Conversational Eliciture

Jonathan Cohen* and Andrew Kehler†

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1 The phenomenon

(1) a. A jogger was hit by a car in Palo Alto last night. (Hobbs 1990)
   b. A farmer was hit by a car in Palo Alto last night.

The NP a jogger in (1a) defeasibly invites inference that victim was jogging at the time of the accident. Nothing analogous in (1b).

Note inference is merely invited, not entailed. Meets standard tests for extrasemantic status: felicitously cancellable, reinforceable (Grice 1975; Hirschberg 1991; Horn 1984; Sadock 1978):

(2) a. John is meeting a woman this evening; in fact she’s his wife/but she’s not his wife.
   b. #John is meeting a woman this evening; but the person he’s meeting is not female/in fact the person he’s meeting is female.
   c. A jogger was hit by a car in Palo Alto last night; but she wasn’t jogging at the time of the accident/and in fact she was jogging at the time of the accident.

Get such inferences from material in a variety of configurations besides indefinite head nouns in (1a–b). E.g., definite descriptions (Kronfeld 1990):

(3) a. Washington D.C. welcomes the meeting of the Linguistic Society of America.
   b. The city with the greatest diversity of languages spoken welcomes the meeting of the Linguistic Society of America.
   c. The murder capital of the world welcomes the meeting of the Linguistic Society of America.

Modifiers of head noun:

(4) a. The drug-addled undergrad fell off of the Torrey Pines cliffs.
   b. The well-liked undergrad fell off of the Torrey Pines cliffs.
   c. The normally risk-averse undergrad fell off of the Torrey Pines cliffs.

(4a) invites the inference that the drugs caused the undergrad to fall off of the cliff, while (4b) does not invite the corresponding inference that being well-liked was a cause of the falling. (4c) yields a counter-to-expectation inference, leading us to be surprised that a normally risk-averse undergrad would fall off of the cliffs.

Relative clause modifiers in object NPs (Rohde, Levy, and Kehler 2011):

*Department of Philosophy, University of California, San Diego, 9500 Gilman Drive, La Jolla, CA 92093-0119, joncohen@aardvark.ucsd.edu
†Department of Linguistics, University of California, San Diego, 9500 Gilman Drive, La Jolla, CA 92093-0108, akehler@ucsd.edu
Three-way distinction similar to (4a–c).
Non-lexical cases:

(6) a. My new alarm clock is annoying. [uttered in a loud voice]
   b. My new alarm clock is annoying. [uttered in a nasal voice]

Common property: a speaker’s decision to use a particular way of referring to an entity over available alternatives invites the hearer to draw inferences not triggered by any syntactic relationship or other type of felicity requirement on linguistic material.
Our label: ELICITURE. Intended to suggest that, by choosing a particular linguistic form, a speaker elicits inferences on the part of the hearer that would not otherwise be drawn.

2 Empirical confirmation

Inferences confirmed in Mechanical Turk passage completion experiment.
Implicit causality verbs: semantically interpreted as involving causation, typically the cause is one of the (animate) verbal arguments.
When attached to a causal clause with ambiguous pronoun (form: NP V NP because Pro . . .), reveal a bias for attribution of causal agency to either subject NP, as in (7a), or object NP, as in (7b) (Caramazza et al. 1977; Garvey, Caramazza, and Yates 1976):

(7) a. Sally, frightens/confuses Mary because she, is beautiful.
   b. Sally loves/hates Mary because she, is beautiful.

Completions on materials with implicit causality verbs typically provide explanations. In cases with object-biased verbs, completing explanations will tend to focus on features of the object NP. Hence, manipulating RC specifying object NP should affect completing explanations offered.
Three-way context manipulation (RC type) with object-biased implicit causality verbs. Object NPs included relative clauses that were independently judged as encoding an explanation for the event described (type Expl, as in 5a), neutral (type NoExpl, as in 5b), or expectation-violating (type ViolExp, as in 5c). Participants (n = 17) supplied a follow-on sentence to complete the passage, and two annotators blind to the hypothesis coded the data. Examples (types Expl/NoExpl/ViolExp):

The professor rewarded the student who received a perfect score on the final.
   who stopped by during office hours yesterday.
   who failed to hand in any of the homeworks.
The singer ridiculed the fan who came on stage and took off his clothes.
   who had contacted him about buying tickets.
   who has attended all of his shows for the last two years.
The student worships the professor who gave him an A+ in his class.
   who teaches Philosophy 101.
   who gave him an F in his class.
The babysitter despises the child who acts out at every opportunity.
   who he watches on Sunday afternoons.
   who is really well-behaved.

