A VIABILITY CONSTRAINT ON ALTERNATIVES FOR FREE CHOICE

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This paper takes the universal force of Free Choice Items (henceforth FCI) to be an implicature that arises when an assertion with existential force interacts with a set of lexically triggered exhaustified alternatives, as proposed by Chierchia (*to appear*). It departs from him in capturing the distribution of FCI through a *Viability Constraint* on alternatives, adapting the notion of *Fluctuation* in Dayal 2009 to the view of FCI as existential. A substantive consequence of the proposed *Viability Constraint* is that FCI can only ever be licensed if they take wide scope over modals (of the appropriate sort). The paper establishes that apparent counterexamples involve non-trivial interactions between FCI and modality. When the FCI is complex it can participate in split-quantification, with one part taking scope over the modal and the other taking scope under it. Alternatively, if there are two modals, FCI can be scopally lower than one but still be licensed because it has scope over the other. A striking confirmation of this approach comes from imperatives. Though long thought to unconditionally admit FCI, it is shown here that this is not so. In addition to accounting for the more nuanced empirical generalization regarding imperatives, the *Viability Constraint* is argued to be generally a simpler way of predicting the distribution of FCI than the one proposed by Chierchia.

SECTION 1: THE DISTRIBUTION OF FCI

1.1. The Distribution of ∀ FCI

The distribution of FCI has been much discussed (Vendler 1967, LeGrand 1975, Carlson 1980, 1981, Kadmon and Landman 1993, Dayal 1995, 1998, 2004, Giannakidou 1998, 2001, Horn 2000a, 2000b, 2003, Jayez and Tovena 2005, Chierchia 2006, *to appear*, among others). I will nevertheless begin by laying out the core facts in order to make the discussion here self-contained. I adopt the standard distinction between FCI *any* and NPI *any* in English, a powerful argument for which comes from cross-linguistic considerations. Italian *qualunque/qualsiasi*, for example, is acceptable in modal but not negative contexts, suggesting that items appearing in those contexts, while related, must be distinct:[1]

1a. * Bill read any book.
  b. Bill didn't read any book.
  c. Bill can read any book.

2a. *Ieri Gianni ha letto qualsiasi libro/qualsiasi dei libri
    "Yesterday Gianni read any_{FCI} book/any_{FCI} of the books."
  b. *Gianni non ha letto qualsiasi libro
    "Gianni didn't read any_{FCI} book."
  c. Puoi leggere qualunque libro
    "You can read any_{FCI} book."

Within the class of FCI, there is a further distinction. English *any* and Italian *qualunque/qualsiasi* sometimes have ∀ and sometimes ∃ quantificational force.[2] (1c) and (2c) are instances of ∀ FCI: they say that Bill/you can read book-1, Bill/you can read book-2, Bill/you can read book-3 and so on for all the books in the domain. In the next subsection we will consider FCI that have ∃ quantificational force. I will use this distinction descriptively for now, leaving it for subsequent sections to determine its theoretical import. Focusing on ∀ FCI here, the distributional generalization that I wish to capture in this paper is given under 3, where three variants of *any* are evaluated in four different types of constructions. The same facts hold for Italian *qualunque/qualsiasi*. In order to conserve space, I do not give Italian examples, except when doing so highlights a cross-linguistic pattern or elucidates the point under discussion:

3.

	Generic ◇	◇	□	Episodic
Partitive-*any*	*	√	*	*
Unmodified *any*	√	√	*/√	*
Subtrigged *any*	√	√	√	√

Let us quickly go over these cases. Partitive-*any* is significant because the inner NP anchors the interpretation to a fixed set of entities.[3] Its acceptability in the context of a possibility modal shows that widening, in the sense of Kadmon and Landman (1993), is not necessary for FCI. The unacceptability of partitive-*any* in generic/habitual statements and in sentences with necessity modals shows that modality is not sufficient for licensing FCI:[4]

4a. *Any of these students works hard.
  b. Bill may read any of these books.
  c. *Bill must read any of these books.
  d. *Bill read any of these books.

Turning to unmodified/non-partitive *any*, we can see that they are acceptable in contexts like (5a)-(5c), contexts that support generic indefinites. This shows that widening does, after all, hold some significance. In (6) we see that in contexts where indefinites do not get a generic interpretation, the difference between possibility and necessity resurfaces. Possibility modals remain hospitable to FCI:

5a. Any student works hard.
  b. Any student can attend this event.
  c. Any student must read books.

6a. Bill may read any book
  b. *Bill must read any book.

Last in the triad is subtrigging, illustrated in (7).[5] Post-nominal phrases, relative clauses, prepositional phrases, locatives and the like, redeem environments that are otherwise inhospitable. Subtrigging not only maintains the acceptability of unmodified *any* in generic indefinite and possibility modal contexts, its beneficial effects are of particular significance in episodic and necessity modal contexts:

7a. Any student who wants to succeed works hard.
  b. Bill may read any book he finds.
  c. Bill must read any book he finds.
  d. Bill read any book he found.

It is worth noting that it is possible for the subtrigger to be covert. One can detect its presence by the fact that the interpretation is limited to a subset of what the noun would otherwise denote. (8a) is not about all leftovers, but about those from the dinner mentioned, (8b) about questions asked at a particular time and place, not questions in general:[6]

8a. After the dinner, we threw away any leftovers.
  b. Mary confidently answered any objections.

There are some constraints on subtrigging that need to be kept in mind. The redeeming effects of subtrigging are felt only if the modifier does not contain indexical material. Subtrigging also cannot rescue unacceptable partitive-*any*:

9a. *Bill is reading any book that is lying there in front of him.
  b. *Bill must read any book that we see lying here.

10a. *Any of these students that you see works hard.
  b. *Bill must read any of these books that he found.
  c. *Bill read any of these books that he found.

Let me conclude this subsection by highlighting the two dimensions in the table in (3) that we will use in trying to capture the distribution of ∀-FCI. Possibility modals and appropriate subtrigging are two factors that provide sufficient conditions for licensing such items. We will see that a proper understanding of the role of possibility vs. necessity provides vital insight into the factors governing the distribution of FCI. An appropriate account of subtrigging is also crucial.

1.2. The Distribution of ∃ FCI

Let us turn now to those cases where FCI-*any* and Italian *qualunque/qualsiasi* have ∃ quantificational force. Imperatives are one such context:

11a. Take any card.
  b. To continue, press any key.

12. Prendi pure qualsiasi libro

     "Take freely any book."

These cases were brought into the discussion of FCI by Jennings 1994, Giannakidou 1998, 2001, Horn 2000a, 2000b, and Jayez and Tovena 2005. My discussion here is based on these accounts as well as those in Dayal 2004 and Chierchia 2006, *to appear*. While the ∃ FCI in imperatives is morphologically the same as the ∀ FCI discussed in the previous subsection, there is a closely related form that has wider distribution. In English, these forms are distinguished by having an overt numeral (numeral FCI). The Italian version has, in addition to the numeral, a difference in word order: *un N qualsiasi/qualunque* instead of *qualsiasi/qualunque N*. Both languages also allow the regular FCI in an appositive phrase, tacked on to a regular indefinite (supplementary FCI). In each of these cases, the quantificational force is strictly ∃:

13a. Bill can/must read any one book.

  b. Bill can/must read a book, any book.

14a. Gianni puo' / deve interrrogare uno studente qualunque

    Gianni can   must question   a   student   FCI

   "Gianni can/must interrogate any (one) student."

  b. Gianni puo' / deve interrrogare uno studente, qualunque studente

    Gianni can   must question   a   student   FCI   student

   "Gianni can/must interrogate a student, any student."

As (13) and (14) show, the distribution of these items is not the same as the distribution of regular FCI (i.e. non-numeral/non-supplementary FCI). In particular, they are acceptable in necessity modal contexts. Like regular FCI, they do not appear to be acceptable in episodic contexts. Notably, however, subtrigging cannot redeem them in such contexts:[7]

 15a. *Bill read any one book.

  b. *Bill read a book, any book.

16a. ?? Una persona qualunque si e' fatta viva

     "Any (one) person showed up."

  b. ?? Una persona, qualunque persona, si e' fatta viva

     "A person, any person, showed up."

17a. *Bill read any one book that he bought.

  b. *Bill read a book that he bought, any book that he bought.

18a. ?? Un ragazzo qualunque che voglia sapere dell'esame si fara' vivo

     "Any (one) boy who wants to know about the exam will show up."

  b. ?? Un ragazzo che voglia sapere dell'esame, qualunque ragazzo…, si fara' vivo

     "A boy who wants to know about the exam, any boy who…, will show up."

There are further restrictions on distribution. For example, the set of intensional contexts that license numeral/supplementary FCI vs. regular FCI are not identical. To give a quick example, consider the following from English and Italian:

19a. *She is waiting for any policeman to show up.
   b. *Sta aspettando qualsiasi poliziotto

20a. She is waiting for a policeman, any policeman, to show up.
   b. Sta aspettando un poliziotto, un poliziotto qualsiasi

In Dayal (2004) data such as these were used to argue against a claim of identity between existential quantification and FCI, in favor of a weaker claim of compatibility.

To conclude this discussion, I would like to highlight two facts regarding ∃ FCI. One, imperatives are able to allow for an existential reading of regular FCI. Two, close variants of regular FCI, typically those with overt markers of indefiniteness, have existential force but their distribution differs significantly from that of regular FCI.

SECTION 2: TWO EARLIER ACCOUNTS

2.1. An Account in Terms of 'Fluctuation'

Dayal (2009) explains the distribution of ∀-FCI by treating it as a ∀ quantifier, much like *every* (and *each*). Unlike *every*, however, it takes *any* to additionally make a secondary contribution to meaning which is characterized as a requirement of *fluctuation*. *Fluctuation* states that the set of individuals in the intersection of the nominal and the verbal properties must vary across the worlds of the modal base. FC *any* is ruled out in statements whose truth conditional meaning contradicts *fluctuation*:[8]

21a. ⟦Any⟧ =λP λQ ∀x [P(w)(x) → Q(x)]   *Universal Quantifier*

   b. ¬ ∃X ∀w': ACC(w,w'). λx [P(w')(x) & Q'(w')(x)] = X   *Fluctuation*

The distribution of *any* is restricted but that of *every* is not, under this view, because *any* is incompatible with non-fluctuating contexts, while *every* is equally compatible with fluctuating and non-fluctuating contexts. Note that the notion of fluctuation differs crucially from the notion of widening in making reference not only to the nominal property but also to the verbal property.

