How to be a ham sandwich or an eel:
The English deferred equative and the Japanese eel sentence

David Y. Oshima (Nagoya University; davidyo@nagoya-u.jp)

Introduction: In some languages including English and Japanese, a nominal predicate construction (NPC; "NP_1 is NP_2") may receive a marked interpretation where the referents of the subject NP (SNP) and the predicate NP (PNP) are understood to be in some pragmatically prominent relation other than identity or inclusion. I refer to NPCs on this marked interpretation as "open-ended-relation NPCs" (ONPCs). The Japanese ONPC has been called the "eel sentence (eel construction)", after an oft-cited example involving *unagi* 'eel' as its PNP (Hoffer 1972; Tokizaki 2003). The English ONPC is discussed in good details by Ward (2004) under the rubric of the "deferred equative". The English ONPC is discourse-pragmatically more constrained than the Japanese one, as illustrated in (1)/(2).

(1) (a restaurant customer to a waitperson who brought several dishes to the table)
 (E) I'm the ham sandwich.
 (J) Watashi wa hamusandoitchi desu. '(lit.) I am (the) ham sandwich.'

(2) (in reply to: "What did you have for your lunch? I had a hamburger.")
 (E) #I'm {a/the} ham sandwich.
 (J) Watashi wa hamusandoitchi desu. '(lit.) I am (a) ham sandwich.'

This work develops semantic analyses of the two ONPCs that improve on previous accounts.

Ward (2004) on deferred equatives: Ward (2004) convincingly argues that English sentences like (1E) and (3B) instantiate a special construction, the deferred equative, which is not reducible to metonymic transfer at the level of nominals (as in "The ham sandwich at Table 7 wants his check"; e.g. Copestake and Briscoe 1995).

(3) A: I remember that one student each is writing an M.A. thesis on *Alien*, *Rocky*, and *Platoon*, but I cannot recall who is working on which movie.
 B: Ken is *Alien*, Joe is *Rocky*, and Chris is *Platoon*.

He proposes that the deferred equative (= the English ONPC) (i) presupposes the presence of a contextually salient *pragmatic mapping* between two (non-empty/non-singleton) sets of relevant discourse referents, and (ii) asserts that on this mapping the referent of the SNP corresponds to that of the PNP. Pragmatic mappings are formulated with the notion of open proposition (OP), "a proposition with one or more variables or underspecified elements, corresponding to that aspect of information structure that constitutes backgrounded or presupposed information". In the case of (1E), the relevant OP looks like (4a).

(4) a. OP: X *maps onto* Y, where X is a member of the set {customers} and Y is a member of the set {orders}.
 b. FOCI: I, the ham sandwich

One shortcoming of this formulation is that it wrongly predicts that (given that by definition a mapping cannot be one-to-many) an utterance like (5a) is infelicitous, a member of {customers} corresponding to two members of {orders} (note that here the speaker need not assume that the waitperson is aware that the ham sandwich and fried chicken were ordered by the same customer, so that the two dishes constitute a "single order" in a sense). On the other hand, the English ONPC does convey what may be called the exhaustivity implication (cf. Velleman et al. 2012 and Büring & Križ 2013 on the exhaustivity implication of the cleft construction), as a non-presuppositional not-at-issue content, as illustrated by (5b).

(5) (a restaurant customer to a waitperson who brought five dishes to a table of three)
 a. I'm the ham sandwich and fried chicken.
 b. I'm the ham sandwich. #I'm the fried chicken, too.
 cf. I ordered the ham sandwich. I ordered the fried chicken, too.

Formal analyses of regular and open-ended-relation NPCs in English: I assume that while comple-

ment NPs (definites, indefinites, and names) denote generalized quantifiers, predicate NPs in regular NPCs are "predicatized" by the rule given (6). This analysis of the regular NPC incorporates the key idea of that of Montague (1973), while departing from it in taking a predicate NP to be predicatized by a phrase-modificational rule rather than the semantics of BE; this has an advantage of being extendable to nominal predicate constructions without a copula (e.g. "They made Cicero an orator", "Me a doctor? No way!").