1Kehler et al. (2008) found 60%, compared to 24% for a control set of non-IC verbs.
Prediction: there will be more explanation continuations for NoExpl (5b) and ViolExp (5c) contexts than Expl (5a) contexts, since unlike NoExpl and ViolExp, Expl contexts already provide an explanation.

This is indeed what we found: Participants wrote fewer explanations in the Expl condition (38.9%) compared to the NoExpl condition (75.4%; \( p < .001 \)) and the ViolExp condition (65.2%; \( p < .001 \)).

### 3 Product differentiation

#### 3.1 Gricean implicature

Grice noted that a speaker’s choice of referential form can give rise to implicatures:

(8) X is meeting a woman this evening.

…would normally implicate that the person to be met was someone other than X’s wife, mother, sister, or perhaps even close platonic friend (56).

…the implicature is present because the speaker has failed to be specific in a way in which he might have been expected to be specific, with the consequence that it is likely to be assumed that he is not in a position to be specific (57).

Implicatures triggered by interpretative failure (norm violation); inference about agent rationality and cooperativity saves the day by enriching interpretation.

Kronfeld (1990) runs a Gricean story on strings of the form \( \langle D \text{ is } F \rangle \), where \( D \) is a definite description and \( F \) is a predicate, such as (sort of) in examples (3b–c).\(^2\)

For example, (3b) is needlessly prolix, hence Quantity-violating; treat it as expressing (9a).

Also explains oddity of (3c). Hearers find violation, then try but fail to find plausible modal base generating norm-compliant content, as in (9b).

(9) a. In view of \( f \), any city with the greatest diversity of languages spoken must welcome the meeting of the Linguistic Society of America. \([f=\text{the fact that linguists like to encounter linguistic diversity}]\)

b. In view of \( f \), any murder capital of the world must welcome the meeting of the Linguistic Society of America. \([f=?]\)

Some worries.

First, phenomenon extends to many constructions other than simple predicational sentences with a definite descriptions as subject terms; bad to restrict account to this one construction. E.g., for indefinites (1) and relative clauses (5), in cases not involving the predicative material at all (10), in cases of multiple inferences between predicative and non-predicative material (11):

(10) The drunk kid who got into a car accident is home now.

(11) The drunk kid who got into a car accident is in the hospital.

Second, list of triggers is suspect. *Pace* Kronfeld, proximity needn’t trigger inference:

(12) a. John fired the employee who was always late.

\(^2\)Compressing: definite-description-containing predications of form \( \langle D \text{ is } F \rangle \) violate brevity/quantity and relevance/manner norms unless construed as presupposing some projectible, not merely de facto, explanation of why \( D \)-satisfaction and \( F \)-hood coincide. Thus, hearers seek out an intensionally justified generalization of the form \( \langle \text{in view of } f \rangle \text{ any } D \text{ must be } F \rangle \) (where \( f \) is a contextually supplied “modal base” — e.g., epistemic, deontic, physical, nomic, conventional, legal, teleological, specific factual — in view of which, intuitively, \( D \)-satisfaction is necessarily connected with \( F \)-hood (Kratzer 1977, 1981).)
b. John fired the employee who has brown hair, a beard, and glasses.

Gricean riposte: the extrasemantic inference at work in (12a) is a result of a violation of a Gricean norm of Relation/relevance.

General problem: not clear what counts as relevant, and what are the limits on accommodation.

Putting this aside, relevance-based explanation will have trouble explaining extrasemantic content conveyed in cases involving violated expectations, such as (5c). Here the crucial background generalization is that an employee with a long history of awards would not get fired. Or inferences arising from non-lexical properties, as in (6): relevance is a relation between contents, so doesn’t apply to features that lack lexical expression.

Further, it seems false that there is a trigger for the search for relevance prior to the recognition of relevance itself.

A more significant problem for any Gricean view: inferences need not be triggered by violations of Gricean (or other) norms. (Cf. (1a).)

3.2 Explicature, impliciture

For Grice, what counts as what is said stays close to the literal meaning of constituents, allowing for fixation of reference, tense, and other indexical elements, ambiguity resolution. Others argue for alternative types of pragmatic strengthening as part of what is said.

E.g., Relevance Theorists take examples such as (13a–d) to motivate extra-semantic expansion (“explicatures”) of “the development of the logical form of the utterance” (Sperber and Wilson 1986, p. 183) so as to include the bracketed material prior to semantic interpretation, as a step on the way to fixing truth-conditional contents expressed by utterances (unlike Gricean implicature, which occurs after a truth-conditional content is already fixed).

(13) a. I haven’t had breakfast. [today]
   b. I haven’t had sex. [ever]
   c. John and Mary are married. [to each other]
   d. The student ran up to the edge of the cliff and jumped. [off the cliff]

Cf., Bach’s “impliciture,” an expansion on the way to the fixation of truth-conditional semantic content that occurs “either because the utterance is semantically underdeterminate and completion is required or because what is being communicated is an expanded version of the proposition expressed” (Bach 1994, p. 126).