The workings of *fluctuation* can be illustrated by contrasting partitive-*any*, which excludes widening as a potential factor, in possibility and necessity contexts. It is easily verified that a wide scope ∀ over possibility allows for different books to be read in different worlds, satisfying *fluctuation*. The model in (22c) has: *{<w_1, {a}>, <w_2, {a,b}>, <w_3, ∅>, <w_4, {b}>}*:[9]

22a. Bill may read any of these books.

   b. $\forall x \ [x \leq \iota y \ [books'(w)(y)] \rightarrow \exists w': ACC(w,w'). \ [read'(w')(x)(b)]]$

   c. <u>book a</u>: $w_1 \rightarrow a$, $w_2 \rightarrow a$, $w_3 \rightarrow \varnothing$, $w_4 \rightarrow \varnothing$; <u>book b</u>: $w_1 \rightarrow \varnothing$, $w_2 \rightarrow b$, $w_3 \rightarrow \varnothing$, $w_4 \rightarrow b$

      It is sometimes thought that English sentences like (22a) do not have a reading in which the permission extends to the full set of books. I believe this is incorrect. If one utters (22a) and Bill reads all the books, he has not exceeded his mandate. The present account allows for this, (cf. w_2).

      We see that in the case of necessity, *fluctuation* is violated because of the interaction of the two universals: $\{<w_1, \ \{a,b\}>, \ <w_2, \ \{a,b\}>, \ <w_3, \ \{a,b\}>\}$. Consequently, *any* is unacceptable:

23a. *Bill must read any of these books.

   b. $\forall x \ [x \leq \iota y \ [books(w)(y)] \rightarrow \forall w': ACC(w,w'). \ [read'(w')(x)(b)]]$

   c. <u>book a</u>: $w_1 \rightarrow a$, $w_2 \rightarrow a$, $w_3 \rightarrow a$; <u>book b</u>: $w_1 \rightarrow b$, $w_2 \rightarrow b$, $w_3 \rightarrow b$

The key difference is that a universal modal interacting with a universal quantifier rules out the possibility of fluctuation while an existential modal allows for it. Thus *fluctuation* accounts for the distribution of *any* in a context where no widening is possible.

   Turning to episodic contexts, we know that unmodified *any* and partitive *any* are both unacceptable. This follows if we make the standard assumption that universals in episodic statements presuppose non-empty domains of quantification. *Fluctuation* is violated because an episodic statement refers to exactly one world. In (24), for example, a single set of books, namely all the books in that world, was read by Bill:

24a. *Bill read any book / any of these books.

   b. $\forall x \ [book'(w)(x) \rightarrow read'(w)(x)(b)]]$

   c. $\forall x \ [x \leq \iota y \ [books'(w)(y)] \rightarrow read'(w)(x)(b)]]$

      This leads to the challenge of pinning down the role of subtrigging. Clearly, a garden variety account of modification does not help. *Fluctuation* remains elusive under simple modification (cf. 25a). Variation in the set of books needs to be derived via the relative clause in order to get the desired result (cf. 25b). The fact that the ameliorating effects of subtrigging are only observed with post-nominal phrasal modifiers is used to establish the crucial role of the world/situation variable, as in Dayal 1998, though the explanation itself is radically different:

25a. $\forall x \ [[book'(w)(x) \wedge found'(w)(x)(b)] \rightarrow read'(w)(x)(b)]$

   b. $\forall x \ [[book'(w)(x) \wedge \exists w': ACC(w,w'). \ [found'(w')(x)(b)]] \rightarrow read'(w)(x)(b)] \equiv$

     $\forall x \ \forall w': ACC(w,w'). \ [[book'(w)(x) \& found'(w')(x)(b)] \rightarrow read'(w)(x)(b)]$

Also, since subtrigging is felicitous in precisely those contexts where the speaker (or in some cases, the attitude holder) does not have immediate knowledge of the full set of individuals involved, the licensing of *any* by a modifier can be linked to its ability to introduce fluctuation cued to epistemic modality. Further indirect support for this comes from considering mood and aspectual distinctions. Iterative contexts are known to be conducive environments for subtrigged *any*, but iterativity is not a necessary condition. (26a), for example, is acceptable if uttered in a context where the relevant set of soldiers is not contextually salient. Similarly, for (26b):

26a. At the end of his speech, the President thanked any soldiers who had fought in the Gulf War.
  b. Anyone who was at the rally signed the petition.

As pointed out by Quer (1998), on the basis of Catalan examples, subtrigging is possible with subjunctive rather than indicative mood. The inadmissibility of indicative mood in subtrigging also holds in Spanish (Carlo Linares p.c.) and Italian (Chierchia 2006).[10]

Let us now consider generic contexts where widening of the domain can plausibly be assumed. Although genericity of this kind is typically associated with indefinites, universal statements with *every* also allow for such readings. (27a) is potentially ambiguous between a generic reading where the set of students varies across worlds, and a habitual reading where it does not. (27b), which makes the latter reading explicit, shows its absence for FCI. (28a) is the logical representation associated with the generic reading, (28b) for the habitual reading. Crucially, *any* is only acceptable in the first case where *fluctuation* is satisfied, while *every* is acceptable in both:
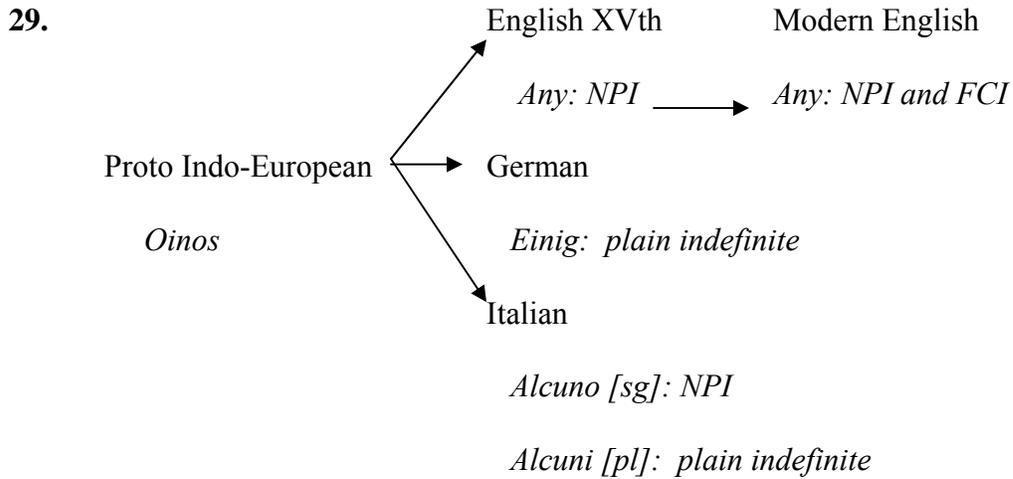
27a. Every student/any student works hard.
  b. Every one of these students / *any of these students works hard.
28a. $\forall x \, \forall w'$: ACC(w$_,$w'). [student($\mathbf{w'}$)(x) $\rightarrow$ works-hard ($\mathbf{w'}$)(x)]

  b. $\forall x \, \forall w'$: ACC(w$_,$w'). [student($\mathbf{w}$)(x) $\rightarrow$ works-hard ($\mathbf{w'}$)(x)]

Cases of existential FCI are accounted for, under this approach, by treating them as universals but considering them as a supplement to indefinite statements. That is, there is only one FCI *any*, a universal, but in the context of an existential statement the universal force is obscured. This analysis takes its cue from the following possible elaboration of supplementary *any*: *Bill must read a book, it can be any book.*

To conclude this section, the distributional facts we have looked at call for a pliable conceptual tool. *Fluctuation* has this pliability, admitting modal manipulation for partitive *any*, narrowing for subtrigged *any*, and widening for generic *any*. Alternative approaches which focus on the nominal property alone lack this pliability. That said, the fluctuation-based approach remains incomplete. As pointed out by Chierchia (*to appear*), it is silent on the precise character of the secondary meaning, on the relationship between FCI and NPI, and on the relationship between FCI and disjunction. I accept these criticisms as valid reasons for shifting from the view of FCI as universal and explore the possibility of FCI being an existential whose universal force arises as an implicature. I adopt for concreteness the theory of FCI in Chierchia (*to appear*).[11]

2.2. An Implicature-based Account

Chierchia (*to appear*), in line with Kratzer and Shimoyama (2002) and Chierchia (2006), treats NPI and FCI as indefinites that lexically trigger (sub-)domain alternatives. (29) represents the full scope of the investigation. The main point is that the development of an NPI from an indefinite, and its further development into an FCI, gives a principled account of the fact that languages often employ the same lexical item for both NPI and FCI. FCI can also have a source independent of the indefinite, as is the case for Italian, but even then their fundamental semantic character is akin to that of FCI that have evolved from indefinites:

29.

English XVth   Modern English

Any: NPI ⟶ *Any: NPI and FCI*

Proto Indo-European ⟶ German

Oinos

Einig: plain indefinite

Italian

Alcuno [sg]: NPI

Alcuni [pl]: plain indefinite

Italian FCI: *Qualunque/Qualsiasi* based on wh-series

Chierchia's main point is that these developments can be characterized in terms of specific changes to the meaning of the basic expression. A pure NPI differs from an indefinite in triggering a set of alternatives, the effect of which is to restrict the item's appearance to downward entailing contexts. The switch from a pure NPI to the hybrid NPI/FCI is a shift to lexical triggering of *exhaustified* alternatives, which forces it to occur in modal contexts and have ∀ force (see also Fox 2006). Our present concern being with FCI, I will focus on how ∀ force can be derived from an indefinite base, referring the reader to the original work for the full range of polarity items.

