negates the alternatives that are not entailed by the prejacent, the existential presupposition will be left to the prejacent to satisfy.

Anaphoricity. On the standard analysis (Heim 1990, Kripke 2009), the presupposition of *too* is anaphoric to some contextually salient, or active, individual or individuals. The present proposal has no special anaphoric component but assumes, with Brasoveanu & Szabolcsi (2013), that the presupposition of *too* is merely existential, although it requires contextual relevance. As a variation on the well-known theme, imagine a circle of dissidents who just received word from one of their number that he successfully made it to the free world. They sit around and sigh,

(11) Now Sam is having dinner in New York, too.

The fact that Sam just joined the ranks of New Yorkers is a source of contextual relevance, even though no particular New Yorkers are salient. Or, with Lincoln (1859),

(12) It is said an Eastern monarch once charged his wise men to invent him a sentence, to be ever in view, and which should be true and appropriate in all times and situations. They presented him the words: *"And this, too, shall pass away."*

Focus-alternatives must be contextually relevant, although often the hearer has to figure out what the relevant set is. We contend that the anaphoric flavor of the presupposition of *too* should be a consequence of the contextual relevance requirement on focus alternatives. The reason why this is somewhat important for our analysis is that we are not going to postulate a dedicated additive *too* that could be endowed with further specific attributes. The empirically attested attributes must come from its basic ingredients.

3 Particle TOO in NPIs and FCIs, cross-linguistically

We have argued that *too*/*either* carries an existential presupposition, because it is focus-sensitive, and focus induces the presupposition that one of the focus-alternatives is true. What *too*/*either* adds to this is **additivity**: some focus-alternative **other than the asserted prejacent** is true. That is not yet accounted for. It could be stipulated in the lexical semantics of the particle, if all its occurrences carried an additive presupposition (possibly, over and above requiring the presence of clause-mate negation, cf. *either*, or carrying a likelihood presupposition, cf. *even*).

In many languages, this is not the case. The goal of this paper is to set the additive presupposition in the context of the broader distribution of the pertinent particles in those languages.[1]

First, in such languages, a single particle expresses, or participates in expressing, the meanings corresponding to *too*, *even*, and *either*. (*Is* is a component of *sem*, and *i* of *ni*.)

[1] (13)-(14) only include a small sample of the relevant data, given that NPIs/FCIs are not in the center of

(13)	Hungarian	Serbo-Croatian	Hindi	English
	Mari **is**	**i** Josip	Raam **bhii**	X too
	még Mari **is**	(čak) **i** Josip	Raam **bhii**	even X
	Mari **sem**	**ni** Josip	Raam **bhii**	X either

Second, that same particle also participates in building negative polarity items and free-choice items out of wh-indefinites and lexical expressions.

(14)	Hungarian	Serbo-Croatian	Hindi	English
	valaki **is**	**i**-(t)ko / [bilo (t)ko]	koii **bhii**	anyone, NPI
	még/akár csak Mari **is**	(čak/makar) **i** Josip	Raam **bhii**	even X, NPI
	akár Mari **is**	(čak) **i** Josip	(koii **bhii**)	even X, FCI

The particles *is*, *i*, and *bhii* will be generically referred to as TOO in small caps.

The interest of these observations is that we have well-established theories of how negative polarity and free choice work. NPIs and FCIs are understood to be disjunctions/existentials over subdomain alternatives or scalar alternatives. Furthermore, Chierchia (2013) and Fox (2007) argue that NPIs and FCIs involve the exhaustification of such alternatives.

On Chierchia's theory (in the spirit of Lahiri 1998), an NPI is an existential situated at the low end of a scale (either inherently or via scale truncation). It has obligatorily active (grammaticized) alternatives that must be figured into meaning by exhaustification. Exhaustification leads to a contradiction, unless a decreasing operator is present right below the exhaustifier. That is, the necessity for the NPI to be in a locally decreasing environment is not directly stipulated. We adopt this theory, because it fits nicely with the way Hungarian productively builds NPIs, as will be demonstrated informally.

Consider *még/akár csak Mari **is*** from (14). It is plainly ungrammatical in an upward monotonic environment, i.e. it is an NPI.

