An inquisitive approach to occasion-sensitivity

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Context-sensitivity

- NL expressions encode information but some expressions encode information only in context / encode different information in different contexts
- Context sensitivity $\approx$ contextual information is necessary to determine which information is communicated by expressions.
- Different classes of expressions require different types of contextual information to be interpreted
- My focus: a type of context-sensitivity that is not associated with a particular class of expression (Recanati ‘free pragmatic enrichment’, Travis ‘occasion-sensitivity’)

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Linguistically mandated context-sensitivity

1. He is hungry (→ John, Bill, Bob...)  [salient male]
2. Lara is tall (→ for a 3-year old, for a basketball player)  [standards of comparison]
3. Bob weighs 70 kilos  [standards of precision]
4. John knows that the bank is open on Saturdays  [epistemic standards]
5. The meal was tasty (→ to me)  [judges]
6. John knows which card is the winning card (→ the ace of spades, left/right)  [conceptual covers]
7. Everyone attended the meeting  [quantifier domain restriction]
Context-sensitivity in question semantics

8. Which students passed the exam? [Domain of quantification]
9. What is the winning card? [Method of identification, Aloni 2005]
10. Who is driving to the party tonight? [Mention-some/-all Van Rooij 2003]
11. Where is Mary? [Level of granularity Ginzburg 1995]

In (1) – (11) context-dependence has a linguistic source associated with a certain class of expressions.
Cross-category C-S

The leaf is green
Sid has a desk
The shoes are under the bed

There are no obviously context-sensitive items in these sentences (modulo definite descriptions), so they should all have classical truth-conditions: their truth-valuations should not vary cross-contextually.
Travis case: The leaf is green

Pia’s Japanese maple is full of russet leaves. Pia paints them green.

15 Zoe needs a green leaf for her decoration
   a. Zoe: Is the leaf green?
   b. Pia: Yes, the leaf is green.

16 Zoe is a botanist seeking green leaves for a study of green-leaf chemistry
   a. Zoe: Is the leaf green?
   b. Pia: # Yes, the leaf is green.
   c. Zoe: No, the leaf is not green.
Motivating examples

Travis cases: Sid has a desk

Sid, an impoverished student, uses a door over two stacks of milk crates as a desk to write on.

17 Concerned if Sid has a desk to write on
   a. Pia: Does Sid have a desk?
   b. Max: Sid has a desk

18 On the look out for high end furniture
   a. Pia: Does Sid have a desk?
   b. Max: # Sid has a desk
   c. Pia: No, Sid does not have a desk
Motivating examples

Travis case: The shoes are under the bed

Pia is looking for her shoes. Sid sees them, heels protruding from beneath the bed.

19 *Retrieving the shoes to go out*
   a. Pia: Are the shoes under the bed?
   b. Sid: The shoes are under the bed

20 *Pia wants to make sure that her shoes would not catch the eye of the kleptomaniacal Zoe and are well hidden*
   a. Pia: Where are the shoes?
   b. Sid: # The shoes are under the bed.
   c. Pia: No, the shoes are not under the bed.
Informal analysis

- Same sentences (same standing meaning) are uttered on two different occasions;
- The world of evaluation is the same on both occasions
- Different truth-evaluations, different answers considered correct (both declaratives and interrogatives affected)
- Different goals: e.g. decorating, studying chemistry
- The way the world is: conducive to one, not conducive to the other goal.
- Categories affected: adjectives, common nouns, verbs, prepositions, possessives....
Meaning and goals

Key thesis of radical contextualism

Charles Travis
What words mean plays a role in fixing when they would be true; but not an exhaustive one. Meaning leaves room for variation in truth conditions from one speaking to another (Travis 2008: 94)
Meaning and goals

Applying insights from the semantics of questions

- RC: a (declarative) sentence expresses not one but may express many different propositions (has many different interpretations)
- Models developed in the semantics of questions could be useful to capture this phenomenon
- *Proposition-set approaches* take the meaning of a sentence to be a set of propositions rather than a unique proposition
- ‘Minimal proposition’: a (maximal) proposition set, rather than a set of worlds.
QUDs and partitions: Schoubye and Stokke 2015

