any Questions?[1]

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I would like to discuss here several puzzling facts about questions. In the first place, although it is well-known that any and other negative polarity items may be triggered by yes/no questions,

(1) Did Max see anybody?
                lift a finger?
                ever go?   ...etc.

it is not clear just how such lexical items function in wh-questions, particularly those where adverbs are questioned.[2] There seems to be a definite difference between (2) and (3), in that (2) is a usual type of question, while (3) is somehow rhetorical.

(2) Why did Max hit anybody?
(3) When did Max hit anybody?[3]

The difference lies in the fact that (2) presupposes that Max hit somebody, while (3) does not. Note that in (2') and (3'), without the any, this difference does not exist: both presuppose that Max hit Sam.

(2') Why did Max hit Sam?
(3') When did Max hit Sam?[4]

Clearly, the use of why and when in (2)-(3) needs an explanation.
     Secondly, the use of certain indefinites in wh-questions sometimes produces a similar rhetorical reading. (4), with why, the Q presupposes that there is a concert being held in the auditorium, but (5), with when, does not.

(4) Why is a concert being held in the auditorium?
(5) When is a concert being held in the auditorium?

With the corresponding definites, (4') and (5') both presuppose the existence of a concert.

(4') Why is the concert being held in the auditorium?
(5') When is the concert being held in the auditorium?

This difference between why and when is what will concern us here. I hope to be able to show: a) that, based on both syntactic and semantic evidence, there must be two distinct classes of adverbs; b) that why and when are members of different classes; c) that these facts allow us to give a natural explanation of the phenomena of (2)-(5).
     There is more syntactic evidence for the difference between when and why. In a number of dialects, including my own, extra-

than semantic evidence

position of relatives is blocked under circumstances which allow
extraposition of NP complements, and the crucial variable is the
use of why instead of when. While (6), (7) and (8) are all good
for most speakers, there is a dialect split on (9); most people
find it bad, but there are a number of speakers who find that it
is equally as good (or bad) as (8).

(6) When was the charge made that Nixon was a communist?
(7) Why was the charge made that Nixon was a communist?
(8) When was the charge made that eventually destroyed
      Nixon's credibility?
(9) %Why was the charge made that eventually destroyed
      Nixon's credibility?

Similarly, while (10) is grammatical, intuitions differ about (11).

(10) When was the treaty signed that ended the War of 1812?
(11) %Why was the treaty signed that ended the War of 1812?

Any explanation of the facts of (6)-(11) must obviously posit some
difference between why and when.
    There are also some usages of modals, particularly may, in
wh-questions that differ crucially, again depending on the wh-word.
May is normally ambiguous between the reading of be allowed to and
that of be possible, and this ambiguity shows up in most wh-ques-
tions. Note that may is   ambiguous in (12) and (13).

(12) &When may the FBI arrest Angela?
(13) &Why may the FBI arrest Angela?

(12) questions either the time of the permission, or the time of
the possibility, and (13) questions either the reason for the per-
mission's being given, or the reason for the possibility's being
asserted. But in any questions, there is a strange disambiguation;
I find that (14) is good only if may is read as allowed, while
(15) seems to require a reading of possible, although the situa-
tion is not as clear here.

(14) Why may the FBI arrest anybody? (=allowed)
(15) When may the FBI arrest anybody? (=possible?)

Although I have no idea why may should behave like this with why
and when, it is clear, at least, that the difference between the
two question words must be taken into account here.
    Finally, there are some phenomena concerning adverbs under
negation which provide strong evidence for the distinction I wish
to posit. George Lakoff (1970) has noted that, with negative exis-
tentials, adverbs of time, place, and circumstance produce nega-
tion of the sentence they modify, while other adverbs do not.

(16) At no time did Tom beat his wife.
(17) Nowhere did the prospector find praesodymium.
(18) Under no circumstances did Abraham sacrifice Isaac.