Suggestion: extrasemantic inferences can affect truth-conditional meaning (“intrusion”) in a way implicature can’t. Evident in (13a–d). Even more evident in conveyance of the bracketed material in (14); possible truth of (14c) suggests conveyed material must intrude in (14a–b):

(14) a. Annie got married and had a baby. [in that order]
   b. Annie had a baby and got married. [in that order]
   c. If Annie got married and had a baby, her parents would be happy, but if she had a baby and got married, they’d be very unhappy. (cf. Cohen (1971, p. 58); Wilson (1975, p. 151)).

Possible reason for assimilating our cases to these? Similar intrusion in cases of eliciture:

(15) a. If the company fires an employee who comes in late, a union complaint will be lodged.
   b. Every time the company fires an employee who comes in late, a union complaint is lodged.
Possibly both true even if Norman Snodgrass, who was discovered to be embezzling money, was fired on a
day on which he happened to come in late and the union did nothing. That he wasn’t fired because he was
late causes event to not satisfy antecedent of conditional in (15a), and to sit outside domain restriction of
(15b).

But notice: like implicature, explication/impliciture are rescue strategies triggered by breakdown when
semantics otherwise fixes no/inappropriate truth-condition content.3

Again, our inferences do not depend on incompleteness/infelicity; triggered by neither grammatical
shortcoming nor norm violation. Sentences need not leave unfilled slots open in their interpretations;
they are felicitous, compliant with communicative norms even if inferences not drawn. Moreover, when
inferences do occur, new content doesn’t replace, but sits alongside, old content.

### 3.3 Local pragmatic strengthening

Another class of enrichments. Strengthening (/modification) in meaning of a constituent (/implicit relation-
ship between constituents), as in “conditional perfection” (16a) and “conjunction buttressing” (16b):4

(16) a. I’ll give you five dollars if [and only if] you mow the lawn.

b. Martha observed the children at play and [as a result] smiled with pleasure.

Many controversies, including fights about which cases to count, whether can be treated as Gricean
implicatures, whether merely invited or mandatory (require triggering by violations), etc. However these
fights shake out, our cases differ.

First, local mechanisms on offer triggered by specific lexical items associated with specific relations
(e.g., ‘or’ for disjunction, ‘if. . . then’ for conditionals, ‘key’+-‘door’ and the unlocking relation, ‘swallowed’
and the taking away relation). In contrast, elicitures include many for there is no lexical trigger smaller than
the whole utterance (e.g., (1a), (6)).

Second, in local cases inferences are constrained to specific outputs: conditionals perfected to bicondi-
tionals, ‘or’ strengthened to inclusive disjunction, unlockings strengthened to unlockings by aforemen-
tioned keys, swallowings loosened to takings by inanimate objects, etc., via specific, conventionalized
association of particular forms with particular contents. Range of inferred contents in cases of eliciture
much wider, not confined to conventionalized associations.

Bach (1994, p. 144) divides implicatures into “completions” (“the filling in of a propositional radical”) and “expansions”
(“the fleshing out of the minimal proposition expressible by an utterance”); holds that the former are mandated by conceptual
incompleteness (p. 127, p. 133) while the latter are triggered (but still pragmatically mandated) by violations of something like
conversational norms (p. 136).

Sperber and Wilson write that

…At every stage in disambiguation, reference assignment and enrichment, the hearer should choose the solution
involving the least effort, and should abandon this solution only if it fails to yield an interpretation consistent with
the principle of relevance (Sperber and Wilson 1986, p. 185).

Many other proposed (controversial) case types, including:

- inference to stereotypes: secretary ⇒ female secretary
- negative strengthening: I don’t like Alice ⇒ I positively dislike Alice
- bridging: John unpacked the picnic. The beer was warm. ⇒ The beer was part of the picnic.
- preferred local coreference: John came in and he sat down. ⇒ John came in and John sat down.
- noun-noun compounds: The oil compressor gauge ⇒ The gauge that measures the state of the compressor that compresses the oil.
- possessive interpretation: Wendy’s children ⇒ Those children to whom Wendy is a parent.
- free enrichment: Mary took out her key and opened the door. ⇒ Mary opened the door with the key she had taken out.
- loosening: The ATM swallowed my credit card. ⇒ The (inanimate) ATM took my credit card and didn’t give it back.
- transfer: I am parked out back. ⇒ The car I own/ drive is parked out back.