(15) Kevesen/*Sokan gratuláltak még/akár csak Marinak is.
'Few/*Many people congratulated even Mari (let alone others)'

Let us proceed item by item. (i) Abrusán (2007) argued that *még* and *akár* are *even*-style exhaustifiers; see also Crnič (2011). (ii) Unlike the indefinite *valaki*, *Mari* does not inherently fall at the low end of any scale. The presence of *csak* brings that about; here *csak* is similar to Dutch *slechts* 'mere(ly)'. Szabolcsi (1994) showed that *csak* can be added to numerals that are downward monotonic ('fewer than n') or non-monotonic ('between n and m' or focused 'n' interpreted as 'exactly n'), but not to irrevocably upward monotonic ones ('more than n').

(iii) What is the particle *is* doing? Notice that *is* is absolutely critical here. *Valaki*, by itself, is 'someone', a PPI, not an NPI. *Még/akár(csak) Mari*, by itself, is a word salad. Chierchia assumes that it is a lexical property of NPIs that they have obligatorily active alternatives. We interpret the Hungarian data as suggesting that activating alternatives is a function that can be delegated to a separate morpheme.

Free-choice items are likewise productively built with particle *is*. Consider *akár Mari **is*** (here *akár* does not alternate with scalar *még*, and the low-end marker *csak* cannot be added).

(16) Akár Mari **is** nyerhet/*nyer.
'Anyone can win/*wins; to pick an arbitrary example, Mari'

this paper. Some comments. The Hungarian and Serbo-Croatian NPIs in (14) are weak (do not occur with clause-mate negation); the negative concord counterparts involve *sem/ni*, cf. *either* in (13). Hindi does not distinguish between weak NPIs and NCIs. The Serbo-Croatian data come from Progovac (1993) and J. Gajić (p.c.), and the Hindi data from Lahiri (1998) and V. Dayal (p.c.).

Fox (2007) proposes that free choice is the result of recursive exhaustification of a set of alternatives with an existential modal under the exhaustifier; Chierchia (2013) recasts that as exhaustification with respect to a pre-exhaustified set of alternatives.

In summary, the following hypothesis seems plausible:

(17) **Too seeks out and activates a set of alternatives**
Hungarian ***is*** (cross-linguistic TOO) seeks out a set of alternatives induced by its host and activates them, so they must be figured into the meaning of the sentence, e.g., by exhaustification. But ***is*** itself does not exhaustify alternatives; it co-occurs with other particles that probably do just that.

What kind of alternatives does TOO recruit, and what kind of semantic operation does it invoke? That depends on what alternatives are available in the given construction, and what kind of operation suits those. The proposal is that TOO is underspecified in this regard. It is possible that the options could be narrowed, but we will not undertake that here. In the realm of negative polarity and free choice, subdomain alternatives or scalar alternatives present themselves. In the realm of expressions with an additive presupposition, we have argued that focus-alternatives present themselves.

4 Too and the additive presupposition

Section 2 observed that *too* and *is* associate with focus, and proposed that presuppositions triggered from focus-alternatives explain the presuppositional character of the additive component. Focus induces a set of propositional alternatives, type $\langle\langle s,t\rangle,t\rangle$, as per Rooth (1992). A set of propositional alternatives is nothing else than the disjunction (join) of the member alternatives: $\{\{w:\varphi_w\},\{w:\psi_w\},\{w:\chi_w\}\} = \{\{w:\varphi_w\}\}\cup\{\{w:\psi_w\}\}\cup\{\{w:\chi_w\}\}$. This puts the focus-alternative set on a par with the core $\exists/\vee$ semantics of NPIs and FCIs.

(18) BILL ásított 'BILL yawned'
assertion: $\text{yawn}_{w^\star}(b)$
focus-alternatives, $ALT: \{\{w:\text{yawn}_w(b)\},\{w:\text{yawn}_w(m)\},\{w:\text{yawn}_w(k)\}\}$
presupposition: $\exists p\in ALT: p_{w^\star}$

(19) BILL nem ásított 'BILL didn't yawn'
assertion: $\neg\text{yawn}_{w^\star}(b)$
focus-alternatives, $ALT: \{\{w:\neg\text{yawn}_w(b)\},\{w:\neg\text{yawn}_w(m)\},\{w:\neg\text{yawn}_w(k)\}\}$
presupposition: $\exists p\in ALT: p_{w^\star}$