Consider (30a) and its logical representation in (30b).[12] (30c) and (30d) are principles for regulating the distribution of FCI:

30a. *Any student danced.

  b. Assertion: $\exists x$ [student$_w$(x) ∧ danced$_w$ (x)]   *student$_w$ = {a, b}*

   Alternatives: { ONLY [student$_w$(a) ∧ danced$_w$(a)]

        ONLY [student$_w$(b) ∧ danced$_w$(b)] }

   FC-Implicature: [a ∨ b] ∧ ¬ [a ∧ ¬ b] ∧ ¬ [b ∧ ¬a] = a ∨ b ∧ a→b ∧ b→a

$$= \forall x \ [\text{student}_w(x) \rightarrow \text{danced}_w(x)]$$

Scalar-Implicature: $\neg \forall x \ [\text{student}_w(x) \rightarrow \text{danced}_w(x)]$

c. Modal Containment: $SC \subseteq FC$
(SC and FC are the modal bases for the scalar and free choice implicatures, respectively)
   d. Wide Scope Constraint (WSC): (i) [any NP MOD…]   >   (ii) [MOD any NP…]

The statement with FCI-*any* asserts an existential proposition. Additionally, it triggers a set of exhaustified alternatives, each of which is stronger than the assertion.[13] Universal force arises as a consequence of the choice of a weaker proposition, the assertion, over stronger propositions, the alternatives. (30b) shows how the conjunction of an existential assertion with the negated alternatives logically entails the universal.

But, of course, (30a) is an episodic sentence and FCI-*any* is unacceptable. Chierchia points to the fact that the assertion, because of the indefinite, has a scalar implicature which clashes with the FC-implicature. The challenge, then, is to show how modals resolve this impasse. He proposes *Modal Containment* and the *Wide Scope Constraint* as ways of carving out the modal contexts that permit FCI.

Starting with overt possibility modals, there are two relevant LFs to consider but the *WSC* rules out the one where the modal has scope over FCI. The scalar and FC implicatures for (31b), the only legitimate LF, are as given in (32):

31a. Any student/ any of these students can dance.
   b. [any student$_i$ [can [t$_i$ dance]]]
32a. $\neg \ \forall x \ [\text{student}_w(x) \rightarrow \ \exists w': \text{ACC}(w,w'). \ \text{dance}_{w'}(x)]$

   b. $\forall x \ [\text{student}_w(x) \rightarrow \ \exists w': \text{ACC}(w,w'). \ \text{dance}_{w'}(x)]$

This looks like the same contradiction that we had earlier but this is where the notion of *Modal Containment* off-sets the clash. Chierchia suggests that there are two modal bases at play. The free choice modal base is a broader set of worlds, those that are live possibilities according to the intersubjective evidence available to the discourse participants. The scalar modal base is a smaller set, those compatible with the subjective, private 'evidential' source of the speaker. Given this distinction, the FC implicature can be satisfied in a broader set of worlds, while the scalar implicature can be satisfied in the smaller set. The possibility of a small set of worlds in which student *a* and student *b* do not both dance, and a wider set of worlds in which each one does, satisfies *Modal Containment*. The universal FCI is rendered acceptable.

The significance of *Modal Containment* becomes clearer with necessity. I include the partitive version, which highlights the unacceptability of FCI + necessity:

33a. *Any student/ *any of these students must dance.
   b. [any student$_i$ [must [t$_i$ dance]]]

34a. $\neg \forall x [student_w(x) \rightarrow \forall w': ACC(w,w'). dance_{w'}(x)]$ scalar implicature

  b. $\forall x [student_w(x) \rightarrow \forall w': ACC(w,w'). dance_{w'}(x)]$ FC implicature

Even assuming that the set of worlds in the scalar modal base is a proper subset of the FC modal base, the contradiction cannot be avoided. Necessity involves universal quantification so that both *a* and *b* must dance in all the worlds of the FC modal base in order to satisfy the FC implicature. It follows that this also holds in the subset of worlds in the scalar modal base. It becomes impossible to satisfy the scalar implicature, and the FCI predictably unacceptable.

      To complete the picture, let us look at how Chierchia handles two cases in which FCI and necessity can co-occur. The first involves imperatives, which Chierchia takes to have a covert high necessity modal □!. He argues that *WSC* is relaxed for imperatives because the modal is too high in the structure to allow QR of the FCI. LFs like (35b), with FCI under modal, become winners by default:

35a. Push any button.
  b. [! [any button$_i$ [push (you, t$_i$)]]]]
  c. $\forall w' \exists x [button_w(x) \wedge push_{w'}(you, x)]$ *assertion*

  d. $\forall w' \neg\forall x[button_w(x) \wedge push_{w'}(you, x)]$ *scalar implicature*

  e. $\forall w'[push_{w'}(you,a) \wedge \neg push_{w'}(you, b)]$ *exhaustified alternatives*

    $\forall w'[push_{w'}(you,b) \wedge \neg push_{w'}(you, a)]$

    $\forall x [button_w(x) \rightarrow \exists w' (push_{w'} (you, x)]$ *FC implicature*

With modality having wide scope, exhaustification happens below the modal. The assertion and implicatures can be satisfied only in models where the individuals distribute over worlds. The FC implicature can be satisfied by having worlds in which *a* gets pushed and worlds in which *b* gets pushed. The scalar implicature is satisfied if there aren't worlds in which both get pushed. Not only is FCI predicted to be acceptable, the existential quantificational force associated with FCI in imperatives is also derived.

      The second case worth discussing is subtrigging. Chierchia, following Quer (1998) and Dayal 2009 (cf. section 2.1), posits a modal inside the postnominal modifier. Subtrigged examples like (36a) have *WSC* compliant LFs. The crucial difference from the case where FCI had scope over necessity is that the modal in (36b) is inside the restriction:

36a. John talked to any student who was around.
  b. [[any student [$_{evidential}$ who was around]]$_i$ john talked to t$_i$]
  c. $\neg\forall x [[student_w (x) \wedge \forall w' \in SC_w around_{w'}(x)] \rightarrow talk\text{-}to_w(j,x)]$

    $\equiv \exists x [student_w (x) \wedge \forall w' \in SC_w around_{w'}(x) \wedge \neg talk\text{-}to_w(j,x)]$ scalar implicature

  d. $\forall x [[student_w(x) \wedge \forall w' \in FC_w around_{w'} (x) \rightarrow talk\text{-}to_w (j,x)]$ FC implicature

Now the distinction between the two modal bases becomes important. The speaker does not know for sure the set of students who were around. There may well be a student who was around that the speaker does not know of. As far as the speaker's subjective knowledge is concerned, John did not talk to that individual. The scalar implicature is therefore satisfied. However, the speaker also invokes a larger set of worlds, in which John talks to all the students who were there. This is the intersubjective modal base where the FC implicature can be satisfied.

Chierchia points out that when a subtrigged FCI occurs inside an imperative, it necessarily has universal force. This happens because the structure

[□! [FCI □$_{evidential}$…]] allows exhaustification below the imperative operator but with reference to the evidential modal, as in (36) above. Since this is *WSC* compliant, there is no motivation to interpret the FCI in relation to the higher modal, as was the case for the non *WSC* compliant structure in (35).

Chierchia's account, we see, captures a wide array of facts. It does so by appealing to two distinct modal bases and a stipulated preference for wide scope. In the next section, I will present an alternative way of deriving the distribution of FCI within the implicature-based account he proposes. The key points of departure are the following: *Modal Containment* is replaced by a *Viability Constraint on Alternatives*, which delivers without further stipulation the effect of his *Wide Scope Constraint*. Furthermore, FCI will be argued to give rise to a scalar implicature only if it is associated with an overt indefinite. These differences result in different explanations for some facts and different predictions for some.

SECTION 3. REVISITING THE DISTRIBUTION OF FCI

3.1. The Viability Constraint on Alternatives
I adopt Chierchia's general framework, given in (29), and the view that FCI are indefinites with a universal FC implicature. I depart from him, however, on the clash between scalar and FC implicatures as the locus of the distributional restriction. Instead, I suggest that although the exhaustified alternatives triggered by FCI cannot be true, thereby justifying the weaker assertion, the modal base must allow these exhaustified alternatives to be live possibilities. In other words, instead of scalarity I am attributing to FCI a requirement of *viability*, given in (37). To see it in action, consider (38a), which is interpreted in line with Chierchia's theory:

37. *Viability Constraint on Alternatives*: […FCI …] is felicitous iff there exists a model M, world w, and a conversational background g(w), such that each exhaustified alternative is true at w w.r.t to some subset of ∩g(w).

38a. *Any of these students danced.

  b. Assertion: ∃x [student$_w$(x) ∧ danced$_w$ (x)]   *student$_w$ = {a, b}*

  Alternatives: {[student$_w$(a) ∧ danced$_w$(a) ∧ student$_w$(b) ∧ ¬danced$_w$(b)]

  [student$_w$(b) ∧ danced$_w$(b) ∧ student$_w$(a) ∧ ¬danced$_w$(a)]}

FC-Implicature: $[a \lor b] \land \neg [a \land \neg b] \land \neg [b \land \neg a] = a \lor b \land a \to b \land b \to a$

$$= \forall x [student_w(x) \to danced_w(x)]$$

I will start with partitive-FCI, which I take to limit the domain of quantification to the contextually salient set. Sub-domain alternatives are generated in the usual way so that the familiar FCI implicature arises. As illustrated above, episodic statements with partitive-*any* are predicted to be unacceptable. While it is possible to create a model in which the assertion and the FC-Implicature both hold, ie a model in which every student danced, it is not possible to satisfy *Viability*. In an episodic statement there is only one accessible world, the world of evalutaion, so there are no subsets where *only a is a student and danced* and *only b is a student and danced* can hold. The sentence is infelicitous. In the next subsections we will explore the empirical reach of the *Viability Constraint*. We will see that it imports into the implicature based account of FCI analyzed as a lexical existential, the effect of *fluctuation* (Dayal 2009), which was defined on FCI analyzed as a lexical universal.