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4 At every stage in disambiguation, reference assignment and enrichment, the hearer should choose the solution
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the principle of relevance (Sperber and Wilson 1986, p. 185).
Third, inferred extrasemantic content sits alongside utterance meaning; meaning is not locally modified (narrowed, strengthened, transferred) to a stereotypical interpretation, but left in situ and supplemented.

4 Eliciture as associative inference

An alternative picture: our inferences are instances of general cognitive (hence not specifically linguistic) strategies for making sense of the world. These strategies draw on information semantically encoded in heard utterances, but also general and specific world knowledge, and are applicable to linguistic and non-linguistic inputs.

Two non-linguistic scenarios:

(17) a. Observer sees a chronically tardy employee show up late for work again, and soon thereafter witnesses the employee being fired.

b. Observer sees a chronically tardy employee show up late for work again, and soon thereafter sees a customer asking the employee where the automotive department is.

Likely inference between lateness and firing in (17a), even without first-hand evidence. No likely inference between the customer’s question and the employee’s lateness in (17b): world knowledge does not support a causal/explanatory connection. Lesson: when an inference of this sort suggests itself and is supported by world knowledge, cognizers are defeasibly disposed to draw it.

Maybe same strategies show up in interpretation of linguistically presented descriptions of the world.

Two linguistic scenarios:

(18) a. The boss fired the employee who came in late again.

b. A customer asked the employee who came in late again where the automotive department is.

Interpret (18a) by reasoning associating the firing with the lateness in the same way as in (non-linguistic) case (17a). Won’t draw a corresponding causal inference when presented with (18b), where all that is necessary for the object NP to be felicitous is that it allows the addressee to identify the referent, analogous to (17b).

How do interpreters draw such inferences, making sense of both linguistic and non-linguistic cases?

Explain inferences in terms of thinkers’/hearing’s attempts to establish coherence. On coherence theories of discourse interpretation (Asher and Lascarides 2003; Hobbs 1979, 1990; Lascarides and Asher 1993), hearers subsume distinct sentences under coherence relations mirroring Humean associative relationships (cause-effect, contiguity, resemblance). E.g., hearers understand (20) as a coherent discourse by construing it as expressing a cause-effect relation between events encoded by constituent sentences:

(20) The boss fired the employee. He was always late.

Our proposal: that very story about discourse/intersentential interpretation extends to intrasentential interpretation as well. Hearers bring sentences in (20) under the cause-effect relation by (defeasibly) inferring a causal relationship between what is expressed by its parts (viz., sentences). Hearers bring clauses in (18a) under a cause-effect relation by (defeasibly) inferring a causal relation between what is expressed by its parts (viz., clauses). Given general non-linguistic beliefs about causation in the world, this story explains why (18a) generates causal eliciture, and why (18b) does not.

As one would expect on this story, details of context can push around available inferences in an extremely flexible way. Hard to imagine a predictive, non-ad-hoc, finitely axiomatizable theory. E.g., no causal eliciture from (21a) in ordinary contexts, but it might in a context in which John is a protective parent.

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5In contrast, oddity of (19) arises from difficulty of subsuming parts under available coherence relations:

(19) # The employee broke his leg. He likes plums.

Knott and Dale (1994)
with a Bieber-fan daughter who also works for his company. E.g., utterance of (21b) ordinarily invites
the eliciture that the runner was running at the time of the accident if the conversants take the victim to
be an occasional/hobbyist runner, but much less if they take the victim to be a professional runner — or,
alternatively, in a case where the string is uttered by one runner and heard by another runner at a meeting
of their running club.

(21) a. John fired the employee who looks like Justin Bieber.

b. A runner was hit by a car in Palo Alto last night.

5 Conclusion

An efficient language will allow speakers to take advantage of their addressee’s knowledge store and
capacity for inference in whatever ways are possible.

Gricean implicatures, for example, take advantage of higher-order properties of human cognition —
rationality and cooperativity — and an inference procedure able to bring meaning into norm compliance.
Elicitures share some properties.

But elicitures also differ from other types of expansions: they don’t have the same sort of failure-
driven triggers, nor the same type of axiomatizable inference procedures associated with them. Instead,
the addressee’s reasoning seems to be nothing more than: the speaker chose a linguistic form that brought
to mind an inference, so she must have intended me to make that inference. That’s why felicity undamaged
when no such inference presents.

Underlying mental capacities — the association of ideas — give rise to a less-constrained set of
inferences. The search problem is larger, and not amenable to the same procedural resolution mechanisms
that pragmatics literature has studied.

Modest view: our cases highlight another interesting type of extrasemantic enrichment. Immodest view:
ours is the general case, while familiar cases (Gricean implicature, filling in unsaturated argument places)
are special cases with constrained search spaces. Relative tractability of the special cases has obscured the
larger portion of the iceberg.

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