Exhaustively as Cell Identification

Dayal’s (1996) approach to question presupposition:
   a. Accounts for existence and uniqueness presuppositions.
   b. Accounts for a large family of negative islands (as pointed out in later work).

My goals for today:
   a. To present Dayal’s proposal from a new perspective.
   b. To propose two minor modification (natural under the new perspective).
   c. Based on these modifications, to propose an account for the “mention-some” reading of questions and for a specific negative island that is not captured by Dayal’s approach.
   d. To connect this discussion to a debate about the nature of Scalar Implicatures.

1. The Duality of Questions – a new perspective on Dayal’s Presupposition

1.1. The Duality of Questions

(1) Question Pragmatics (Groenendijk and Stokhof, Lewis, etc.)
   A Question characterizes a topic of conversation and as such tells us what is relevant, informative, orthogonal, etc.
   \[ \rightarrow \text{Question as Partition} \] (of a space of possibilities)

(2) Question Semantics (Heim, Klinedinst and Rothschild, Cremers and Chemla, etc.)
   Questions show an asymmetry between positive and negative information. Therefore, questions cannot denote partitions. Instead, they denote sets of propositions that need not be mutually exclusive.
   \[ \rightarrow \text{Question as Set of Propositions} \]

(3) But Luckily: Any set of propositions determines a partition.

(4) The partition induced by \(Q\), \(\text{Partition}(Q)\), is the set of equivalence classes under the relation \( w \sim w’ \iff \forall p \in Q [p(w) = p(w’)] \]

(5) Simple Example:
   \(Q = \{p,q\}\) where \(p\) and \(q\) are logically independent
   \[ \text{Partition}(Q) = \{\neg p \& \neg q, p \& \neg q, q \& \neg p, p \& q\} \]

(6) Observation about Answers
   A question \(Q\) is typically answered by a proposition \(p\), such that \(p \in Q\), hence is not itself a cell in \(\text{Partition}(Q)\). Still \(p\) manages (by Exhaustification) to identify a cell.

Imagine that we turn this observation into a principle:

(7) Question Answer Matching
   A question \(Q\) (thought of as a set of propositions) must be answered by a proposition \(p\), such that \(p \in Q\).
(8) **Simple Arithmetic Problem:**

There will be cases in which cells in Partition(Q) will not be identifiable by a member of Q (based on simple numerical considerations).

In (5), $Q=\{p,q\}$ contains 2 propositions yet Partition(Q) contains 4:

- $\text{Exh}(Q, p) = p \& \neg q$
- $\text{Exh}(Q, q) = q \& \neg p$

The cells $\neg p \& \neg q$, $p \& q$ cannot be identified.

1.2. **Dayal’s Approach**

(9) **Dayal (1996):**

a. $\text{Ans}_D(Q) = \lambda w: \exists p \in Q[p = \text{Max}_{inf}(Q,w)]$. $\text{Max}_{inf}(Q,w)$

b. $\text{Max}_{inf}(Q,w) = p$ iff $w \in p$ & $\forall q \in Q[w \in q \rightarrow p \subseteq q]$.

If the presupposition of $\text{Ans}$ are satisfied, we have a simple way of meeting Question-Answer-Matching.

(10) **Simple Solution:**

Formal presuppositions ensure that every cell in the partition of the context set (the set of worlds compatible with the common ground) is identifiable by a member of the question denotation.

(11) **Back to our Example (taking presuppositions into account):**

$Q=\{p,q\}$ where $p$ and $q$ are logically independent,

$A$ is a context set in which the presupposition of $\text{Ans}_D$ is met

$\text{Partition}(Q, A) = \{[p \& \neg q]_A, [q \& \neg p]_A\}$

(12) **Restatement of Dayal**

a. $\text{Ans}_D(Q) = \lambda w: \exists p \in Q[\text{Exh}(Q,p,w)=1]$. $(\text{up} \in Q)[\text{Exh}(Q,p,w)=1]$

b. $\text{Exh}(Q,p,w) = 1$ iff $p = \text{Max}_{inf}(Q,w)$

**Note (which will be important later on):**

There is a potentially confusing feature of my presentation of Dayal’s approach (that in my view follows from question duality).

On the one hand, every proposition in $Q$ identifies a cell in Partition(Q,A) by Exhaustification.

Nevertheless, the answer to a question is not the cell itself but rather the proposition that identifies the cell in its non-exhaustified form (so called “weak exhaustivity”).

