Embedded questions as definite descriptions

An insight from Japanese

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Embedded questions with nominal properties

❖ Case marking

In Japanese, … Fukui (1986)

a. Nominal arguments are usually case-marked.

b. Embedded clauses resist case marking, except (i) nominalized declarative clauses and (ii) interrogative clauses.

Nominal arguments

1. Hanako-**ga** kuruma-**o** katta.
   Hanako-NOM car-ACC bought
   'Hanako bought a car.'

Nominalized declarative clauses

2. John-wa [**Taro-ga** **siken-ni** **ukatta-*(no)-o**] sitteiru
   John-TOP Taro-NOM exam-DAT passed-NMZ-ACC know
   'John knows Taro passed the exam.'

Interrogative clauses

3. John-wa [**dare-ga** **siken-ni** **ukatta-ka-(o)**] sitteiru.
   John-TOP who-NOM exam-DAT passed-Q-ACC know
   'John knows who passed the exam.'

❖ Numeral-classifiers

Like nominal expressions, embedded wh-questions can be modified by numeral-classifiers.

Responsive verbs

4. John-wa [**dare-ga** **siken-ni** **ukatta-ka-(o)**] san-nin-(gurai) sitteiru.
   John-TOP who-NOM exam-DAT pass-Q-ACC three-CL-about know
   'For three of the people who passed the exam, John knows whether they did.'

Kitagawa (2009); Tomioka (2020); Noguchi (2024)

people	pass the exam
Aiko	✔
Bekki	✔
Chiya	✔
Daiki	✔
Hanako	✘

Did **Aiko** pass the exam?	YES
Did **Bekki** pass the exam?	YES
Did **Chiya** pass the exam?	YES
Did **Daiki** pass the exam?	?

Context: Hanako and Taro are working for an undergraduate division. 10 people passed this year's undergraduate exam, but Hanako and Taro doesn't know who they are. So, they need to review the students who took the exam to determine who passed. Hanako is responsible for checking three of them.

Rogative verbs

5. Hanako-wa [**dara-ga** **siken-ni** **ukatta-ka-(o)**] san-nin sirabeta.
   Hanako-TOP who-NOM exam-DAT passed-Q-ACC three-CL checked
   'For three of the people who took the exam, Hanako checks whether they passed the exam.'

Take-home message

Japanese embedded questions are interpreted as definite descriptions.

- ⟦2⟧ = ⟦John knows the people passing the exam⟧
  = ⟦John knows who are the people passing the exam⟧
  (Concealed Question)

More predictions

WH-CL agreements (Tomioka 2020)

Counting books

6. Mari-wa [**dono-hon-ga** **mada kaes-arete-inai-ka**] zyu(s)-**satu**-wa age-rareru.
   Mari-TOP which-book-NOM yet return-PASS-not-Q ten-CL-TOP list-can
   'For ten of the books that have not been returned, Mary can list if they are.'

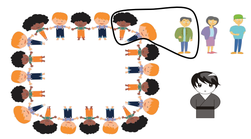
Counting nations

7. Mari-wa [**dono-kuni-ga NATO-no menbaa-dearu-ka**] yon-**kakoku**-sika sir-anai.
   Mari-TOP which-nation-NOM NATO-GEN member-be-Q four-CL-only know-NEG
   'Only for four of the nations that belong to NATO, Mari knows what they are.'

Embedded coordinated wh-questions

Interpreted as coordinating plural entities

8. John-wa [**dare-ga** **kaigi-ni** **sankasi**]-te [**dare-ga** **kaigi-ni**
   John-TOP who-NOM meeting-DAT attend-and
   sankasi-sinakatta-ka] san-nin sitteiru.
   attend-not-Q three-CL know
   'For three of the people who attended the meeting and the people who didn't, John knows if they did/n't.'