- One recent account of context-sensitivity (Schoubye and Stokke 2015) appeals to notions from question semantics: Robert’s QUDs and G&S partition semantics.
- Minimal content constraint (MCC): contextual meaning entails or is entailed by minimal content (which is determined by lexical semantics of parts plus rules of composition).
- QUD determines a range of possible answers (partition cells); the answer which satisfies MCC is the contextual meaning of a sentence.
- The appeal to QUDs (plus partitions): unable to explain the context-sensitivity of interrogatives (intended contextual interpretation of a QUD is stipulated).
Why inquisitive semantics?

- Inquisitive semantics enables a uniform formal treatment of declarative and interrogative sentential forms.
- Meanings are enriched propositions: the meaning of a sentence is a downward closed set of classical propositions.
- Semantic underspecification, plurality: captured by associating literal meanings with a set of classical propositions.
- Downward closure: a range of possible interpretations is suitably constrained (The leaves are naturally green |= The leaves are green).
Declarative meanings as power-sets

Ciardelli et al 2017: 17

Intuitively, we take the meaning of *John walks* to be the set of all propositions that contain *enough* information to establish that John walks, i.e., all propositions $p$ such that John walks in every world in $p$, rather than just the proposition that contains *precisely* the information that John walks, i.e., the proposition consisting of *all* worlds in which John walks.
Illustration: minimal proposition

- Assume there are only two ways of being a green leaf, naturally green (NG) and painted green (PG). (11) both PG and NG, (10) only PG, (01) only NG, (00) none.

- \text{green}_g = \text{green in any of the senses that the term is ever used}
  (Kennedy and McNally 2010: 84)
Goals and goal-conduciveness

- Second ingredient: the goal-sensitivity of interpretation.
- The idea is that classical propositions/possibilities *qua* properties of worlds could be *conducive* (or not) to contextually salient *goals* (e.g. the leaf being non-naturally green is *not* conducive to the botanist’s goal)
- Goals: valuation functions that map classical propositions to goal-conduciveness values (*c*-values)
- Standing meaning gives the plurality of propositions; goals narrow down this plurality to those with maximal *c*-values.
The InqB system

- Basic InqB system: inquisitive semantics for a simple propositional language $\mathcal{L}$ consisting of atomic formulas $\mathcal{A}$, negation ($\neg$), disjunction ($\lor$), and two non-standard operators, (! and ?).
- The proposition expressed by a formula $\varphi \in \mathcal{L}$ is determined by the following recursive definition.

\[
[[p]] = \varphi(\{w : w(p) = 1\})
\]
\[
[[\neg \varphi]] = \varphi(\bigcup[[\varphi]])
\]
\[
[[\varphi \lor \psi]] = [[\varphi]] \cup [[\psi]]
\]
\[
[[!]\varphi]] = \varphi(\bigcup[[\varphi]])
\]
\[
[[?]\varphi]] = [[\varphi]] \cup \varphi(\bigcup[[\varphi]])
\]
Extending the InqB system

Possibility, classical proposition
A set of possible worlds $\alpha \subseteq W$ is called a possibility or classical proposition

Goals
Goal $\gamma$ is a function that maps every classical proposition $\alpha \in \Pi$ to a goal-conduciveness value. I.e. $\Gamma : \Pi \rightarrow \{0, 1\}$, where $\Gamma$ is the set of goals, $\Pi$ is the set of classical propositions, $\{0, 1\}$ the set of c-values.

Goal-conduciveness: constraint guaranteeing downward closure
For any pair of states $\alpha, \beta$, such that $\beta \subseteq \alpha$, $\gamma(\beta) \geq \gamma(\alpha)$. 
The InqC system