In this context, the presence of TOO modifies the presupposition that at least one focus-alternative is true to the effect that at least one focus-alternative **other than the prejacent** is true; this is additivity. TOO plays its role by seeking out the set of focus-alternatives, ALT and relies on some operation that removes the prejacent from ALT, in one way or another. Preliminarily stating this directly in terms of set-theoretic difference,

(20) BILL **is** ásított 'BILL yawned **too**'
assertion: $\text{yawn}_{w^\star}(b)$
$ALT^{DIFF} = \{\{w:\text{yawn}_w(b)\},\{w:\text{yawn}_w(m)\},\{w:\text{yawn}_w(k)\}\}\setminus\{\{w:\text{yawn}_w(b)\}\}$
$= \{\{w:\text{yawn}_w(m)\},\{w:\text{yawn}_w(k)\}\}$
presupposition: $\exists p\in ALT^{DIFF}: p_{w^\star}$

(21) BILL **sem** ásított 'BILL didn't yawn **either**'
assertion: $\neg\text{yawn}_{w^\star}(b)$
$ALT^{DIFF} = \big\{\{w : \neg\text{yawn}_w(b)\}, \{w : \neg\text{yawn}_w(m)\}, \{w : \neg\text{yawn}_w(k)\}\big\}\backslash\{\{w : \neg\text{yawn}_w(b)\}\}$
$= \big\{\{w : \neg\text{yawn}_w(m)\}, \{w : \neg\text{yawn}_w(k)\}\big\}$
presupposition: $\exists p \in ALT^{DIFF} : p_{w^\star}$

In what follows we experiment with a procedure where a version of exhaustification helps produce ALT^{DIFF}. Using such a procedure is desirable because, if viable, it unifies the ways in which the activated alternatives can be figured into the meaning of the sentence, while leaving it open what kind of exhaustification is suitable in each case.

There is a recent line of research that derives conjunctive meanings from disjunctive ones by recursive exhaustification without negating a stronger, conjunctive alternative; a modification of Fox (2007). See Bar-Lev & Margulis (2014) for Modern Hebrew *kol*, Mitrović (2014) for Japanese *mo*, Bowler (2014) for Warlpiri *manu*, Singh et al. (2016) for Child English *or*, and Wong (2017) for Malay *pun*. Of these authors, Mitrović addresses *mo* as an additive particle; his proposal is our closest model. But Mitrović assumes that *mo* itself is a recursive exhaustifier and stipulates presuppositionality, which we cannot literally follow.

A critical assumption is that in the calculation of exhaustification, the disjunction has only subdomain alternatives (the disjuncts) but no scalar, i.e. stronger alternative (the conjunction), and so no conjunctive alternative is negated. Several of the authors justify that with reference to the fact that the given language has no separate word for conjunction, or (in the case of child language) the speaker cannot access that word. For how such recursive exhaustification yields a conjunction, (22-23) replicate Bar-Lev & Margulis (2014).

(22) $\text{EX}(Alt(p))(p)(w) \Leftrightarrow p$ is true in w, and every excludable alternative of p is false in w.
$Excludable(p, Alt(p)) \Leftrightarrow \cap\big\{Alt(p)' \subseteq Alt(p) : Alt(p)'$ is a maximal set in $Alt(p)$ such that $\{p\} \cup \{\neg q : q \in Alt(p)'\}$ is consistent$\big\}$

(23) EX $\text{EX}(a \vee b) = a \wedge b$
$Alt(a \vee b) = \{a \vee b, a, b\}$ Note: $a \wedge b$ is not an alternative.
$\text{EX}_{Alt(a\vee b)}(a \vee b) = a \vee b$ $\{a \vee b, \neg a\}$ and $\{a \vee b, \neg b\}$ are both consistent sets and maximal as such. But $a, b \notin \{a \vee b, \neg a\} \cap \{a \vee b, \neg b\}$.