1.3. **Evidence for Dayal’s Solution:**

a. Accounts for inferences we draw from grammatical questions.


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By $\phi_A$ I simply mean the portion of $A$ that satisfies $\phi$, i.e., $A \cap \phi$. 
1.4. The presuppositions of acceptable questions

(13) Which girl (among a, b and c) came to the party?

\[ Q = \{ p_a, p_b, p_c \} \] (*three logically independent propositions corresponding to the three boys*)

**Presupposition:** exactly one proposition among the three is true

(Eliminates 5 cells in the partition of logical space.)

\[ \text{Partition (Q, A)} = \{ [p_a & \neg p_b & \neg p_c]_A, [p_b & \neg p_a & \neg p_c]_A, [p_c & \neg p_a & \neg p_b]_A \} \]

(14) Who (among a, b and c) came to the party?

\[ Q = \{ p_a, p_b, p_c, p_{a\oplus b}, p_{a\oplus c}, p_{b\oplus c}, p_{a\oplus b\oplus c} \} \] (*seven propositions corresponding to the plural individuals we get from the boys*)

**Presupposition:** one of the seven propositions is true.

(Eliminates 1 cell in the partition of logical space.)

\[ \text{Partition (Q, A)} = \{ [p_a & \neg p_b & \neg p_c]_A, [p_b & \neg p_a & \neg p_c]_A, [p_c & \neg p_a & \neg p_b]_A, [p_{a\oplus b} & \neg p_c]_A, [p_{a\oplus c} & \neg p_b]_A, [p_{b\oplus c} & \neg p_a]_A, [p_{a\oplus b\oplus c}]_A \} \]

1.5. Patterns of acceptability – negative islands (Fox and Hackl’s perspective)

(15) Guess how fast John drove

\[ Q = \{ \lambda w. \text{Speed}(J,w) \geq d : d \in D \} \]

For every context-set A (in which Speed(J,w) is defined) and for every cell \( C \in \text{Partition(Q,A)} \) there will be a proposition in Q that (by Exhaustification) will identify C.

(16) *Guess how fast John didn’t drive

\[ Q = \{ \lambda w. \text{Speed}(J,w) < d : d \in D \} \]

For no context-set A and for no cell in Partition(Q,A) will there be a proposition in Q that will identify the cell. Since Exh(Q,p,w) is false for every w and p \( \in Q \).

(17) Guess how fast he is not allowed to drive

There is a context-set A such that for every cell in Partition(Q,A), there will be a proposition in Q that will identify the cell. Exh(Q,p) is not contradictory for any member of Q.

1.6. Problem for Dayal’s Semantics

1.6.1. Mention Some Questions

(18) Mary knows where we can get gas in Cambridge.

**mention some (MS)**

Mary knows one location where we can get gas.

**mention all (MA)**

Mary knows all locations where we can get gas.

A MS answer to a question can’t possibly entail all other true answers, hence can’t be the output of \( \text{Ans}_D \)

**Conclusion:** Dayal demands too much from an Answer.
1.6.2. Higher Order Questions – a Mysterious Negative Island (Spector 2008)

1.6.2.1. Higher Order Questions

(19) What are you required to read for this class?
   a. War and Peace or Brothers Karamazov. *(Required>or; or >required)*
   b. Three Russian books. *(required>3; 3 >required)*
   c. Madame Bovary and W&P or BK *(required>or; or >required)*

(20) John knows what we are required to read for this class.
   War and Peace or Brothers Karamazov. *(required>or; or >required)*

Spector’s Proposal

(21) LF for required > or (before application of Ans)
   \[ \lambda p. \text{What (books)}^R \lambda Q C_p \lambda w. \text{required}_w Q \lambda x. \text{[you to read x for this class]}? \]

Where Q is a variable ranging over GQs and what^R is an existential quantifier over Upward Monotone quantifiers over the domain of what (books).

Paraphrase: What is the upward monotone quantifier ranging over books, Q, such that the requirements entails the proposition \( \lambda w. Q(\lambda x. \text{you read x for this class in w}) \)

1.6.2.1. Higher Order Questions are Subject to Negative Islands (as shown by Spector)

(22) What did you not read for this class?
   War and Peace or Brothers Karamazov. *(not>or; or >not)*

(23) What are you not allowed to read for this class?
   War and Peace or Brothers Karamazov. *(not>or; or >not)*

But: or >not could be a maximally informative true member of the question denotation in (21)

Conclusion: Dayal demands too little from an Answer.