(16) entails that Tom did not beat his wife, (17) that the prospector did not find praesodymium, and (18) that Abraham did not sacrifice Isaac. But this relation does not hold with (19)-(21).

> (19) For no reason, Tom beat his wife.
> (20) Without any instrument, the prospector found praesodymium.
> (21) To no purpose, Abraham sacrificed Isaac.

(19)-(21) entail the opposite of (16)-(18), respectively. Note that with negatives and <u>any</u> in the adverb phrases, the same relation occurs:

> (16') Tom didn't beat his wife at any time.
> (17') The prospector didn't find praesodymium anywhere.
> (18') Abraham didn't sacrifice Isaac under any circumstances.

> but:(19') Tom didn't beat his wife for any reason. (...he just beat her, that's all)
> (20') The prospector didn't find praesodymium with any instrument. (...he just found it, that's all)
> (21') Abraham didn't sacrifice Isaac to any purpose. (...he just went ahead and did it, that's all)

At first glance, it appears obvious that these two classes of adverbs are quite well-defined by (16)-(21); unfortunately, things are not so easy as that.

Lakoff notes that (22) entails that Irving ate the bagel:

> (22) Irving ate the bagel in no particular manner.

But (23) and (24) also entail this:

> (23) Irving ate the bagel in no particular place.
> (24) Irving ate the bagel at no particular time. [5]

Apparently, with <u>particular</u> (as well as with <u>special</u> and <u>definite</u>) something very different is going on. If the addition of <u>particular</u> can change the behavior of time and place adverbs as in (23) and (24), then it is not safe to assume (as Lakoff does) that, on the evidence of (22), adverbs of manner should be grouped with reason, purpose, and instrument. In fact, I do not know just how adverbs of manner or means should fit into the grouping discussed here.[6] For the moment, I propose to ignore them.

Even when we admit the difficulty of extending this classificatory schema to include manner and means adverbials, and to adverb phrases with <u>particular</u>, there still remains the fact that, to account for (16)-(21), it is necessary to posit two classes of adverb, one of which will contain adverbs of time, place, and circumstance, while the other will contain (at least) adverbs of reason, purpose, and instrument. If these are the two classes that

distinguish between the uses of <u>when</u> and <u>why</u> in the question forms
discussed above, then we would expect similar behavior from the
question words corresponding to the other adverbs. In particular,
we would expect <u>where</u> and <u>under what circumstances</u> to behave like
<u>when</u>, and <u>with what instrument</u> (or similar phrases denoting instru-
mentals) to behave like <u>why</u> (which, of course, questions both rea-
son and purpose).
    In <u>any</u> questions, this expectation is met:

    (25) What utensil does anybody eat bagels with?
    (26) Where   ⎱ does anybody eat bagels?
          Under what circumstances⎰

(25) presupposes that somebody eats bagels, but (26) does not, and
is therefore rhetorical in the same sense as (3). With indefinites:

    (27) What instrument was a ton of bagels consumed with?
    (28) Where   ⎱ was a ton of bagels consumed?
          Under what circumstances⎰

(27) presupposes that a ton of bagels was consumed, while (28) does
not. Similarly, in the extraposition questions:

    (29) %With what instrument was the crime committed that
              was reported in the newspaper?
    (30) Where   ⎱ was the crime committed
          Under what circumstances⎰
              that was reported in the newspaper?

While (30) is good, (29) is bad for those who reject (9) and (11).
    Finally, while the modal phenomena do not agree exactly with
the conclusions previously drawn about (14) and (15), it is clear
that instrumentals do work like <u>why</u>, in that (31) clearly needs a
reading of <u>allowed</u> for <u>may</u>. It is not clear that (32) gives only
a reading of <u>possible</u>, and it seems to me that (33) is clearly
ambiguous. Perhaps the most we can say about the usage of <u>when</u>-
class adverbs with <u>may</u> is that they sometimes produce unambiguous
readings.