3.2. Modals and Partitive ∀-FCI

We have established that a plurality of worlds is a precondition for *Viability*. Our next challenge is to sift out the types of modality that are compatible with it. Recall from (3) that possibility modals are particularly conducive to FCI in that they alone allow partitive FCI. Consider (39):[14]

39a. Any of these students can dance
 b. [[any of these students]$_i$ [can [t$_i$ dance]]]
 c. Assertion: $\exists x \, \exists w': ACC(w,w'). [s_w(x) \land d_{w'}(x)]$
 d. Alternatives: $\{\exists w':ACC(w,w').[s_w(a) \land d_{w'}(a)] \land \neg \exists w':ACC(w,w').[s_w(b) \land d_{w'}(b)]$

 $\exists w':ACC(w,w').[s_w(b) \land d_{w'}(b)] \land \neg \exists w':ACC(w,w').[s_w(a) \land d_{w'}(a)]\}$

 e. M1: $\cap g(w) = \{w1, w2, w3\}$; $\forall w \, student_w = \{a,b\}$,

 dance = $\{<w1, \varnothing>, <w2, \{a\}>, <w3,\{b\}>, <w4, \{a,b\}>\}$

In model M1 the assertion is true and every exhaustified alternative is false. That is, M1 is a model in which the universal FC-Implicature $\forall x[s_w(x) \to \exists w'd_{w'}(x)]$ arises. Furthermore, for each alternative, there is a subset of accessible worlds in which it is true: *only a is a student and can dance* is true in $\{w1, w2\}$; *only b is a student and can dance* is true in $\{w1, w3\}$.[15] Thus (39a), under reading (39b), is felicitous and may be true or false in a given model, depending on whether it verifies the assertion and the FC-implicature. So, for example, (39b) would be evaluated false in a model M1' where *dance = {<w1, ∅>, <w2, {a}>, <w3,{a}>, <w4, {a}>}* because not all the alternatives are false. M1, a model in which the assertion, the FC implicature and *Viability* can all be

satisfied, satisfies the presupposition of FCI+possibility, allowing (39a) to be evaluated in M1' but the facts of M1' determine its truth value.[16]

Turning to necessity modal contexts where partitive-*any* is unacceptable, *Viability* straightforwardly accounts for it:

40a. *Any of these students must dance

   b. [[any of these students]$_i$ [must [t$_i$ dance]]]

   c. Assertion: $\exists x \forall w' \, ACC(w,w') \, [st_w(x) \wedge d_{w'}(x)]$

   d. Alternatives: $\{\forall w':ACC(w,w').[s_w(a) \wedge d_{w'}(a)] \wedge \neg \forall w':ACC(w,w').[s_w(b) \wedge d_{w'}(b)]$

                    $\forall w':ACC(w,w').[s_w(b) \wedge d_{w'}(b)] \wedge \neg \forall w':ACC(w,w').[s_w(a) \wedge d_{w'}(a)]\}$

   e. M2: $g(w) = \{w1, w2, w3\}$; $\forall w \, student_w = \{a,b\}$

         dance = $\{<w1, \{a,b\}>, <w2, \{a,b\}>, <w3,\{a,b\}>\}$

In M2 the assertion is true while all the alternatives are false. That is, it is a model in which the FC-Implicature $\forall x[s_w(x) \rightarrow \forall w' d_{w'}(x)]$ arises. However, it does not satisfy *Viability*– no alternative is true in any subset of accessible worlds.

It is worth considering what goes wrong with other candidates for *Viability*. A model where *dance* = $\{<w1, \{a\}>, <w2, \{a\}>, <w3,\{a,b\}>\}$ would be one in which the assertion would be true, but not all alternatives would be false: *only a must dance* would be true so the FC-implicature would not arise. And a model where *dance* = $\{<w1, \{a\}>, <w2, \{b\}>, <w3,\{a,b\}>\}$ would make the assertion false (remember *any* has scope over *must*). Thus there is no model in which the assertion, the FC implicature and *Viability* can all be satisfied. Partitive *any* with modals of necessity are doomed to be infelicitous. Note that *Viability* builds in a kind of modal distributivity, requiring that each exhaustified alternative hold in some subset of accessible worlds. This has interesting consequences for the Canasta example, argued by Menéndez-Benito (2005, 2010) to be problematic for the wide scope universal account of Dayal (1998, 2004):

41a. In Canasta, you can take any of the cards from the discard pile when you have two
     cards that match its top card.

   b. $\forall x$ [card-in-the-discard-pile$_w$(x) $\rightarrow \exists w'$ pick$_{w'}$ (you,x)]

  c. Models admitted by the rules of Canasta include only two types of worlds:
     Type 1: worlds in which you take all the cards in the discard pile
     Type 2: worlds in which you don't take any of the cards in the discard pile

The challenge is that (41a), under an analysis like (41b), is predicted to be true because for each card there exists a permitted world in which it is picked. It just so happens that the worlds in which the various cards are picked coincide. The intuition, however, is that the sentence is unacceptable. This follows in the present account because of the modal distributivity for exhaustified alternatives encoded in the *Viability Constraint*. *Viability* does not prohibit all unexhaustified alternatives from holding in a single world in some model (cf. w4 in M1). What it enforces is that there be worlds in which the extension of

pick include *a* but not *b*, and worlds in which the extension of *pick* include *b* and not *a.* But the rules of Canasta, given in (41c), rule out all such models. *Viability* correctly predicts (41a) to be unacceptable.[17]

Before looking at further cases, let us address a question that the preceding discussion begs, namely the status of these sentences under a narrow scope reading for the FCI:

42a. [can/must [**viability-check** any P_i [t_i Q]]]

   b.   [any P_i [t_i Q]] = $\exists x$ [$P_w(x) \wedge Q_{w'}(x)$]

Assuming that *Viability* checking takes place at the point in the structure where an FCI occurs, we can see in the schema in (42b) that the world variable w' in its scope will not be bound at that point. As far as *Viability* is concerned, then, such a structure is equivalent to that of an episodic statement: there is only one accessible world in the scope of the FCI. We conclude, at least for now, that the only LFs that stand a chance are those in which FCI takes wide scope. That is, our theory so far is in keeping with the conventional view of FCI as having a propensity for wide scope. We will return to this later.

3.3. Genericity and Non-partitive ∀-FCI

Thus far we have looked at partitive-FCI which fixes the domain of quantification at the world of evaluation and seen that only modals of possibility are able to satisfy *Viability*. We now turn to sentences with non-partitive FCI, which we noted in (3) to have a wider distribution. We will see that this is because their interpretation is more nuanced. When they are interpreted with their domain of quantification fixed to the world of evaluation, their behavior, unsurprisingly, is exactly that of partitive-FCI. But in contexts where their domain varies across worlds, other options open up. There are two main sources for the relevant variation, genericity and subtrigging. I take these up in turn.

(43a) shows that FCI yield generic interpretations but cannot be bound by an adverb of quantification, unlike a regular indefinite or a bare plural.[18] Thus, the source for the generic reading of (43a) cannot be the LF in (43b). Instead, if we allow the FCI to scope out to a higher position, binding by adverbs is ruled out. We therefore take the LF in (43c) as the structure for generically interpreted FCI:[19]

43a. Any student (*usually/*sometimes) works hard.
  b. [GEN / ADV-of-QUANT [any student] [works hard]]
  c. [any student$_i$ [GEN [t_i] [works hard]]]

Although switching to situations would be closer to the desired interpretation for generic sentences, I will continue talking of worlds in the discussion here to keep the exposition of the various cases maximally similar. The main question to be determined with respect to to (43c) is the status of the world variable on the FCI. Should it remain free, as in (44a), or should it be existentially bound, as in (44b)?

44a.   Assertion: $\exists x$ [student$_w(x) \wedge$ [GEN w':ACC(w,w').[in$_{w'}(x)$] [work-hard$_{w'}(x)$]]]

b.   Assertion:

∃x ∃w:ACC(w_a,w). [student_w(x) ∧ [GEN w':ACC(w,w').[in_w'(x)] [work-hard_w'(x)]]]

In (44a), with the world variable on *student* free, the assignment function will anchor interpretation to the world of evaluation. This, however, would yield a *de facto* habitual reading about students in the actual world. We know from (4a) that a partitive-FCI does not allow such a reading. The explanation for this is parallel to the explanation for (40a), under the standard view of the GEN operator as a universal of sorts. It is not clear, then, why a non-partitive FCI should be acceptable when it too is interpreted with a fixed domain. I suggest, therefore, that the world variable on *student* is existentially bound, as in (44b) and propose the following computation, where the extension of *student* in the actual world does not play a role:

44c. Alternatives:

{∃w:ACC(w_a,w).[student_w(a) ∧[GEN w':ACC(w,w').[in_w'(a)] [work-hard_w'(a)]]]

∧ ¬ ∃w:ACC(w_a,w).[student_w(b) ∧[[GEN w':ACC(w,w'). [in_w'(b)] [work-hard_w'(b)]]]

∃w:ACC(w_a,w).[student_w(b) ∧[[GEN w':ACC(w,w').[in_w'(b)] [work-hard_w'(b)]]]

∧ ¬∃w:ACC(w_a,w).[student_w(a) ∧[GEN w':ACC(w,w').[in_w'(a)] [work-hard_w'(a)]]] }

d. ∀x ∀w:ACC(w_a,w).[student_w(x) → [GEN w':ACC(w,w').[in_w'(x)] [work-hard_w'(x)]]]

e. Model M3:   student   work-hard
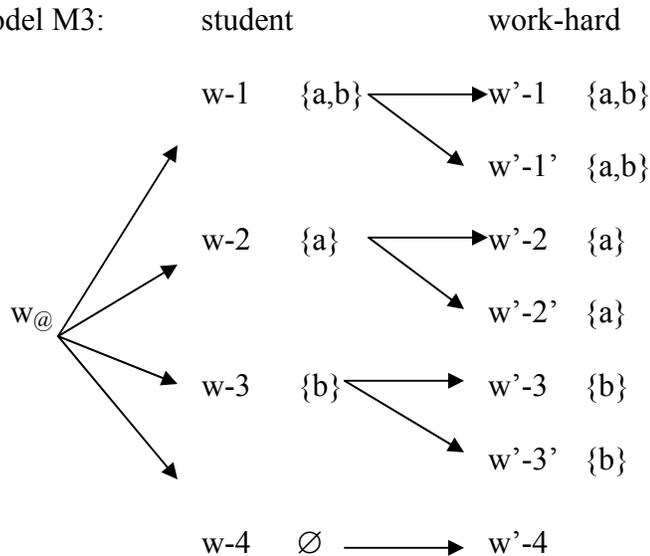
Let us assume that the modal base is determined by the speaker's beliefs about the properties of students in general. This allows for models like M3 in which students vary across worlds, allowing for worlds in which the only student is *a* and worlds in which the only student is *b* and so on. The FC implicature is that any student in any world is such that he/she works hard in all accessible worlds. The exhaustified alternatives are clearly

false in this model but what we need to show is that *viability* is satisfied. The class of worlds exemplified by w-2 satisfies alternative 1. Here *a is the only student and works hard* holds because *a* is the only student. Similarly, the class of worlds exemplified by w-3 verifies *b is the only student and works hard.* The generic reading of an unmodified FCI is thus derived and the habitual reading of a contextually anchored/partitive FCI ruled out.