2. Proposal in a nutshell

(12) Restatement of Dayal
   a. \( \text{Ans}_D(Q) = \lambda w. \exists p \in Q[\text{Exh}(Q,p,w)]. (p \in Q)[\text{Exh}(Q,p,w)=1] \)
   b. \( \text{Exh}(Q,p,w) = 1 \iff p=\text{Max}_{in}(Q,w) \)

Observation (made earlier): If the presupposition of \( \text{Ans}_D \) is met, it follows that every cell in the partition of the context-set (induced by the question) is identifiable by a member of Q, via Exhaustification.

I will agree with Dayal that this is a requirement:

(24) A question must have an answer
   For every question Q and context-set A, the following must hold:
   \[ \forall C \in \text{Partition}(Q,A) \exists p \in Q[[\text{Exh}(Q,p)]_A=C], \]
2.1. Dayal demands too much

I will claim that Dayal has an overly simplified theory of $Exh$:

- The goal of $exh$ is indeed to identify cells
- However, sometimes $exh$ identifies a cell for a member of $Q$ which is weaker than other true members (*Recall $Q = \{p, q, p \lor q\}$ from slides*).
- This, I will claim, is the source of MS. More specifically, when existential modals have scope over disjunction, $exh$ maps a very weak member of $Q$ to a cell. When this happens, the stronger members of $Q$ are all candidates for MS answers (a consequence, I will argue, of question duality).

2.2. Dayal demands too little

Once (24) is stated, it is tempting to entertain the converse as well:

(25) **Every candidate is a potential answer**
For every question $Q$ and context-set $A$, the following must hold:
$$\forall p \in Q[\exists C \in \text{Partition}(Q,A)[\text{Exh}(Q,p)_A = C]].$$

This further condition turns out to derive Spector’s Negative Island.

2.3. Summary of Proposal:

(26) $Answer(Q,A,w)$ is defined only if $Match(Q,A)$ holds. When defined:
$$Answer(Q,A,w) = \{q \in Q: w \in q \land q \text{ entails } (\exists p \in Q[\text{Exh}(Q,p,w) = 1])\}$$

I.e. $q$ is an answer to $Q$ in $w$ iff $q$ is true and is at least as strong as the proposition that identifies the cell to which $w$ belongs.

(27) $Match(Q,A)$ iff
a. $\forall C \in \text{Partition}(Q,A)[\exists p \in Q[\text{Exh}(Q,p)_A = C]],$ and
b. $\forall p \in Q[\exists C \in \text{Partition}(Q,A)[\text{Exh}(Q,p)_A = C]].$

**Note on Question Duality:**

On the one hand, every proposition in $Q$ identifies a cell in $\text{Partition}(Q,A)$ by Exhaustification.

Nevertheless, an answer to a question is not the cell itself but rather the proposition that identifies the cell in its non-exhaustified form and every true proposition stronger than this proposition.
3. Mention Some in Detail

3.1. Mention Some is sometimes available:

(28) Where can we get gas in Cambridge?
   
   mention some (MS)
   Specify one location where we can get gas.
   
   mention all (MA)
   Specify all locations where we can get gas.

(29) Mary knows where we can get gas in Cambridge.
   
   mention some (MS)
   Mary knows one location where we can get gas.
   
   mention all (MA)
   Mary knows all locations where we can get gas.

3.2. Mention Some is not always available

(30) Mary knows who came to the party.
   
   *MS: Mary knows one person who came to the party.
   
   MA: Mary knows all people who came to the party.

(31) The Problem:
   a. What is the distribution of MS readings?
   b. Is there a general account of the syntax, semantics, and pragmatics of questions that predicts the distribution?

4. Van Rooij’s (2004)

An answer must “resolve” a question. MA arises when a resolution requires the specification of all relevant information (subsequently, when there is only one resolution). MS arises when some relevant information is sufficient for a resolution, e.g. when there is a salient practical problem (getting gas) for which part of the relevant information would suffice (in which case there might be more than one resolution).

(32) $\left[ [\text{Ans}_{VR}]^C \right](Q)(w) = \lambda p.\text{Resolve}(Q, p, w, C)$

Where, Resolve(Q, p, w, C) iff

$w \in p \in Q$ & $\forall p' \in \text{Rel}(Q)$ [$w \in p'$ \rightarrow Utility_C(Knowing(p)) = Utility_C(Knowing(p \& p'))].$

And Rel(Q) is the closure under set-union of cells in Partition(Q).