The proposition expressed by $\varphi$ relative to the goal of context $\gamma$ is defined in the following recursive definition:

\[
[[p]]_{\gamma} = \{\alpha \in \wp\{w : w(p) = 1\} \text{ such that there is no } \beta \in \wp\{w : w(p) = 1\} \text{ such that } \gamma(\beta) > \gamma(\alpha)\} \\
[[\neg \varphi]]_{\gamma} = \wp(\bigcup[[\varphi]]_{\gamma}) \\
[[\varphi \lor \psi]]_{\gamma} = [[\varphi]]_{\gamma} \cup [[\psi]]_{\gamma} \\
[[\neg \neg \varphi]]_{\gamma} = \wp(\bigcup[[\varphi]]_{\gamma}) \\
[[? \varphi]]_{\gamma} = [[\varphi]]_{\gamma} \cup [[\neg \varphi]]_{\gamma}
\]

Atomic formulas

The proposition expressed by an atomic sentence $p$ on an occasion where the goal $\gamma$ is operative is a downward closed set of classical propositions $\alpha \in \wp(|p|)$ which have greater $c$-values than others.
The InqC proposition expressed by an atomic formula determines only one alternative: for any $\alpha \in \wp(|p|)$ such that $\gamma(\alpha) = 1$ it is the maximal goal-conducive element $\alpha \in [[p]]$ s.t. there is no $\beta \in [[p]]$ s.t. $\alpha \subset \beta$.

In case $\forall \alpha \in \wp(|p|), \gamma(\alpha) = 0$ then the unique alternative is the maximal not goal-conducive element $\alpha$ s.t. there is no $\beta \in [[p]]$ s.t. $\alpha \subset \beta$.

Like in InqB, an atomic formula in InqC is therefore never inquisitive. Insofar as $\text{info}([[p]]_{\gamma}) \neq W$, an atomic formula in InqC is always informative.
Contextual negation

The InqC proposition expressed by a negated formula, $\neg \varphi$ like in the InqB system always determines a single alternative corresponding to the complement of the union of classical propositions contained in $[[\varphi]]_\gamma$, i.e. $\bigcup[[\varphi]]_\gamma$. Contextual negation is thus never inquisitive.

NB: $[[\neg \varphi]]_\gamma$ contains the possibilities that consist of worlds where $\varphi$ is classically false, but it also may contain some possibilities consisting of worlds where it is classically true but which are not conducive to $\gamma$. 
Truth, resolution, and acceptance

- What do I intend to capture with the notion of InqC proposition and goal-sensitive meaning?
- Like InqB, InqC is conservative with respect to truth- and resolution-conditions: the context-independent meaning of a sentence determines resolution conditions from which classical truth-conditions are recoverable.
- What InqC describes is *which* section of the InqB proposition is dominant when a certain contextual goal is present, thus determining which subsets of $[[\varphi]]$ are *acceptable* and which not.
Positive declaratives: with goal-conducive $\alpha \in \wp(|p|)$

The leaf is green in the way conducive to $\gamma$

Figure: Minimal proposition and two contextual propositions expressed by (23)
Positive declaratives: no goal-conducive $\alpha \in \wp(|p|)$

Assume that the shoes are not under the bed but are next to the bed. The goal is to prevent a kleptomaniac from stealing the shoes by having them hidden under the bed.

24 The shoes are next to the bed

Intuitively, no possibility compatible with (24) is conducive to the goal of having the shoes hidden under the bed but (24) is still true.

Whenever there is no difference in c-values between the classical propositions expressed by the sentence, the contextual proposition expressed by it will be identical to its minimal proposition.

For any atomic formula $p$ it holds that: $[[p]]_\gamma \subseteq [[p]]$. 

Positive declaratives: relevance

Compare the following sentences uttered in the kleptomaniac context (the shoes are next to the bed, not hidden under the bed):

- **Hiding the shoes under the bed from a kleptomaniac**
- **25** The shoes are next to the bed
- **26** John is a smoker

Again, no possibility compatible with (25) is conducive to the goal of having the shoes hidden under the bed. Ditto for (26). However, whilst uttering (25) is still relevant (and true) in this context, uttering (26) (out of the blue) is irrelevant and odd.