Note that since there is a double layer of modality, as it were, built into such examples, it does not matter whether the GEN operator is replaced by an overt necessity or possibility modal: *any student must/can work hard. Viability* for the necessity modal is satisfied along the same lines as for covert genericity, since they both involve universal quantification. Possibility, of course, remains unproblematic. Significantly, an overt adverb in the scope of FCI is correctly predicted not to lead to quantificational variability.

The analysis for FCI in terms of existential binding of its world variable readily extends to generic readings of quantified terms, mentioned earlier in section 2.1. (45a), for example, says that for every x, x a student in some world, x works hard at all worlds accessible from it:[20]

45a. Every student works hard.
   b. Every man loves his mother.
   c. Most students work hard.
   d. Most men love their mothers.

Interestingly, *every NP/most NP* also only allow for generic readings with the covert GEN operator, not with adverbs of quantification. *Every student usually/rarely works hard* says something about all students, not about most or some of them, and *most students always/rarely work hard* says something about most students, not about all or some of them. The existence of such examples, then, is independent motivation for the double genericity account for FCI presented here in which the base world for the GEN operator itself has a modal dimension.

Crucial to the explanation above is the view that the world variable on noun phrases can be existentially bound. Enç (1986) established that the temporal interpretation of noun phrases with determiners is independent of the verb and argued that the common noun can be interpreted indexically. I have simply extended this idea to allow for existential binding of the world variable. I illustrate with reference to (45a), which is ambiguous between a habitual and a generic reading. (46a) takes the world variable on both arguments of the determiner to be identified. This leads to the reading where the set of students is anchored to the world of evaluation, and the predication refers to worlds accessible from it. This is the habitual reading of the sentence, where reference is to a fixed set of entities:

46a. $⟦every⟧ = \lambda P \lambda Q \forall x [P(w)(x) \rightarrow Q(w)(x)]$

$⟦student⟧ = \lambda w' \lambda x [student(w')(x)]$

$⟦every\ student⟧ = \lambda Q \forall x [student(w)(x) \rightarrow Q(w)(x)]$

⟦[GEN [t$_i$] [works-hard]] ⟧ =

   λw' λx$_i$ [GEN w'':ACC(w',w'').[in(w'')(x$_i$)] [work-hard(w'')(x$_i$)]]

⟦[every student$_i$ [GEN [t$_i$] [works-hard]]] ⟧ =

∀x [st (w)(x) →[GEN w'':ACC(w,w'').[in(w'')(x)] [w-h(w'')(x)]]]

b. ⟦every⟧ = λP λQ ∀x ∃w':ACC(w,w').[P(w')(x) → Q(w')(x)]

   ⟦every student⟧ = λQ ∀x ∃w':ACC(w,w').[st(w')(x) → Q(w')(x)]

   ⟦[every student$_i$ [GEN [t$_i$] [works-hard]]] ⟧ =

∀x∃w':ACC(w,w').[st(w')(x)→[GENw'':ACC(w',w'').[in(w'')(x)][w-h(w'')(x)]]]

In (46b), the world variable on the common noun is existentially bound, and by identification, the base world in the predication is also bound by the same quantifier. The world of evaluation now determines the modal base within which the choice of students can vary, delivering the widening that allows *viability* to be satisfied.[21]

   Summing up, I have argued that when the domain of the FCI can vary across worlds, *viability* can countenance a universal modal in its scope, be it overt necessity or or the covert GEN operator. This explanation has the advantage of blocking the possibility of quantificational readings with overt adverbs of quantification. An analysis in terms of a double layer of genericity has the further advantage of also extending to generic readings of quantified terms.[22]


3.4. Subtrigging and Non-partitive ∀-FCI

   So far, we have looked at non partitive FCI in modal statements. We now turn to their behavior in episodic statements. The first question to address is why a non partitive FCI, whose domain can vary across worlds, is unacceptable in such statements:

47a. # Any student is working hard.

   b. ∃x ∃w': ACC(w,w').[student$_{w'}$ (x) ∧ working-hard$_w$(x)]

   c. Model M4   student   working-hard
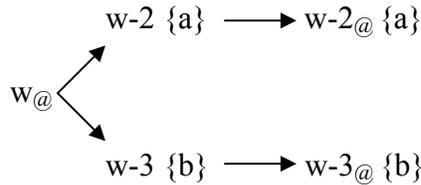
Assuming again a modal base determined by the speaker's beliefs about students, it is unclear how the actual world would be accessible from such worlds. There is nothing about the property of being a student that guarantees that he/she would be working hard in the actual world. Model M 4 shows the oddity of having a modal interpretation for the

FCI and a non modal interpretation for the predicate. Note in this connection that there are also necessity contexts that do not support a generic interpretation of the universal, and where indefinites have existential rather than generic readings. These are precisely the contexts where unmodified FCI *any* is ruled out (Dayal 1998):

48a. You must pick a flower/every flower/*any flower.
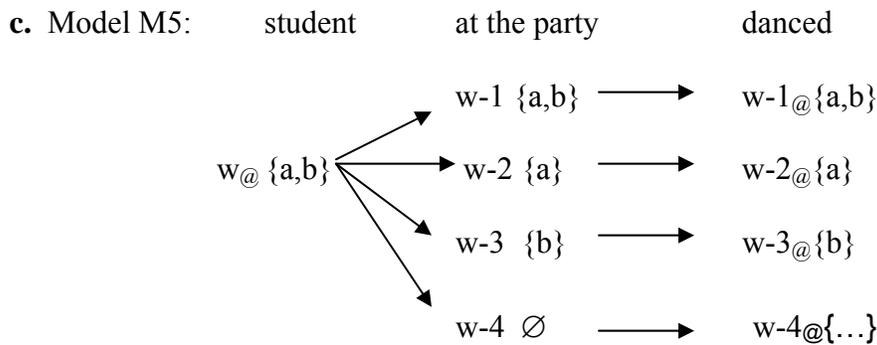 **b.** A pilot/every pilot/*any pilot must be flying this plane.

Although the predications involve modals, the interpretation is anchored to the actual world due to indexical material, *you/this plane*. For all practical purposes, then, they are episodic statements like (47a) and reject FCI for the same reasons. The actual world cannot be accessible from a modal base that draws on the properties of flowers or pilots. Of course, a possibility modal in place of necessity would not pose a problem. Possibility accepts an FCI with a fixed quantificational domain, as discussed in section 3.2.

Against this background, let us look at the impact of subtrigging on FCI. Crucial to the ability of a modifier to license FCI is its phrasal character, which in English is related to the postnominal position. Furthermore, as argued by Quer (1998), the modifier must host subjunctive mood. Taking the interpretation of the head noun to be anchored to the actual world, with an existential modal over epistemic alternatives introduced by the subjunctive mood in the modifier, we have:

49a. Any student who was at the party danced.

  b. Assertion: $\exists x [student_w(x) \wedge \exists w': ACC(w,w').[a\text{-}t\text{-}p_{w'}(x) \wedge danced_{w'}(x)]]$

Alternatives: { $\exists w': ACC(w,w').[student_w(a) \wedge a\text{-}t\text{-}p_{w'}(a) \wedge danced_{w'}(a)] \wedge$

$\neg \exists w': ACC(w,w').[student_w(b) \wedge a\text{-}t\text{-}p_{w'}(b) \wedge danced_{w'}(b)]$,

$\exists w': ACC(w,w').[student_w(b) \wedge a\text{-}t\text{-}p_{w'}(b) \wedge danced_{w'}(b)] \wedge$

$\neg \exists w': ACC(w,w').[student_w(a) \wedge a\text{-}t\text{-}p_{w'}(a) \wedge danced_{w'}(a)]$ }

FC Implicature: $\forall x \exists w': ACC(w,w').[[student_w(x) \wedge a\text{-}t\text{-}p_{w'}(x)] \rightarrow danced_{w'}(x)]$

  c. Model M5:   student   at the party   danced

w-1 {a,b} $\longrightarrow$ w-1$_@${a,b}

w$_@$ {a,b} $\longrightarrow$ w-2 {a} $\longrightarrow$ w-2$_@${a}

w-3 {b} $\longrightarrow$ w-3$_@${b}

w-4 $\varnothing$ $\longrightarrow$ w-4$_@${...}

The point to note is that the modal base is determined not on the speaker's beliefs about students in general, or even about students in the actual world, but rather on beliefs about

the party under discussion. (49a) asserts what, in view of what the speaker knows about the party, was the case involving students and dancing. If the speaker lacks full knowledge about the set of students who were there, the lexically triggered alternatives will be false, giving rise to the FC implicature. As we can see from Model M5, what we have are different possible histories for the actual world. And *Viability* is satisfied with reference to these distinct histories. So alternative 1 is satisfied by the history represented by w-2, alternative 2 by the history represented by w-3.