Non-propositional answers

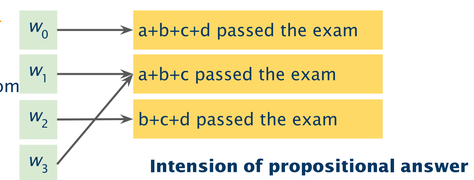
Two types of answers

9. A: Who passed the exam?
   B: (i) Taro and Hanako passed the exam. (propositional answer)
   (ii) Taro and Hanako. (non-propositional answer)

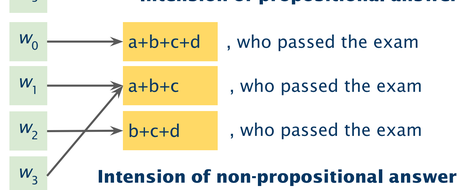
The sentence with the form⌈*x V Q*⌉expresses the subject *x*'s attitude towards the propositional answer to the question *Q*. (Dayal 1996)

Dayal's answerhood operator

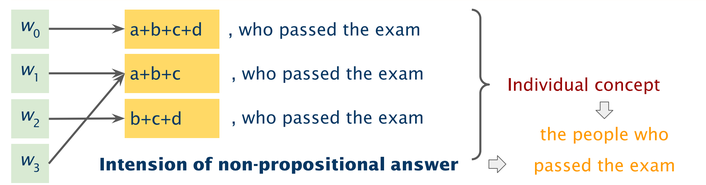
A(*Q*) : **A** maps a set *Q* of propositions to a function from worlds to complete answers.



w_0 a+b+c+d	w_1 a+b+c
w_2 b+c+d	w_3 a+b+c



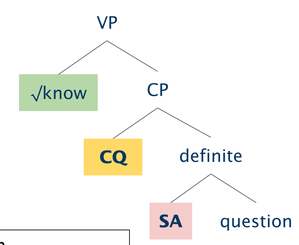
Individual concepts



In Japanese, a question-taking verb can be decomposed into:

- A verbal root (i.e., a predicate of eventualities)
- **CQ**, exclusively

In addition, the non-propositional answerhood operator **SA** is available.



SA	Transform a question to a definite description
CQ	Transform a definite description to a concealed question

Concealed questions

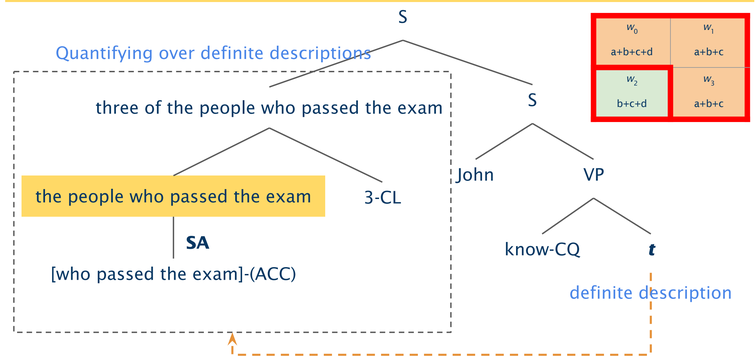
10. John knows the time. ⇒ John knows what the time is.
11. Emily asked Fred's age. ⇒ Emily asked what Fred's age is.

Heim (1979); Romero (2005); Nathan (2006); Aloni & Roelofsen (2011); Frana (2013); Barker (2016); a.o.

⟦**CQ** [**SA** *Q*]⟧ = { { ***w'*** | ⟦**SA** *Q*⟧(***w***) = ⟦SA Q⟧(***w'***) } | ***w*** ∈ *W* }

Groenendijk & Stokhof (1984)

Quantification over definite descriptions



⟦three of the NP⟧(w_0)

= λ*P*. | { *x* : *x* ⊑$_a$ ⟦the NP⟧(w_0) } ⋂ { *x* : *P* (λ*w* ι*y* . *y* = *x* ⋀ *y* ⊑$_a$ ⟦the NP⟧(*w*)) } | ≥ 3

⟦three-CL⟧ (⟦**SA** [who passed the exam]⟧) (λ*d*. John know-**CQ** (*d*))
= | { *x* : *x* ⊑$_a$ ⟦**SA** WH⟧(w_0) } ⋂ { *x* : John know-CQ (λ*w* ι*y* . *y* = *x* ⋀ *y* ⊑$_a$ ⟦**SA** WH⟧(*w*)) } | ≥ 3
= | { *x* : *x* passed in w_0} ⋂ { *x* : John know-CQ (λ*w* ι*y* . *y* = *x* ⋀ *y* passed in *w*) } | ≥ 3

Suppose *x* = a, then { {*w'* | [ι*y* . *y* = a … in *w*] = [ι*y* . *y* = a … in *w'*] } | *w* ∈ *W* }