Advantage: Accounts for some of the distributional properties and for the intuition that the answer on an MS reading “resolves a practical concern”.

Limitation: doesn’t account for what seem to be grammatical constraints on distribution.

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2 The core idea for MS was presented originally in a mini-course I taught at MIT (February 2013), which responded to B. R. George’s dissertation ([http://web.mit.edu/linguistics/people/faculty/fox/class1-3.pdf](http://web.mit.edu/linguistics/people/faculty/fox/class1-3.pdf)). Later versions closer to what I will present today were presented in ZAS Berlin (June 2015) and Carnegie Mellon University (June 2016).
5. The role of existential quantification

(33) a. Mary knows where in this neighborhood we can get gas. (MS, MA)  
    b. Mary knows what gas station(s) in this neighborhood is/are open right now. (*MS, MA)  

(34) Contextual Assumptions (common ground): there was no gas in the greater Boston area for a couple of days (say…the aftermath of a storm). Josh got a huge tank truck and delivered gas to various gas stations (so that people like us can get gas)  
    a. Mary knows where we can get gas. (MS, MA)  
    b. Mary knows where Josh delivered gas. (*MS, MA)

6. The Lack of Intermediate Readings (Xiang 2016)

(35) A: They will execute John if he doesn’t tell them two places where we can get gas.  
    B: No worries, John knows where can get gas.  

B’s utterance can’t be interpreted as meaning that Bill knows two places where we can get gas. But (as far as I can see) Van Rooij’s proposal should allow for that.

7 Lack of MS with Singular whPs

(36) a. John knows who can serve on this committee. (MS, MA)  
    b. John knows which professors can serve on this committee. (MS, MA)  
    b. John knows which professor can serve on this committee. (*MS, uniqueness)

8. George 2011 (chapter 6)

MS is not a separate reading. The MS effect results from the presence of an existential quantifier that takes scope outside of the interrogative clause.

(37) Who did some of your friends vote for?  
    For some of your friends, tell me who they voted for. I.e,  
    For some of your friends, tell me all of the people they voted for.  

Problem: The extension to existential modals goes against much of what we know about their scope taking potential.  

Goal: To derive MS by a method that is consistent with the scope taking potential of modals – by scope reconstruction below an existential quantifier (rather than by QR above the existential quantifier).

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3 This argument is made, with slightly different examples, in George (2011, chapter 6). For some further evidence that MS is grammatically represented, see Chierchia and Caponigro (2013), http://scholar.harvard.edu/files/chierchia/files/frs_and_qs_iii_2013-9-11.pdf  
4 Chapter 2 of George 2011 pursues a very different proposal. See Fox (2011) for discussion.  
5 See Fox (2013), Kriz (2015) and Dayal (2016) for additional arguments against an extension of the analysis of MS provided in (37) to existential modals.
9. Spector Readings of Questions and their Potential Relevance for MS

9.1. Spector Readings

(38) What are you required to read for this class?
    a. War and Peace or Brothers Karamazov.  
       (Required>or; or >required)
    b. Three Russian books. 
       (required>3; 3 >required)
    c. Madame Bovary
       and W&P or BK 
       (required>or; or >required)

(39) John knows what we are required to read for this class. 
    War and Peace or Brothers Karamazov. 
    (required>or; or >required)

(40) John knows what we are required to read for this class. 
    War and Peace or Brothers Karamazov. 
    (required>or; or >required)

(41) **Conjecture:**
    MS readings are only available for the type of structures needed to account for
    Spector Readings

9.2. Evidence for the Conjecture

Both MS and Spector Readings are unavailable with singular whPs

(42) a. John knows which professors can serve on this committee. 
    (MS, MA) 
    b. Which books are we required to read? 
       [W&P and BK] or [MB and SE]. 
       (required>or; or >required)

(43) a. John knows which professor can serve on this committee. 
    (*MS, uniqueness) 
    b. Which book are we required to read? 
       W&P or BK 
       (*required>or; or >required)

9.3. Spector’s Proposal

(44) LF for *required > or* (before application of *Ans*)

$$\lambda p. \text{Which books}^R \lambda Q C p \lambda w. \text{required}_w Q \lambda x. \text{[you to read x for this class]??}$$

Where Q is a variable ranging over GQs and books^R is a predicate that is true of 
Upward Monotone quantifiers over books.

Why should this reading be impossible with singular NPs?