We have looked so far at examples of subtrigging involving epistemic modality cued to the speaker, but cases like the following, suggest that it may sometimes be cued to an attitude holder:

50a. At the end of his speech, the President thanked any soldier who had fought in the Gulf War.
  b. Assertion:

$\exists x \ \exists w':ACC(w,w').[soldier_w (x) \land there_{w'}(x) \land f\text{-}i\text{-}t\text{-}GW_{w'} (x) \land thank_{w'}(the\text{-}pres,x)]$

FC Implicature:

$\forall x \ \exists w':ACC(w,w').[[soldier_w (x) \land there_{w'}(x) \land f\text{-}i\text{-}t\text{-}GW_{w'} (x)] \rightarrow thank_{w'}(the\text{-}pres,x)]$

A context that would support (50a) would be one in which the President may be addressing a large group of soldiers, some of whom may have fought in the Gulf War. Or it may be a televised speech being listened to by an unknown number of Gulf War soldiers. The modal base is determined by the President's lack of knowledge about the set of soldiers in front of him/listening to him with the relevant property.[23]

A question that remains to be addressed is why indicative mood in the modifier does not license FCI. I have argued that the modifier is responsible for limiting the domain in a way that the modal base can feed into the histories of the actual world. The difference between subjunctive and indicative mood is that the former but not the latter allows for a plurality of worlds. With indicative mood the presence or absence of a modifier does not lead to the kind of variation across worlds needed for the satisfaction of *viability*.

The approach to subtrigging I am presenting here, I believe, captures what is at the heart of the oft-voiced intuition that subtrigged FCI has a conditional interpretation (Quer 1998, among others). However, a question that earlier theories advocating a conditional interpretation leaves unaddressed is why something similar does not happen with ordinary indefinites. The present account makes some headway in this. According to Villalta (2008), 'a proposition p that is the complement of the matrix predicate requires the subjunctive mood iff the matrix predicate introduces an ordering relation between propositions and compares p to its contextually available alternatives'. As is obvious, mood in relative clauses is not selected so an account of mood in complement clauses cannot be applied directly. Villalta's insight, however, resonates with the premises of the alternative-based account that I am following here. The difference between an ordinary indefinite and an FCI is precisely in the activation of alternatives, and the asserted proposition can be ordered with respect to its (sub)-domain alternatives in terms of strength. An ordinary indefinite with a modifier in subjunctive mood is unacceptable in

episodic statements. For this reason, it neither has a conditional interpretation nor does it license FCI.

To sum up, I have shown how an FCI determiner and a subjunctive mood modifier, by fulfilling each other's licensing requirements, work together to make episodic statements hospitable environments for each other. While an overt modifier locating the eventuality at a time and place makes this explicit, the account also applies to cases where the modifier is covert.

3.5. Numeral/Supplementary FCI

We have so far considered FCI with universal force. As mentioned earlier, FCI can also have existential force. We will now focus on the latter, as exemplified by numeral *any* in English and *un N Qualsiasi* in Italian. Chierchia derives the existential force of such FCI from LFs in which the modal scopes over FCI (cf. section 2.2). I have argued, however, that *Viability* cannot be satisfied in such LFs because the relevant world variable is free, lacking the ability to refer to a plurality of worlds, at the point at which *viability* would be checked:

51a. Any student can/*must dance.
   b. *[can/must [$_{\text{Viability-check}}$ any student$_i$ [t$_i$ dance]]]

Note, however, that a high modal LF can satisfy *Viability* just in case there is a possible LF in which checking can take place above the modal. I suggest that a numeral/supplementary FCI allows precisely this to happen because it is possible for the numeral to outscope the modal, while allowing the domain alternatives to have lower scope. To see how, consider (52) where the numeral *any* phrase has a split quantificational analysis of the kind that has been proposed for *how-many* phrases:

52a. Any one student can/must dance.
   b. [$_{\text{Viability-check}}$ one$_j$ [can/must [[any t$_j$ student$_i$] [t$_i$ dance]]]]

I also claim that this LF, because it is tied to overt numerals, has a scalar implicature. (53) and (54) illustrate how the various pieces work together:[24]

53a. Any one student/any one of these students can dance.

   b. Assertion: $\exists n$ [n=1 $\wedge$ $\exists w'$ $\exists x$ [n-many-student$_w$(x) $\wedge$ dance$_{w'}$(x)]]

   c. Scalar Implicature: $\neg$ $\exists n$ [n $\geq$ 2 $\wedge$ $\exists w'$ $\exists x$ [n-many-student$_w$(x) $\wedge$ dance$_{w'}$(x)]]

   d. Alternatives: {$\exists n$ [n=1 $\wedge$ $\exists w'$ [n-many-student$_w$(a) $\wedge$ dance$_{w'}$(a)]] $\wedge$

                        $\neg\exists n$ [n=1 $\wedge$ $\exists w'$ [n-many-student$_w$(b) $\wedge$ dance$_{w'}$(b)]]

                $\exists n$ [n=1 $\wedge$ $\exists w'$ [n-many-student$_w$(b) $\wedge$ dance$_{w'}$(b)]] $\wedge$

                        $\neg\exists n$ [n=1 $\wedge$ $\exists w'$ [n-many-student$_w$(a) $\wedge$ dance$_{w'}$(a)]]}

     FC Implicature: $\forall x$ [1-many-student$_w$(x) $\rightarrow$ $\exists w'$ danced$_{w'}$(x)]

   e. M6: dance = {<w1, {a}>, <w2, {b}>, <w3,$\varnothing$>}

M6 is a model in which the scalar implicature is satisfied: no world has more than one dancing student. It is also a model in which the alternatives are false: neither *a* nor *b* are such that they are the only individual who is a student and possibly dances. This licenses the FC implicature. Finally, it is a model in which *Viability* is satisfied: there are subsets of worlds which verify the exhaustified alternatives: w1 for alternative 1 and w2 for alternative 2.

Numeral *any* with necessity also works well under this account:

54a. Any one student must dance.

  b. Assertion: $\exists n\ [n=1 \wedge \forall w' \ \exists x \ [n\text{-many-student}_w(x) \wedge \text{dance}_{w'}(x)]]$

  c. Scalar Implicature: $\neg \ \exists n\ [n=2 \ \forall w' \ \exists x \ [n\text{-many-student}_w(x) \wedge \text{dance}_{w'}(x)]]$

  d. Alternatives: $\{\exists n\ [n=1 \wedge \forall w' \ [n\text{-many-student}_w(a) \wedge \text{dance}_{w'}(a)]] \wedge$

$\neg \exists n\ [n=1 \wedge \forall w' \ [n\text{-many-student}_w(b) \wedge \text{dance}_{w'}(b)]]$

$\exists n\ [n=1 \wedge \forall w' \ [n\text{-many-student}_w(b) \wedge \text{dance}_{w'}(b)]] \wedge$

$\neg \exists n\ [n=1 \wedge \forall w' \ [n\text{-many-student}_w(a) \wedge \text{dance}_{w'}(a)]]\}$

  FC Implicature: $\forall x \ [1\text{-many-student}_w(x) \rightarrow \exists w' \ \text{danced}_{w'}(x)]$

  e. M7: dance = $\{<w1, \{a\}>, <w2, \{b\}>, <w3,\{a,b\}>\}$

Here the scalar implicature forces every world to have at least one dancing student. The exhaustified alternatives say for each of *a* and *b* that they are the only one who is a 1-many-student and dances in every world. These alternatives can be false if at least one world has a different dancing student, giving rise to the FC implicature. Note that this is compatible with the requirements of *Viability*, as evident in M7.[25]

It is worth considering the impact of the scalar implicature that I claim enters into the calculation in these cases. Interesting distinctions with regard to an upper bound on the size of the relevant set emerge. (55a) and (55b) show a distinction between non-numeral and numeral *any*, and (56a) and (56b) show a distinction between numeral *any* in the context of possibility vs. necessity:

55a. John can take any of these books.
  b. John can take any one of these books.

56a. #You may take any two apples, though you could take more.
  b. You must take any two apples, though you could take more.
  c. You must answer any two of the questions on this page, but if you answer more you will not be penalized.

If John takes books *a* and *b*, upon utterance of (55a), he can hardly be considered guilty of disobedience. If he does so upon utterance of (55b) he is very likely going to be in trouble. The reason for the upper bound is the scalar implicature that is present in the latter case. (56a) – (56b) compares the effect of the scalar implicature in the case of possibility vs. necessity. In the latter case, the scalar implicature is compatible with there

being worlds in which the cardinality of the relevant set is greater than what is specified by the numeral. Blocked are models in which the upper limit is crossed in every world. This simply follows from what we know independently about modals, interacting with the particulars we have identified as crucial for FCI.

To sum up, I have derived the existential quantificational force in much the same way as Chierchia, by interpreting LFs where modals outscope FCI. In the present approach, this ensures that reference can be to a plurality of worlds, a prerequisite for the felicity requirement encoded in *Viability*. I have departed from him, however, in making an overt numeral in a split quantificational configuration crucial for delivering this effect. I submit that this allows for a more straightforward explanation for the difference in the compatibility of partitive/non-generic FCI with necessity vs. that of numeral FCI. By restricting scalar implicatures to numeral FCI, I have also provided a simple account for differences in upper bound between the various cases we have considered: non-numeral $\forall$-FCI, numeral FCI + necessity, numeral FCI + possibility. I have not discussed supplementary FCI here but I take it to belong with numeral FCI. That is, the overt indefinite introduces the scalar implicature and it is the element that allows the modal above the FCI to be included in the calculation of *Viability*. These issues will also be relevant in our discussion of imperatives.

3.6. Imperatives and FCI

Imperatives are generally considered good environments for FCI so it is reasonable to impute to the semantic operation associated with them the crucial role in the licensing of FCI. Chierchia, for example, associates imperatives with a high universal modal: [! [any P Q]] but in the approach I am advocating this option is not available. I submit that this is not a bad result because imperatives, in and of themselves, do not provide a hospitable environment for FCI. To see this, consider (57). Imagine them being uttered in contexts where they are not responses to previous utterances or to some other contextually available non-verbal prompt. You will find that the FCI are awkward at best, regardless of whether they are construed as commands, suggestions or requests:

57a. Write down any word!
  b. Please taste anything.
  c. Eat any fruit.

This shows clearly that the imperative operator cannot be the locus of the explanation. The challenge, of course, is to identify the factors that do make FCI in imperatives acceptable. I will elaborate on this, noting in advance, that the factors I isolate as critical are not meant to exhaust the range of possibilities. Rather, they are meant as illustrative of the need for a more refined empirical generalization regarding FCI and imperatives, and as suggestive of the sort of explanation that is needed. The ideas I present build on the analysis of $\exists$-FCI in Dayal (2004) but the particulars are substantially different since the fundamental terms of the analysis have changed.