(6) **the Identity/Inclusion predicatization rule**

$$\left[\begin{array}{ll} \text{INPUT} & \left[\begin{array}{ll} \textit{expression} & \\ \text{PHONOLOGY} & \boxed{1} \\ \text{SYNTAX} & \boxed{2}\left[\begin{array}{ll} \text{CATEGORY} & \textit{noun} \\ \text{VALENCE} & !\ \textit{empty-list} \end{array}\right] \\ \text{SEMANTICS} & \alpha\text{'} \end{array}\right] \\ \text{OUTPUT} & \left[\begin{array}{ll} \textit{expression} & \\ \text{PHONOLOGY} & \boxed{1} \\ \text{SYNTAX} & \boxed{2}\left[\text{VALENCE} \quad \langle \text{NP} \rangle\right] \\ \text{SEMANTICS} & \lambda X[\lambda x[X(\lambda y[x = y])](\alpha\text{'})] \end{array}\right] \end{array}\right]$$

(7) Cicero is Tully.
   a. Tully $\mapsto \lambda P[P(\textbf{tully})]$
   b. (is) Tully [predicatized with rule (6)] $\mapsto \lambda X[\lambda x[X(\lambda y[x = y])]](\lambda P[P(\textbf{tully})])$
      $\rightarrow_\beta \lambda x[x = \textbf{tully}]$
   c. Cicero $\mapsto \lambda Q[Q(\textbf{cicero})]$
   d. Cicero is Tully $\mapsto \lambda Q[Q(\textbf{cicero})](\lambda x[x = \textbf{tully}])$
      $\rightarrow_\beta \textbf{cicero} = \textbf{tully}$

(8) Cicero is an orator.
   a. an orator $\mapsto \lambda P[\exists z(\textbf{orator}(z)\ \&\ P(z))]$
   b. (is) an orator [predicatized with rule (6)] $\mapsto \lambda X[\lambda x[X(\lambda y[x = y])]](\lambda P[\exists z[\textbf{orator}(z)\ \&\ P(z))])$
      $\rightarrow_\beta \lambda x[\exists z(\textbf{orator}(z)\ \&\ x = z)]$
   c. Cicero $\mapsto \lambda Q[Q(\textbf{cicero})]$
   d. Cicero is an orator $\mapsto \lambda Q[Q(\textbf{cicero})](\lambda x[\exists z[\textbf{orator}(z)\ \&\ x = z]])$
      $\rightarrow_\beta \exists z[\textbf{orator}(z)\ \&\ \textbf{cicero} = z]]$
      $\leftrightarrow \textbf{orator}(\textbf{cicero})$

Regarding the English ONPC, I suggest that for it to be felicitously used it is required (i) that there be (a) a contextually prominent set of entities P that contains the referent of the SNP and at least one other member, (b) a contextually prominent set of entities Q that contains the referent of the PNP and at least one other member, and (c) a contextually prominent binary relation R and (ii) that it is common ground that R is a serial (left-total) and surjective (right-total) correspondence from P to Q (R is possibly but not necessarily a mapping from P to Q).

Predicatization rule (9) captures theses features of the English ONPC. "$\sqsubseteq$" stands for the (individual or material) parthood relation (Link 1998). Materials between curly braces ($\{\cdot\}$) and ones between vertical bars ($|\cdot|$) respectively represent presuppositional and non-presuppositional not-at-issue contents. Variable $\mathbb{R}$ is evaluated as a contextually prominent binary relation, and $\mathbb{P}$/$\mathbb{Q}$ as contextually prominent non-empty, non-singleton sets.

(9) **the open-ended-relation predicatization rule (English)**

$$\left[\begin{array}{ll}
\text{INPUT} & \left[\begin{array}{ll}
\textit{expression} & \\
\text{PHON} & \boxed{1} \\
\text{SYN} & \boxed{2}\left[\begin{array}{ll}\text{CATEGORY} & \textit{noun} \\ \text{VALENCE} & !\ \textit{empty-list}\end{array}\right] \\
\text{SEM} & \alpha\text{'}
\end{array}\right] \\
\text{OUTPUT} & \left[\begin{array}{ll}
\textit{expression} & \\
\text{PHON} & \boxed{1} \\
\text{SYN} & \boxed{2}\left[\text{VALENCE} \quad \langle \text{NP} \rangle\right] \\
\text{SEM} & \lambda X[\lambda x[X(\lambda y[\{\mathbb{P} \leftrightarrows_{\mathbb{R}} \mathbb{Q}\ \&\ x \in \mathbb{P}\ \&\ y \in \mathbb{Q}\} \\
 & [|\forall z \in \mathbb{Q}[\mathbb{R}(x,z) \rightarrow z \sqsubseteq y]|[\mathbb{R}(x,y)]]])]](\alpha\text{'})
\end{array}\right]
\end{array}\right]$$