    (31) With what equipment may the FBI tap anybody's phone?
    (32) Where may anybody verify the references?
    (33) &Under what circumstances may the FBI tap anybody's
              phone?

    We have seen, then, that adverbs (and their corresponding
question words) fall into two distinct classes, and that the mem-
bers of these classes differ systematically in the following ways:
a) in their use in questions with <u>may</u>; b) in their use in ques-
tions with extraposition of relatives; c) in their use in ques-
tions with <u>any</u> and indefinites; and d) in their behavior under
negative existentials. It would be very nice to account for all
these phenomena with just one statement, but I can offer only a
partial solution to this problem here (if it is a solution).

In order to account for the behavior of the different adverb classes, let us try to give meaning postulates showing the distinction. We will assume the view that adverbs are, in some sense, higher predicates (I do not wish to argue this assumption here——it is convenient, but not essential for my treatment of adverbs; everything said here can easily be recast in a different form, if preferred). On this view, (34)-(36) show that (37)-(39) give the proper entailments for why-class adverbs.

(34) There is a reason why Harry likes salami.
(35) There is no reason why Harry likes salami.
(36) There may be some reason why Harry likes salami.

(37) $(\exists x)(\text{REASON}(x,S)) \rightarrow S$
(38) $\neg(\exists x)(\text{REASON}(x,S)) \rightarrow S$
(39) $\Diamond(\exists x)(\text{REASON}(x,S)) \rightarrow S$

Note that (34)-(36) all entail that Harry likes salami. If we add (36') and (39'), which are given in any case by conversational principles, we get the complete set of postulates for a factive predicate, as given by Karttunen (1970b).[7]

(36') There may not be any reason why Harry likes salami.
(39') $\Diamond\neg(\exists x)(\text{REASON}(x,S)) \rightarrow S$

If why-class adverbs are viewed as predicates, then, they are factives, and their behavior under negation and in questions[8] becomes explicable (or inexplicable) by the same rules that govern other factive predicates. I can see no reason why these adverbs should work like factives, but we have at least reduced this problem to a previously unsolved one, namely why factive predicates behave the way they do.

Unfortunately, the logical waters are considerably murkier when it comes to the problem of postulates for when-class adverbs. If, as we have seen, the postulates for why-class adverbs turn out to be those of a factive predicate, we can well ask whether there is any other set of postulates which might correspond to those of when-class adverbs. If there is, then we can again ascribe the behavior of these adverbs to the properties of some other class of predicates. The first impulse is to say that when-class adverbs are implicative, in the sense of Karttunen (1970a). The postulates given there are (40) and (41), illustrated by (42) and (43). To these we should probably add (44)a and b, which are shown by (45) to give the proper result.

(40) $V(S) \rightarrow S$
(41) $\neg V(S) \rightarrow \neg S$
(42) Max managed to close the door. ($\rightarrow$ Max closed the door)
(43) Max didn't manage to close the door. ($\rightarrow$ Max didn't close the door)

(44)a $\Diamond V(S) \rightarrow \Diamond S$
    b $\Diamond\neg V(S) \rightarrow \Diamond\neg S$

(45)a Max may have managed to close the door.
　　　　(→Max may have closed the door.)
　　b Max may not have managed to close the door.
　　　　(→Max may not have closed the door.)

　　These look very like the postulates we would want to posit
for when-class adverbs; what we actually need, to account for the
negation facts, is a postulate stating that if a sentence is not
to be asserted as true for some time (or place, or circumstances),
then it is to be denied, while if it can be asserted for some time,
then is true. Certainly, we need to represent the fact that (46)
entails (47), and (48) entails (49).

　　　(46) Max threw up at some time t.
　　　(47) Max threw up.
　　　(48) Max didn't throw up at any time t.
　　　(49) Max didn't throw up.

(We have seen from (19')-(21') that (49) does not follow automatic-
ally from the negation in (48)) But this is only half the job; we
also need to note that (49) entails (48), and (47) entails (46).
Apparently, mutual entailment is involved. The postulates, then,
should look something like (50).