To begin with, unsurprisingly, all the examples in (57) become acceptable under appropriate subtrigging. The quantificational force in (58) is universal: they cannot be comfortably followed with *but no more than one*. The examples in (59) are familiar from

the literature on covert subtrigging. They follow straightforwardly from what we now know about the role of subtrigging in the interpretation of FCI and require no elaboration at this point:[26]

58a. Write down any word you don't know!
   b. Please taste anything you like.

59a. Confiscate any liquor (you find).
   b. Report any errors (you see) immediately.

     The question is how to account for imperatives that admit FCI without the benefit of subtrigging. To address this issue, I would like to begin with the distinction Han (2000) makes between (straightforward) directives, which include commands as well as requests, and other speech acts performed by imperatives: permissions, wishes, threats and dares. The cases we have looked at so far, controlling the context as we have, would fall under the rubric of directives. These involve instructions to the addressee to include a particular action that is either not in the addressee's plan of action or at least the context does not make it clear that it is. Now consider (60a) which is structurally parallel to cases considered so far, but which Han classifies as a permission. (60b) is another example of an imperative used to grant permission, though note that a declarative with an overt possibility modal would also be appropriate here. The point is that such imperatives do not seem to unequivocally allow existential construals for FCI, as seen in (61). My intuition is that either Speaker B would use a subtrigged example where context might bias the interpretation to include only one book or Speaker B would opt for a declarative with an overt modal:

60a. Please come in. *In response to a knock.*
   b. Speaker A: Can I take this cookie?
     Speaker B: Yeah, take it/Sure, you can take it.

61a.. Speaker A: Can I take this book?
   b. Speaker B: Sure, take any book (you want).
   b'. Speaker B: Sure, you can take any book (you want).

     There are, of course, contexts where the interpretation of the FCI is clearly existential, without a modifier serving that end. (62a) is an example of an advice or suggestion, given possibly in response to a request for information. (62b) involves directions of the kind seen in recipes. FCI appear natural in both and readily yield an existential interpretation. Note that they can be easily substituted by supplementary FCI. Versions with overt possibility modals, though not ruled out, are not preferred in these contexts:

62a. Speaker A: How can I get to the movie theatre?
     Speaker B: Take any number 3 bus and get off at the third stop.
  b. Pour the batter into any 8" square pan and bake at 350 for 20 minutes.

Taking (62a)-(62b) as a starting point in understanding the role of imperatives in hosting ∃-FCI, let us see what sets apart these two cases from the ones considered earlier.

I would like to suggest that these two, like most of the examples of ∃-FCI in the literature, have a secondary modality of a teleological flavor, cued to the purpose or goal of the directive action at the core of the imperative.[27] Taking a bus is a way of reaching the theatre, pouring batter into a pan of the right size a way of ensuring a good outcome for the baking project. Furthermore, one can infer from the context that there is an existential bound: one takes only one bus at a time, one needs only one pan for a single cake. Thus we have all the pieces required to arrive at the existential interpretation of the FCI. I represent this schematically in (63a) and give elaborations in (64a)-(64b), attempting a rough approximation of the analysis required for purpose clauses:

63a. [MODAL$_{\text{IMP}}$ [$_{\textbf{viability-check}}$ numeral/indefinite$_i$ [MODAL$_{\text{GOAL-of-IMP}}$ [FCI-base$_i$ […]]]]]
   b. *[$_{\textbf{viability-check}}$ numeral/indefinite$_i$ [MODAL$_{\text{IMP}}$ [FCI-base$_i$ […]]]]]

64a. ∃n [n=1 ∧ ∀w' ∃x [n-many-bus#3$_{w'}$(x) ∧ take$_{w'}$ (addressee, x)]
$$\text{[at-theatre}_{w'} \text{ (addressee)]]}$$
   b. ∃n [n=1 ∧ ∀w' ∃x [n-many-8"pan$_{w'}$(x) ∧ pour-batter-into$_{w'}$(addressee, x)]
$$\text{[bake-successfully}_{w'} \text{ (addressee)]]}$$

(63a) is premised on the fact that existential force results from an LF in which the modal outscopes FCI, that the numeral/indefinite is needed to make the relevant structure visible to the calculation of *Viability*, and that the second modal is needed because the higher modal associated with the imperative speech act does not interact with sentence internal expressions, ruling out (63b) as a possibility. The main thrust of the argument here is that the directive action can have a conditional interpretation (see Han (2000) and references there for other instances of conditional interpretations of imperatives). This provides the appropriate environment for FCI.[28]

A question one might well ask at this point, is why some imperatives are easier to interpret teleologically while others are not. I do not have a definitive answer to this, but it is worth looking at the following examples in this connection. The sentences in (65) are variants of the unacceptable sentences in (57), with the added benefit of a numeral or an overt indefinite:

65a. Write down any one word/ Write down a word, any word.
   b. Please taste any one thing/ Please taste something, anything.

A close examination of intuitions reveals that acceptability of the FCI is accompanied by a sense that the directive action has a goal. My claim is that while the overt indefinite element allows the split from the FCI base, it is the goal that provides the high modal for *Viability* to operate on. These are the two factors that are crucial to licensing of FCI – imperatives just happen to provide a particularly conducive environment for them.

Highlighting the role of a secondary, teleological modality in making ∃-FCI available resonates in an interesting way with the discussion of selectional restrictions for

supplementary/numeral FCI in Dayal (2004). The non-modal intensional contexts that support these FCI were noted to be those that also support purpose clauses:

66a. She was looking for a policeman, any policeman (to report the crime to).
   b. She was dreaming of a policeman (#to report the crime to).
   b'. #She was dreaming of a policeman, any policeman.

The analysis there drew on the fact that the supplementary clause has an elaboration with an overt modal: *She was looking for a policeman, it could be any policeman; take a card, any card will do.* The idea was that there is always a modal in the supplementary clause which needs a purpose clause in the matrix to draw its modal base from. In the approach I am now advocating, the purpose clause is important in allowing *viability* to be satisfied. If there is a supplementary clause with an overt modal, it can draw on the purpose clause for its modal base, but it is no longer necessary to posit a modal for numeral FCI or for supplementary FCI when it does not have one.

   Another fact noted there was that these FCI are unacceptable in episodic contexts, even with the benefit of subtrigging, a fact also noted for Italian by Chierchia 2006. Interestingly, acceptability improves considerably if continuations give some indication of a purpose behind the directed action. (67b), for example, suggests that the reader wanted to avoid someone and picking up a book was a way to achieve that goal:[29]

67a. # She picked up a book, any book (that was there).
   b. She picked up a book, any book (that was there), and pretended to read.

   To sum up, I have shown that the imperative speech act operator itself cannot be the source for licensing ∃-FCI. The reason imperatives appear to be such good hosts for ∃-FCI is because it is relatively easy, given the nature of the speech acts for which they are used, to (a) impute a secondary modality cued to the goal of the directed action and (b) to infer from the context an existential statement of the relevant kind. The explanation presented here makes crucial use of these aspects, yielding an account in better sync with the facts. No doubt there is more to be one in this connection, but I hope to have at least shifted the discussion from considering imperatives *per se* as conducive to FCI, to the need for a more fine-grained understanding of the interaction between imperatives and FCI.

4. Conclusion

   I will conclude by trying to place the *Viability Constraint* against earlier proposals in the literature. Since I have stayed close to the alternative based approach of Chierchia (*to appear*), the comparisons with it are self-evident. A detailed comparison with it and other alternative-based accounts such as Menéndez-Benito (2005, 2010) and Aloni (2007) would have been appropriate. Also appropriate would have been a comparison with earlier accounts (Giannakidou 1998, 2001, Jayez and Tovena 2005 among others) that do not refer to alternatives. Unfortunately, that must be left for another occasion. Here I will restrict myself to the following comment. I believe the current proposal differs in the precise way in which it separates the three components that seem to be

crucial in predicting distribution: fixed vs. variable domain of quantification, episodic vs. modal predication, and existential vs. universal quantification over worlds. *Viability,* like its predecessor *fluctuation,* can be satisfied when the denotation of the noun phrase varies across worlds, as in proposals based on variation or irreferentiality. But if the modality is of the right type, it can also be satisfied when reference is to a fixed set of entities. This view of FCI licensing has resulted from looking closely at the role of subtrigging, partitivity, and covert genericity (that is, genericity not involving adverbs of quantification), emphases that also mark my earlier attempts at analyzing FCI. At the empirical level, the new contribution in this paper has to do with a more nuanced understanding of FCI in imperatives than has previously been available.

Notes

[1] It is hard to decide whether the appropriate characterization of unacceptability for individual cases of FCI should be *, ?? or #.

[2] Chierchia (*to appear*) uses the diagnostic of checking for contradiction/consistency with follow-ups that make non-universality explicit to establish this.

[3] I use demonstrative phrases as inner NPs to ensure that the interpretation is restricted to a contextually salient set of entities. The same point could be made with definites, if the interpretation is suitably controlled. Definites, however, are a less reliable diagnostic since it is somewhat easier to interpret them as varying across worlds.

[4] Gennaro Chierchia and Lisa Selkirk (p.c.) find (i) acceptable:

i. Any of these cats hunts mice.
ii. Any of these (types of) cats can hunt mice.

There is an important difference between (i) and (4a). In (4a) reference to sub-types of students who may be predisposed to working hard is implausible. In (i) reference to sub-kinds of cats is readily available. The crucial factor in allowing FCI in (i), I believe, is the possibility of a dispositional analysis which allows the sentence to be analyzed as a generic statement with a possibility modal, as in the close variant in (ii).

[5] LeGrand (1975) is the original source for subtrigging. Dayal (1995, 1998) extends the empirical generalizations which I assume here, by probing various constraints on subtrigging.

[6] These examples are attributed to Barbara Partee and Jason Stanley. The question raised by the possibility of covert subtrigging can be framed in two ways. Why is it that some constructions support covert subtrigging and not others? What is the effect of subtrigging when it occurs vs. when it does not? It is the latter question that I have addressed in previous work and the same holds true for the present paper.

[7] These examples are relevant because they show that the distribution of numeral/supplementary FCI is different from that of regular FCI, independently of the issue of quantificational force. Section 3.6 discusses conditions under which $\exists$ FCI become acceptable in episodic statements.