$Alt(EX_{Alt(a\vee b)}[a \vee b]) = \big\{\text{EX}_{Alt(a\vee b)}[a \vee b], \text{EX}_{Alt(a\vee b)}[a], \text{EX}_{Alt(a\vee b)}[b]\big\}$
$= \big\{a \vee b, a \wedge \neg b, b \wedge \neg a\big\}$

$\text{EX}_{Alt(EX_{Alt(a\vee b)}[a\vee b])}\big[\text{EX}_{Alt(a\vee b)}[a \vee b]\big] =$
$\text{EX}_{\{a\vee b, a\wedge\neg b, b\wedge\neg a\}}[a \vee b] =$
$a \vee b \wedge \neg(a \wedge \neg b) \wedge \neg(b \wedge \neg a) =$
$a \vee b \wedge (a \rightarrow b) \wedge (b \rightarrow a) =$
$a \vee b \wedge (a \leftrightarrow b) = \boldsymbol{a \wedge b}$
Now $a \wedge \neg b$ and $b \wedge \neg a$ are negated; the negations are consistent with $a \vee b$.

Here is a way to produce the same outcome as ALT^{DIFF}, using exhaustification. We stipulate that TOO "bifurcates" the alternative-set into two big alternatives: the prejacent and a flattened-out disjunction of the other alternatives. (All focus-sensitive particles distinguish the prejacent, although not in this same way.) Call the result *BI-ALT*. With *BI-ALT*, the presupposition would be that the prejacent is true or some other alternative is true. But, as per (17), TOO forces the exhaustification of *BI-ALT*; this time recursively, without a scalar alternative. Note that no lexical element serves as a primitive additive particle.

(24) BILL **is** ásított 'BILL yawned **too**'
assertion: $\text{yawn}_{w^\star}(b)$
$BI\text{-}ALT = \{\{w : \text{yawn}_w(b)\}, \{w : \text{yawn}_w(m) \vee \text{yawn}_w(k)\}\}$
EX EX$(BI\text{-}ALT) = \{w : \text{yawn}_w(b)\} \cap \{w : \text{yawn}_w(m) \vee \text{yawn}_w(k)\}$
presupposition: $\exists p \in$ EX EX$(BI\text{-}ALT) : p_{w^\star}$

(25) BILL **sem** ásított 'BILL didn't yawn **either**'
assertion: $\neg\text{yawn}_{w^\star}(b)$
$BI\text{-}ALT = \{\{w : \neg\text{yawn}_w(b)\}, \{w : \neg\text{yawn}_w(m) \vee \neg\text{yawn}_w(k)\}\}$
EX EX$(BI\text{-}ALT) = \{w : \neg\text{yawn}_w(b)\} \cap \{w : \neg\text{yawn}_w(m) \vee \neg\text{yawn}_w(k)\}$
presupposition: $\exists p \in ALT^{DIFF} : p_{w^\star}$

Now (24) presupposes that Bill yawned **and** someone else yawned. The conjunct corresponding to the prejacent can be eliminated; and it must be eliminated under extra-clausal negation:

(26) Nem igaz, hogy BILL is ásított. 'It is not true that BILL yawned too.'

M. Esipova (2017; p.c.) suggests that treating the same content as both at-issue (asserted) and not-at-issue (presupposed) is odd on the global level. Oddness or contradiction may motivate the local accommodation of the prejacent part of the presupposition generated by TOO. The above combination of *BI-ALT* plus local accommodation has some ad hoc elements; it can be hopefully improved upon in future work.

5 TOO in the MO family

In this paper, we have motivated the need for a unified treatment of the various uses of TOO, and made some headway with meeting the challenge. Szabolcsi (2015) proposed that unary TOO belongs to the larger family of "MO particles", which also participate in reiterated constructions with a distributive conjunction interpretation and build universal quantifiers.

(27)

Japanese		Hungarian	
A mo	'A too, even A'	A is	
A mo B mo	'A as well as B'	A is B is	/ mind A mind B
dare-mo	'everyone, anyone'		mind-en-ki

The present claims are entirely compatible with that proposal. They provide the backstory of how TOO/MO particles come to mean what they mean. On the other hand, Szabolcsi (2017) takes up the distinction between Hungarian *is* and *mind*, and argues that morpho-syntactically, there is no unbroken line from the unary particle to the quantifier.

Acknowledgements

Thank-you to M. Esipova and to R. Balusu, L. Champollion, V. Dayal, J. Gajić, D. Lassiter, H. Li, M. Mitrović, C. Roberts, B. Slade, participants of the New York Philosophy of Language Workshop, and the AC 2017 reviewers for discussion, suggestions, and objections.

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