**Suggestion:** We are not dealing with quantification over all GQs but only over those 
definable by reference to parts of members of the NP denotation.

(45)[[A^R]] = \lambda Q. \exists x \in A & \exists A' (A' \subseteq \{x': x' \leq x\} & Q = \lambda P. \exists x [x \in A' & x \in P])
10. Proposal for MS

10.1. Re-writing \( \text{Ans}_D \) – Setting the Stage

(12) Restatement of Dayal
a. \( \text{Ans}_D(Q) = \lambda w: \exists p \in Q [\text{Exh}(Q,p,w) = 1] \)  
   \( (up \in Q)[\text{Exh}(Q,p,w) = 1] \)

b. \( \text{Exh}(Q,p,w) = 1 \) iff \( p = \text{Max}_{\text{inf}}(Q,w) \)

This, as we saw, is just another way of writing Dayal’s operator. But things change once we consider modifications of exhaust, in particular, if we think \( \text{exh} \) is responsible for free choice inferences (see Fox 2007, a proposal inspired by Kratzer and Shimoyama 2002).

(46) Free Choice:
You are allowed to have cake or ice cream.
\( \text{Exh}(Q)(\langle C \lor IC \rangle) = \langle C \rangle \land \langle IC \rangle \land \neg \langle C \land IC \rangle \)
\( [Q = \{\langle C \lor IC \rangle, \langle C \rangle, \langle IC \rangle, \langle C \land IC \rangle\}] \)

(47) Exhaustivity as Cell Identification (Simplification of Bar-Lev and Fox (2017))
\( \text{Exh}(Q,p,w) = 1 \) iff \( \forall q \in Q [q \in \text{IE}(Q,p) \rightarrow q(w) = 0] \) \& \( \forall q \in Q [q \notin \text{IE}(Q,p) \rightarrow q(w) = 1] \).

10.2. Proposal

(48) Modification of Dayal
a. \( \text{Ans}_D'(Q) = \lambda w: \exists p \in Q [\text{Exh}(Q,p,w) = 1] \)  
   \( (up \in Q)[\text{Exh}(Q,p,w) = 1] \)

b. \( \text{Exh}(Q,p,w) \) as defined in (47)

This adopts Dayal’s conception. \( \text{Ans} \) introduces the presupposition that there is a member of the question that identifies the true cell in the partition. It differs from Dayal only in the definition of \( \text{exh} \), with the consequence that the answer when existential modals are involved could be very week.

But I will suggest an additional modification, according to which \( \text{Ans} \) returns the set of propositions that are true and entail the output of \( \text{Ans}_D' \)

(49) \[ \llbracket \text{Ans}_s \rrbracket = \lambda Q \lambda w: \exists p \in Q [\text{Exh}(Q,p,w) = 1]. \]
\[ \{q \in Q: w \in q \land q \subseteq \text{Ans}_D'(Q)(w) \} \]

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6. To account for the optionality of the inference \( \neg \langle C \land IC \rangle \) we can appeal to pruning of alternatives, rather than to the suggestion in Fox (2007) – the inference disappears if the alternative \( \langle C \land IC \rangle \) is considered to be irrelevant. This is consistent with the constraint argued for by Fox and Katzir (2011), a constraint crucial for understanding the impossibility of a conjunctive inference when the set of formal alternatives is closed under conjunction. See also Chierchia (2014), Katzir (2014), Crnič et. al. (2015), and Singh et. al. (2016).

7. This will be too weak in the general case, since in MS cases the disjunctive answer is not sufficient. In Fox (2013) I suggested we deal with this by appeal to Ans-Strong. This is not an available option if the arguments in Klinedinst and Rothschild (2011) are accepted. Two alternative ways of strengthening the meaning are the following:

(i) \[ \llbracket \text{Ans}_s \rrbracket = \lambda Q \lambda w: \exists p \in Q [\text{Exh}(Q,p,w) = 1]. \]
\[ \{p: p \in \llbracket \text{Ans}_s \rrbracket (Q)(w) \land \neg \exists q \in \llbracket \text{Ans}_s \rrbracket (Q)(w) [q \subset p] \} \]

(ii) \[ \llbracket \text{Ans}_s \rrbracket^C = \lambda Q \lambda w: \exists p \in Q [\text{Exh}(Q,p,w) = 1]. \]
\[ \{p: p \in \llbracket \text{Ans}_s \rrbracket (Q)(w) \land p \in \llbracket \text{Ans}_s^C \rrbracket (Q)(w) \} \]
10.3. Example

(50) Who can serve on this committee?