(10) For any context c, world w, and assignment g,
- a. $[\![\{\phi\}[\psi]]\!]^{c,w,g}$ is defined only if $[\![^\wedge\phi]\!]^{c,w,g} \in$ CG(c) (i.e. it is common ground in c that ϕ); if defined, $[\![\{\phi\}[\psi]]\!]^{c,w,g} = [\![\psi]\!]^{c,w,g}$;
- b. $[\![|\phi|[\psi]]\!]^{c,w,g}$ is defined only if $[\![\phi]\!]^{c,w,g} = 1$; if defined, $[\![|\phi|[\psi]]\!]^{c,w,g} = [\![\psi]\!]^{c,w,g}$;
- c. $[\![\mathbb{R}]\!]^{c,w,g}$ is defined only if g($\mathbb{R}$) is a relation between two entities that is prominent in c; if defined, $[\![\mathbb{R}]\!]^{c,w,g}$ = g($\mathbb{R}$);
- d. $[\![\mathbb{P}]\!]^{c,w,g}$ is defined only if g($\mathbb{P}$) is a non-empty, non-singleton set of entities that are prominent in c; if defined, $[\![\mathbb{P}]\!]^{c,w,g}$ = g($\mathbb{P}$). Likewise for $[\![\mathbb{Q}]\!]^{c,w,g}$.

(11) $P \leftrightarrows_R Q =_{def} \forall x_1 \in P, \forall y_1 \in Q[\exists x_2 \in P, \exists y_2 \in Q[R(x_1,y_2)\ \&\ R(x_2,y_1)]$

To illustrate with a specific example, (12) presupposes that there are contextually prominent (non-empty/non-singleton) sets of {people} and {movies} (a) that respectively contain Ken and *Alien* and (b) such that each member of {people} stands in a pragmatically prominent relation R with some member of {movies}, and each member of {movies} is such that some member of {people} stands in R with it; it furthermore conveys that Ken does not stand in R with any movie other than *Alien*.

(12) Ken is *Alien*. "Ken saw *Alien*, Ken is writing a M.A. thesis on *Alien*, ..." $\mapsto$
$\{\mathbb{P} \leftrightarrows_{\mathbb{R}} \mathbb{Q}$ & **ken** $\in \mathbb{P}$ & **alien** $\in \mathbb{Q}\}[|\forall z \in \mathbb{Q}[\mathbb{R}$(**ken**,$z) \rightarrow z \sqsubseteq$ **alien**$]|[\mathbb{R}$(**ken**,**alien**$)]]$

The Japanese open-ended-relation NPC: The Japanese ONPC (a.k.a. the eel sentence) is associated with a strictly weaker presupposition than the English one, but it still is more discourse-pragmatically constrained than acknowledged in the previous literature. In addition to there being a contextually prominent two-place relation R, the construction presupposes that there is some x such that $\langle$the referent of the SNP, $x\rangle \in R$ ("existence presupposition"; see the contrast between (13B$_2$) and (14B$_2$)), and furthermore that there is at least one pair of entities $\langle y, z\rangle$ such that (i) y is distinct from the referent of the SNP and (ii) $\langle y, z\rangle \in R$ ("multiple-pair presupposition"; see (15)/(16)). Also, like the English one, the Japanese ONPC conveys an exhaustivity implication, as illustrated in (17).

(13) A: "I heard that you and your husband are marine biologists. Do you work on particular creatures, like whales?"
B$_1$: Watashi wa kuromaguro no seitai o kenkyuu shite imasu.
'I study the life of bluefin tuna.'
B$_2$: **Otto wa unagi** {no seitai o kenkyuu shite imasu/**desu**}.
'My husband {studies the life of/is} eel.'

(14) (B and her husband are both marine biologists. A has met B for the first time, and does not anything about her husband.)
A: "So you are a marine biologist? Do you work on a particular creature, like whales?"

B_1: Hai, watashi wa kuromaguro no seitai o kenkyuu shite imasu.
'Yes, I study the life of bluefin tuna.'
B_2: (**Chinamini**) **otto wa unagi** {no seitai o kenkyuu shite imasu/**#desu**}.
'(Incidentally) my husband {studies the life of/#is} eel.'