Relevance via answerhood: unlike (26), (25) is an *answer* to a QUD
The leaf is not green (in the way conducive to $\gamma$)

(a) InqB neg
(b) Artist
(c) Botanist

Figure: Literal negation and two contextual negations
Reversed entailment

To determine a contextual proposition expressed by a negated sentence (27), besides those propositions containing worlds where (27) is classically false, we need to take into account other classical propositions which are in the complement of $\bigcup\{[[27]]_\gamma\}$. In the artist’s context that is the singleton possibility $\{01\}$ (only naturally green) and in the botanist context the singleton possibility $\{10\}$ (only painted green).

In the case of negation the entailment order holding between literal and contextual meaning is reversed: $[[\neg\varphi]] \subseteq [[\neg\varphi]]_\gamma$
Entailment orders

Entailment orders for meanings of positive sentences and their negations

\[ [[\varphi]]_\gamma \subseteq [[\varphi]] \text{ iff } [[\neg \varphi]]_\gamma \supseteq [[\neg \varphi]]. \]

The contextual meaning of a positive declarative is more specific than its literal meaning just in case the literal meaning of its negation is more specific than its contextual negation. In case there is a difference between c-values of classical propositions constituting minimal proposition wrt to \( \gamma \), the contextual meaning of \( \varphi \) strictly entails the literal meaning of \( \varphi \) (and reverse holds for \( \neg \varphi \)), namely: \( [[\varphi]]_\gamma \subset [[\varphi]] \) and \( [[\neg \varphi]]_\gamma \supset [\neg \varphi] \).
Is the leaf green (in the way conducive to $\gamma$)?

Figure: Literal and contextual interpretations of (28)
Wh-interrogatives mention-some reading

Which leaves are green?

(a) Minimal

(b) Artist

(c) Botanist

Figure: Mention some readings
Wh-interrogatives mention-all reading

(a) Minimal

(b) Botanist

(c) Artist

Figure: Mention-all readings
[[ϕ]] and [[ϕ]]_γ are incomparable

- Two contextual propositions expressed by ?ϕ are not enhancements of the minimal proposition expressed by ?ϕ.
- Since ?ϕ is an abbreviation of ϕ ∨ ¬ϕ this is an expected consequence of the observation that the contextual negation of ϕ does not asymmetrically entail the minimal proposition expressed by ¬ϕ (but that reverse may be the case).
- there is no entailment relation or reverse entailment relation between literal and contextual meanings of polar interrogatives: literal and contextual meanings of polar questions are incomparable
- Comparable in other terms? (e.g. compliance)
Consider (30) with respect to the botanist’s goal:

30  The leaf is red

Since the botanist’s goal requires that the leaf be naturally green all non naturally green possibilities will be evaluated as not goal conducive.

NB: there is one possibility which contains the worlds where the leaf is painted red but not naturally red whose c-value will be undecided insofar as the leaf might still be naturally green (but it also might not).

Or is this case a red herring? I.e. only painted red gets a negative c-value?
Consider the following dialogue in the botanist’s context:

31. Zoe, the botanist seeks a green leaf for her experiment
   a. Zoe: Is the leaf (naturally) green?
   b. Pia: No, the leaf is red

- My intuition: in (31b) Pia says that the leaf is naturally red.
- Prediction: insofar as no possibility compatible with (31b) is conducive to $\gamma$ the contextual proposition should correspond to the minimal proposition.
- Possible explanation: the answer in (31b) is supposed to resolve the issue raised by (31a) (only if red $\approx$ naturally red $\models$ not naturally green)
So-anaphora

- Leaf A is naturally green (painted red), leaf B is painted green (naturally red)
  - **32** Leaf A is green and so is leaf B.
- Can (32) be interpreted so that both conjuncts are true?
- (32) in the botanist context: unacceptable as true (because B is not acceptable as being green).
- Still, the predication is that it should be acceptable when no goals considered.
Cancelling an expected interpretation

33 a. The botanist: Is the leaf green?
   b. Pia: Yes, the leaf is green.
   c. The botanist: No, the leaf is not green.

34 a. The botanist: Is the leaf green?
   b. Pia: Yes, the leaf is green but not naturally green.

- The expected interpretation is explicitly cancelled (indicating a pragmatic inference like conversational implicature).
- Cancellation is justified only when there is a reasonable assumption that the interlocutor may be interested in other possible interpretations despite the salient goal.