**LF for MS:**

\[ \lambda p \left[ \text{who}^{R} \lambda Q \ C \ P \lambda w \ . \ \text{can}_w \ [Q \text{ serve on this committee}] \right] \]

(51) Denotations for (50) in \( w^0 \) (after application of \( \text{Ans}_S \)):

\[ \left[ \text{Ans}_S \right](\{\text{\dagger}[Q(\lambda x. \text{serve}(x, \text{comm.})] ; Q \ \text{UM} \ GQ \ \text{over} \ \left[ \text{Pl(person)} \right]^{w^0}(w^0) \}

Assume that in \( w^0 \) there are two possible committees: one, \( X \), a plural individual consisting of \( p_1, p_2, p_3 \), and the other, \( Y \), consisting of \( p'_1, p'_2, p'_3 \).

There is one proposition \( p \) in \( Q \) such that \( \text{Exh}(Q, p, w^0) = 1 \), namely

\( \text{\dagger}[\text{serve}(X, \text{comm.}) \lor \text{serve}(Y, \text{comm.})] \)

(52) Given (49),

\[ \{p \in Q : w^0 \in p \ \& \ p \text{ entails } \text{\dagger}[\text{serve}(X, \text{comm.}) \lor \text{serve}(Y, \text{comm.})] \}

\[ = \{\text{\dagger}[\text{serve}(X, \text{comm.}), [\text{\dagger}[\text{serve}(y, \text{comm.}), [\text{\dagger}[\text{serve}(X, \text{comm.}) \lor \text{serve}(Y, \text{comm.})]]] \}

The same results are, of course, achieved also by the entry in (26)

(26) \( \text{Answer}(Q, A, w) \) is defined only if \( \text{Match}(Q, A) \) holds. When defined:

\[ \text{Answer}(Q, A, w) = \{q \in Q : w \in q \ \text{and } q \text{ entails } (p \in Q)[\text{Exh}(Q, p, w) = 1] \}

But (26) has a stronger presupposition than (49). This stronger presupposition will account for Spector’s negative islands.

11. An Account of Spector’s Negative Island

11.1. Spector’s Observation

(53) Q: Which books are we required to read?

A: The French books or the Russian books.

Can mean: \( \text{Required}(\text{FB or RB}). \)

(54) Q: Which books did we not read?

A: The French books or the Russian books.

Cannot mean: \( \neg(\text{FB or RB}). \)

**Spector’s proposal:** For the fragment answer in (54), the unavailable (narrow scope) reading requires ellipsis of the predicate \( \lambda Q. \ \neg(Q(\lambda x. \ \text{we read } x)). \) Such ellipsis is possible only if the trace ranges over GQs, such traces are subject to NIs.
11.2. An account of the NI

Dayal presupposition is satisfied in NI environment (and likewise the weaker requirement that every cell in the partition is identifiable via exh by a proposition in the question denotation).

However, the question denotation contains many superfluous items (in particular ¬( FB & RB).

It is thus blocked by the entry in (26) [since not every proposition in Q identifies a cell].

And the facts about modal obviation follow as well (by the logic that I went over in my 2007 SALT talk).

12. Summary of Proposal:

(26) Answer(Q,A,w) is defined only if Match(Q,A) holds. When defined:
    Answer(Q,A,w) ={q∈Q: w∈q and q entails (p∈Q)[Exh(Q,p,w)=1]}

I.e. q is an answer to Q in w iff q is true and is at least as strong as the proposition that identifies the cell to which w belongs.

(27) Match(Q,A) iff
    a. ∀C∈Partition(Q,A)[∃p∈Q[[Exh(Q,p)]A =C]], and  
    b. ∀p∈Q[∃C∈Partition(Q,A)[[Exh(Q,p)]A =C]].

(27)a account for uniqueness and existence presuppositions and for a variety of negative islands, while still allowing for MS if exh can deliver Free Choice.

(27)b provides an account for the sensitivity of Spector Readings to Negative Islands.

Restatement (suggested to me by Roger Schwarzschild).

(55) Answer(Q,A,w) is defined only if P(Q,A) is a partition of A. When defined:
    Answer(Q,A,w) ={q∈Q: w∈q and q entails (p∈Q)[Exh(Q,p,w)=1]}

(56) P(Q,A) = {[Exh(Q,p)]A: p∈Q}