(15) (It is common ground that Ken is the only person who had a meal.)
A: "So, what did Ken eat?"
B: Ken wa hamusandoitchi o tabemashita. 'Ken ate a ham sandwich.'
B': **#Ken wa hamusandoitchi desu**. '(lit.) Ken is (a) ham sandwich.'

(16) A: "What did you have for your lunch? I had a hamburger."
B: Watashi wa hamusandoitchi o tabemashita. 'I ate a ham sandwich.'
B': **Watashi wa hamusandoitchi desu**. '(lit.) I am (a) ham sandwich.'
B": **Watashi mo hanbaagaa desu**. '(lit.) I am (a) hamburger, too.'

(17) A: "What did you have for your lunch? I had a hamburger."
B: Watashi wa hamusandoitchi o tabemashita. Ato, furaidochikin mo tabemashita.
'I ate a ham sandwich. And I ate fried chicken, too.'
B': **Watashi wa hamusandoitchi desu**. **#Ato, furaidochikin de mo arimasu**.
'(lit.) I am (a) ham sandwich. And I am fried chicken too.'
cf. Watashi wa gaka desu. Ato, toogeika de mo arimasu.
'I am a painter. And I am a potter, too.'

The rule given in (18) will yield the meaning of a Japanese ONPC that captures these features.

(18) **the open-ended-relation predicatization rule (Japanese)**

$$\left[\begin{array}{ll}
\text{INPUT} & \left[\begin{array}{ll}
\textit{expression} & \\
\text{PHON} & \boxed{1} \\
\text{SYN} & \boxed{2}\left[\begin{array}{ll}\text{CATEGORY} & \textit{noun} \\ \text{VALENCE} & !\ \textit{empty-list}\end{array}\right] \\
\text{SEM} & \alpha\text{'}
\end{array}\right] \\
\text{OUTPUT} & \left[\begin{array}{ll}
\textit{expression} & \\
\text{PHON} & \boxed{1} \\
\text{SYN} & \boxed{2}\left[\text{VALENCE} \quad \langle \text{NP} \rangle\right] \\
\text{SEM} & \lambda X[\lambda x[X(\lambda y[\{\exists y_1, x_2, y_2[\mathbb{R}(x,y_1)\ \&\ \mathbb{R}(x_2,y_2)\ \& \\
 & x_2 \neq x]\}[|\forall z[\mathbb{R}(x,z) \rightarrow z \sqsubseteq y]|[\mathbb{R}(x,y)]]])]](\alpha\text{'})
\end{array}\right]
\end{array}\right]$$

(19) Ken wa *Alien* desu. '(lit.) Ken is *Alien*.' $\mapsto$
$\{\exists y_1, x_2, y_2[\mathbb{R}(\textbf{ken},y_1)\ \&\ \mathbb{R}(x_2,y_2)\ \&\ x_2 \neq \textbf{ken}]\}[|\forall z[\mathbb{R}(\textbf{ken},z) \rightarrow z \sqsubseteq \textbf{alien}]|[\mathbb{R}(\textbf{ken},\textbf{alien})]]$

The proposed analyses account for the contrast illustrated in (1)/(2). They also correctly predict that (19) can but (12) cannot be felicitously uttered as a reply to: "I heard that Ken and Joe saw different movies, but I have no clue what they are. What did Ken see?".

References:

Copestake, A. & T. Briscoe. 1995. Semi-productive polysemy and sense extension. *Journal of semantics* 12.

Hoffer, B. 1972. Contrastive analysis of basic sentence patterns in Japanese and English. In: *Nichiei no kotoba to bunka*. Sanseido.

Büring, D. & M. Križ. 2013. It's that, and that's it! Exhaustivity and homogeneity presuppositions in clefts (and definites). *Semantics & Pragmatics* 6.

Link, G. 1998. *Algebraic semantics in language and philosophy*. CSLI Publications.

Montague, R. 1973. The proper treatment of quantification in ordinary English. In: *Approaches to natural language*. Springer.

Tokizaki, H. 2003. Eel sentences in Japanese and English. In: *A new century of phonology and phonological theory: A Festschrift for Professor Shosuke Haraguchi on the occasion of his sixtieth birthday*. Kaitakusha.

Velleman, D.B., D. Beaver, E. Destruel, D. Bumford, E. Onea & E. Coppock. 2012. It-clefts are IT (inquiry terminating) constructions. In: *Proceedings of SALT*, vol. 22.

Ward, G. 2004. Equatives and deferred reference. *Language* 80.