　　　(50)a　　$(\exists t)(TIME(t,S))$ ⟷ S
　　　　　b　　$\neg(\exists t)(TIME(t,S))$ ⟷ $\neg S$

Further, we can see from (51) that modals carry over, as well as
negatives. (51)a mutually entails (51)b, and the additional pos-
tulates are given in (50)c and d.

　　　(51)a There may (not) be some time t when Max threw up.
　　　　　b Max may (not) have thrown up.
　　　(50)c　$\Diamond(\exists t)(TIME(t,S))$ ⟷ $\Diamond S$
　　　　　d　$\Diamond\neg(\exists t)(TIME(t,S))$ ⟷ $\Diamond\neg S$

　　But (50) is stated in terms of quantified propositions, and
(40), (41) and (44) are not. If we restate the postulates for
implicative predicates in terms of quantifiers, we get very in-
teresting results. For manage as a typical implicative verb, some
postulates are given in (52)-(55), along with illustrations. In
each of the following, the "b" example entails the "c" example.

　　　(52)a　$\neg(\exists x)(MANAGE(x,P(x,z)))$ → $\neg(\exists x)(P(x,z))$
　　　　　b　There is no one who managed to close the door.
　　　　　c　There is no one who closed the door.
　　　(53)a　$(\exists x)(\neg MANAGE(x,P(x,z)))$ → $(\exists x)(\neg P(x,z))$
　　　　　b　There is someone who didn't manage to close the door.
　　　　　c　There is someone who didn't close the door.
　　　(54)a　$(\exists z)(\neg(\exists x)(MANAGE(x,P(x,z))))$ → $(\exists z)(\neg(\exists x)(P(x,z)))$
　　　　　b　There is a door which nobody managed to close.
　　　　　c　There is a door which nobody closed.

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(55)a $\Diamond(\exists x)(\neg MANAGE(x,P(x,z))) \rightarrow \Diamond(\exists x)(\neg P(x,z))$

    b There may be somebody who didn't manage to close
the door.

    c There may be somebody who didn't close the door.

I believe, in fact, that the proper statement of the postu-
late for implicative verbs is (56), for a typical verb V.[9]

$$(56)\quad Q(V(x,P(x,\dots,z))) \rightarrow Q(P(x,\dots,z)),$$

where "Q" is any well-formed collection of predicates, including
$\neg$, quantifiers, modals, or other predicates, and $P(x,\dots,z)$ rep-
resents the propositional content of the complement. I have been
able to find only one restriction on the content of Q: it may not
contain any predicate (such as $\neg$TRUE) which has the effect of can-
celling presuppositions. (56) essentially states that anything
predicated of the implicative verb is predicated also of its com-
plement, so that (52)-(55) are all special cases of this one general
postulate. The restriction on $\neg$TRUE is due to the fact that
manage has presuppositions relating to difficulty, and if they are
cancelled, the relation does not hold.

If (56) is correct (and I will not attempt to disprove it here)
and if we are to maintain that when-class adverbs are implicative,
we should be able to fit in (50) so that it looks like (56). But
while negation, modals, and other predicates do carry over, there
are no quantifiers to the right of the entailment in (50). In fact,
to introduce them would reduce (50) to a tautology, if any meaning
could be assigned to it at all. While we need not be certain that
(50) is the correct form of the postulate, there does not seem to
be much hope of making when-class adverbs fit the implicative
mold.[10]

What I suggest is that these adverbs, if they are to be viewed
as higher predicates, are actually implicit in any sentence. Un-
like the implicative verbs, there are no special presuppositions
associated with these adverbs; this is, in fact, what necessitates
the mutual entailment. In those sentences which appear on the
surface without when-class adverbs, an indefinite-deletion will
have eliminated the adverbs, similar to that which eliminates the
logical subject in the "agentless passive". In the logical struc-
ture, there will be a well-formedness condition specifying that
there be the proper adverb predicates above any verbal predicate.