[8] The formulation of *fluctuation* in (21b) does not make it clear how to separate out modality from the verbal property Q'. A solution to this is presented in section 11 of Dayal (2009), which I will not discuss here for reasons of space. Since I am now pursuing a different analysis, it is the net effect of *fluctuation* that is relevant for present purposes.

[9] The modal base in the cases under discussion would be restricted to worlds where the set of books includes at least *a* and *b*. Other books, if present, will not affect the computation.

[10] The correlation between mood and epistemic uncertainty may be more complex than indicated. A reviewer provides French *Toute personne qui a appris quelque chose doit le communiquer immediatement a la police* "Any person who has learnt something must tell the police without delay", where changing from indicative to subjunctive makes the example unacceptable.

[11] My analysis was prompted by an early version of the manuscript. I have modified the discussion to align it to the October 2011 version, but further changes are not addressed. Aloni (2007) also treats FCI as an existential and uses alternatives to explain its distribution but, for reasons of space, I do not engage with her account here.

[12] Technically, the alternatives are also existential statements defined over sub-domains. So student(a) is really $\exists x[\text{student}_{D'}(x)]$ where D' is that subset of D that contains *a* as its only member.

[13] This differs from Chierchia (2006) where the alternatives were not exhaustified. The move to exhaustified alternatives is influenced by the treatment of Free Choice disjunction in Fox (2006).

[14] It is crucial that the models for partitive-FCI hold the set of students constant across accessible worlds, due to the existence presuppositions of the inner NP. The alternatives refer to sub-domains drawn from this set.

[15] The model allows for worlds in which the predication holds of the full domain, which is desirable (cf. section 2.1).

[16] The *Viability Constraint* is open to the objection that it is a presuppositional requirement and violation should lead to infelicity rather than ungrammaticality (but see note 1). I refer the reader to Menéndez-Benito (2005, 2010) and Chierchia (*to appear*) for arguments from Gajewski (2002) against this line of criticism.

[17] A reviewer offers a variation on the Canasta example as a challenge to *Viability*: Imagine a situation with a red, a blue and a green doll on sale. One can choose the red doll. If one chooses the blue/green the other one comes for free. Here (i)-(ii) are fine:

i. You can choose any doll.
ii. Any doll can be bought.

But this is not a problem since there are worlds in which only the blue or the green doll is choosen/bought. That the other one comes for free does not impact on the extension of these predicates. Interestingly, the FCI becomes unacceptable if the predicate in (i) is changed to *have* (Matt Barros, p.c.). This is predicted because, indeed, now worlds in which you have only the blue or only the green doll are ruled out.

[18] *Usually/sometimes* in (43a) is acceptable as a VP modifier. If an individual level predicate is used such as *is hard working*, the adverb becomes ungrammatical (see Dayal 1995, 1998).

[19] Chierchia (*to appear*) also interprets generic FCI in such LFs, due to *WSC*, but there are differences in the interpretations associated with these LFs.

[20] Quantifiers like *each N* do not lend themselves to generic interpretations. I assume this is because of a lexical requirement for a contextually salient quantificational domain for *each*.

[21] The widening here spans across worlds and thus differs from Kadmon and Landman's original notion, which simply required the widened domain to be larger than the contextually salient one. The two could be brought into closer alignment if we switched to talking about situations in representing generic readings. The analysis could be maintained without any substantive shift in explanation, but introducing these modifications into the system would take up more space than is available here (see Büring (2004) and Schwarz (2009) for relevant discussion).

[22] Dayal (2009) drew a parallel between *every* and *any* on the basis of their lexical meaning as universal quantifiers. The parallelism is maintained in this approach where they have distinct lexical meanings but end up having similar constructional meanings.

[23] Free choice readings of *-ever* free relatives are not subject to *Viability*. The *–ever* free relative is acceptable in episodic contexts even when reference is to a fixed set of individuals, as long as their identity is unknown. The same is true for *some N or other* (see Dayal 1997, 2004, 2009 for relevant discussion). I have not yet worked out the licensing conditions for these items in the alternative-based approach.

[24] Vendler (1967) noted that if there are only two apples, *take any two apples* is unacceptable. This is expected, since it will be impossible to create sub-domain alternatives and still satisfy the number requirement.

[25] A reviewer finds that (i) is not anomalous, when interpreted as *a file, any file*:

i. The instructions say you must pick any file and try to compile it to make sure the compiler works.

He/she notes 'if this intuition is stable, it suggests that *any* alone can have a numeral interpretation'. I assume that in cases where an existential bound is inferred from the context, a numeral is inserted into the semantic representation in the appropriate position in the structure. See note 28 for further relevant discussion.

[26] A reviewer finds that (58b) has an existential rather than universal force. This may be due to the choice of a predicate of subjective taste. A close variant of (58b) clearly has universal force: *please write down anything you hear*.

[27] Some standard examples of ∃-FCI have precisely these properties:

i. To continue, press any key.
ii. Take any card, and put it to one side (to keep the game moving).

[28] A reviewer notes that the Italian variants of (i) and (ii) are unacceptable. Interestingly, Chierchia takes the comparable (iii) and (iv) to be relatively good under an ∃construal:

i. To go to the theater, you must take any number 3 bus
ii. To continue, you must push any key.
iii. ?? You must pick any card.
iv. In Massachusetts, you are obliged to pick any card; then you can move on.

The present account predicts that an FCI with necessity will be acceptable if (a) it can be construed as a covert supplementary form: *a N, any N* or (b) the sentence has a teleological flavor. There seems to be speaker variation with respect to the ease with

which these sentences can be analyzed as a supplementary construction. The contrast between (iii) and (iv) shows that even a single speaker's judgments can vary. See also note 25, which reports exactly the opposite judgment for comparable examples by a different reviewer. More work is clearly needed on this issue.

[29] Vlachou (2007) gives examples of acceptable ∃-FCI in affirmative sentences but all of them set up contexts that support a goal oriented interpretation.

References

M. Aloni (2007) 'Free Choice, Modals, and Imperatives', *Natural Language Semantics,* 15, 65-94.

D. Büring (2004) 'Crossover Situations', *Natural Language Semantics*, 12, 23-62.

G. Carlson (1980) 'Polarity *any* is Existencial', *Linguistic Inquiry*, 11, 799-804.

G. Carlson (1981) 'Distribution of Free Choice *Any*', *Proceedings of Chicago Linguistic Society* 17.

G. Chierchia (2006) 'Broaden Your Views: Implicatures of Domain Widening and the "Logicality" of Language', *Linguistic Inquiry*, 37, 535-590.

G. Chierchia (to appear) *Meaning as an Inferential System: Polarity and Free Choice Phenomena*. October 2011 version.

V. Dayal (1995) 'Licensing *Any* in Non-negative/Non-modal Contexts', *Proceedings of SALT V*, 72-93.

V. Dayal (1997) 'Free Relatives and Ever: Identity and Free Choice Readings', *Proceedings of SALT VII*.

V. Dayal (1998) '*Any* as Inherently Modal', *Linguistics and Philosophy,* 21, 433-476.

V. Dayal (2004) 'The Universal Force of Free Choice Any'', Linguistic Variation Yearbook 4, 5-40.

V. Dayal (2009) 'Variation in English Free Choice Items', in R. Mohanty and M.Menon (eds.) *Universals and Variation: Proceedings of GLOW in Asia VII*.

M. Enç (1986) *Tense Without Scope: An Analysis of Nouns as Indexicals*, Ph.D. dissertation, University of Southern California.

D. Fox (2006) 'Free Choice Disjunction and the Theory of Scalar Implicatures' In *Presupposition and Implicature in Compositional Semantics* eds. Uli Sauerland and Penka Stateva. 71-120. New York: Palgrave Macmillan**.**

J. Gajewski (2002) 'On Analyticity in Natural Language', Unpublished manuscript, University of Connecticut.

A. Giannakidou (1998) *Polarity Sensitivity as (Non)veridical Dependency*, John Benjamins.

A. Giannakidou (2001) 'The Meaning of Free Choice', *Linguistics and Philosophy* 24, 659-735.

C-H. Han (2000) *The Structure and Interpretation of Imperatives: Mood and Force in Universal Grammar*, Garland/Routledge, New York.

L. Horn (2000a) '*Any* and *ever*: Free Choice and Free Relatives', *Procedings of the 15th Annual Conference of the Israeli Association for Theoretical Linguistics*, 71-111.

L. Horn (2000b) 'Pick a Theory (not just *any* theory): Indiscriminatives and the free-choice indefinite', in L. Horn and Y. Kato (eds.) *Negation and* Polarity, Oxford University Press, 147-92.

J. Jayez and L. Tovena (2005) 'Free-choiceness and Non Individuation', *Linguistics and Philosophy*, 28, 1-71.

R. E. Jennings (1994) *The Genealogy of Disjunction*. (New York: Oxford University Press)

N. Kadmon and F. Landman (1993) 'Any', *Linguistics and Philosophy*, 16, 353-422

A. Kratzer and J. Shimoyama (2002) 'Indeterminate Pronouns: The View from Japanese'. Paper presented at the 3rd Tokyo Conference on Psycholinguistics.

J. LeGrand (1975) *Or and Any: The Semantics and Syntax of Two Logical Operators*. Doctoral Dissertation, University of Chicago.

P. Menéndez-Benito (2005) *The Grammar of Choice*, Doctoral Dissertation, University of Massachusetts, Amherst.

P. Menéndez-Benito (2010) 'On Universal Free Choice Items', *Natural Language Semantics* 18, 33-64.

J. Quer (1998) *Mood at the Interface*. Doctoral Dissertation, University of Utrecht (The Hague: Holland Academic Graphics).

F. Schwarz (2009) *Two Types of Definites in Natural Language*. Doctoral Dissertation, University of Massachusetts, Amherst.

Z. Vendler (1967) *Linguistics in Philosophy* (Ithaca: Cornell University Press).

E. Villalta (2008) 'Mood and Gradability: an Investigation of the Subjunctive Mood in Spanish', *Linguistics and Philosophy* 31, 467-522.

E. Vlachou (2007) *Free Choice in and out of Context: Semantics and Distribution of French, Greek and English Free Choice Items* Doctoral Dissertation, University of Utrecht (The Hague: Holland Academic Graphics).