If we accept this view, then we would expect that arguments
of predicates, being necessary also from well-formedness conditions,
should act in the same way as the when-class adverbs. Subject and
object noun phrases do behave the same as the when-class adverbs
under both negative existentials and in any questions. Note that
(57) and (58) are both negative sentences, although the preposing
and subject-verb inversion rules do not apply when the object is
negated.

    (57) No one hit Max.

    (58) Max hit no one.

In addition, both (59) and (60) are rhetorical in the same way as (3); neither presupposes that anything was given.

(59) What did Max give to anybody?
(60) Who gave the moustache cup to anybody?

Note that the analysis proposed is consistent with a different possible view, in which the time, place, etc. are arguments of any given predicate; i.e, instead of TIME(t,P(a,b)), one might wish to represent these as P(a,b,t). I offer no conclusions as to which is preferable; the facts presented here seem to me to support either.

We have seen that the two classes of adverbs are indeed different; that the why-class is factive, while the when-class is what I will call essential; that the difference has well-grounded semantic reasons for existing; what still remains to do is to explain, if possible, just why any questions show up these differences. They are, after all, the topic referred to in the title.

First, whatever we find to be the case with any questions, the behavior of why-class adverbs should not vary from the norm with them, since these adverbs are factive, and in fact strong factives (or "factives proper" in the sense of Karttunen (1970b)). So it is not with the why-class that we should concern ourselves. What needs an explanation is this: what is there about any questions that cancels the normal presuppositions of when-class adverbs? If (50) is to be believed, there must be some additional predicate postulated of the adverb which brings (50)b, c, or d into play. How can this be effected by the occurrence of any in what we have been calling the lower sentence?

As Borkin (1971) suggests, the occurrence of polarity items in questions depends upon the answer expected, and this clearly is dependent in some way on the presuppositions of the question. It appears that the questions (2') and (3') both expect an answer consisting of some definite reason or time; this is only natural, since each presupposes not only that Max hit Sam, but that he did it at some time or for some reason. (2) and (3), on the other hand, leave open the possibility for the response "for no reason" or "never". (2) still presupposes that Max hit somebody, since why is factive, but when loses its presupposition in (3). What we have then, is some sort of "possible" or "possible not" (probably both, by conversational postulate) being predicated in (2) and (3) of the adverb. As (50) shows, this gives the entailment of a "possible" or "possible not" at most, just what we find, since to entail that a sentence is possibly true is to have no presuppositions about it. (4) and (5) show that something of the same sort is related to indefinites. Thus, somehow, questioning an adverb (or NP, as in (59) and (60)) in a sentence with an indefinite, into which class any certainly fits, produces an effect not only of uncertainty as to the nature and identity of the questioned element, but also to its very existence. If this is done by means of a modal, then there must be some relation between indefinites and the modal possible.

NOTES

[1]I wish to express my thanks to Andy Rogers and Paul Neubauer, and especially to George Lakoff, for many helpful criticisms and suggestions. Naturally, they are not responsible for errors in this paper.

I might also make some remarks on notation and intuition. The phenomena dealt with here are rather vague in nature, and intuitions of grammaticality differ sharply. Even more sharply divergent are judgements about ambiguity (represented, where relevant, by "&" before a sentence) and rhetorical use. I could have marked many more sentences with a "%" (indicating a dialect split) than I actually have. Quite a few of the sentences take some time (and occasionally the proper intonation) to get understood as grammatical.

[2]See Borkin (1971) for an intriguing discussion of the role of polarity items in questions.

[3]There are a number of speakers who inform me that (3) is of dubious grammaticality for them without extreme intonation. Apparently, these people do not question the existence of a temporal existential unless in a yes/no question.

[4]There is, of course, a reading of (3') (but, interestingly enough, not of (2')) with extreme stress on when that gives it the same rhetorical flavor as (3). I believe that this is due to the fact that stress is tied up with presuppositions (see Schmerling 1971); it is interesting to note that (3) pronounced with normal intonation entails that it is possible that Max hit somebody, while with heavy stress on when, it entails (at least) that the speaker assumes that Max did not hit anybody. This last reading is the rhetorical one associated with (3'), and is the only one that the speakers mentioned in fn 3 seem to be able to get for (3).

[5]This observation is due to John Haiman.

[6]This is only the tip of the iceberg. While it is generally true that particular makes an adverb into a member of the why-class, which does not entail negation under a negative existential, there are some examples which seem to show that some predicates are going to require certain adverbs, and that therefore the adverbs that work like time, place, and circumstance will vary from predicate to predicate. Note the difference between (22') and (61):

(22') In no particular way, Sam ate the bagel.
(61) In no particular way did Sam distinguish himself.

There are even some people (not including me) who get (62):

(62) %In no particular way did Sam eat the bagel.,

thus making a striking contrast with (61). Apparently, a manner is somehow necessary in which to distinguish oneself, so that (61) is negative from the negative existential. How does this square with behave, which also needs a manner adverb, but which produces:

(63) *In no particular way did he behave.

although (64) and (65) are all right; in fact, (65) is affirmative:

> (64) In what particular way did he behave?
> (65) He didn't behave in any particular way.

These are some of the reasons why I don't want to treat manner here.

    [7]Actually, these are not quite the full set of factive post-
ulates; Karttunen (1970b) gives them in a different form, but it
is not difficult to show that they can be given in a form like
that of (37)-(39'). In fact, it seems to be the case that for
factive predicate F and complement proposition P(x,...,z), (66)

$$(66)\quad Q(F(y,P(x,\ldots,z))) \rightarrow P(x,\ldots,z)$$

is the proper formulation of the postulate for factives, where "Q"
is taken to mean any well-formed combination of predicates, inclu-
ding negatives, modals, quantifiers, and other verbs. See below
for an application of this kind of postulate to implicative verbs.

    See also Gordon and Lakoff (1971) for a detailed discussion
of conversational principles.

    [8]As we will see below, any has some strange properties, not
the least of which is the ability to somehow cancel presuppositions.
The any questions discussed here owe their strangeness to the pres-
ence of the indefinite. There is another situation in which any
cancels presuppositions: if there is an any (or indefinite, or
some other negative polarity items) in the complement sentence of
a semifactive verb (in Karttunen's sense (1970b)) like discover,
and if the polarity item is triggered by the not above the semi-
factive, then the verb loses its factivity. Note that (70) does
not presuppose that somebody stole Irv's bicycle, while the rest do.

> (67) Irv didn't realize that somebody stole his bicycle.
> (68) Irv didn't discover that somebody stole his bicycle.
> (69) Irv didn't realize that anybody stole his bicycle.
> but:(70) Irv didn't discover that anybody stole his bicycle.

Since Karttunen ascribes the difference between strong factives
like realize (which is to be carefully distinguished from come
to realize, a semifactive) and semifactives like discover to the
fact the semifactives only entail their complement under affirm-
ation and negation, not when $\Diamond$ or $\Diamond\neg$ is predicated of them,
we must get this loss of presupposition in (70) from a $\Diamond$ and
$\Diamond\neg$ in the logical structure. This, in turn, must come somehow
from the fact that any is in the complement. As we will see below,
a similar solution will be proposed for the any questions.

    [9]This is not quite as general as one might like. Happen is
an implicative verb, but it is a one-place predicate. We need (56')

$$(56')\quad Q(HAPPEN(P(x,\ldots,z))) \rightarrow Q(P(x,\ldots,z))$$

to state the postulate for HAPPEN. Still, this looks like a fair-
ly easily generalizable phenomenon. See Horn 1971 for further disc-
ussion of implicative verbs.

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