

Defining Relevance for Imperatives in Discourse^{*}

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1 Introduction

- Imperatives have frequently been omitted from definitions of Relevance.
- The empirical coverage of Relevance should be as wide as possible:
“Relevance can be characterized in terms of logical relations between the [question under discussion] and the semantic content of a new utterance ... we need a dynamic formal semantic theory.”
(Roberts Forthcoming)
- I adopt the dynamic preference semantics of Starr (2010; 2012) to implement imperative Relevance.
- Semantic preferences are general enough that they can be used to directly compute Relevance.
- Benefits over other approaches:
 - No conversion from another semantic type, such as properties (Portner 2004; 2007).
 - No complex stipulations to assimilate imperatives and declaratives (Kaufmann 2011).
- Preference semantics accounts for all utterance types, and I show that this leads to a straightforward unification of Relevance.
- The result is an initial definition of Relevance for *any utterance*.

2 Relevance and the QUD

- Approaches to Relevance have evolved from Grice’s (1989) Maxim of Relevance.

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- Roberts’s (1996) formal approach to Relevance distinguished itself from:
 - cognitive and planning theory (Sperber and Wilson 1986)
 - purely pragmatic, Gricean approaches to Relevance
- Relevance is relativized to the Question Under Discussion, “a semantic question (i.e. a set of alternative propositions) which corresponds to the current discourse topic.” (Simons et al. 2011:7).

2.1 Assertions and Questions

- Early definitions of Relevance focus on *set-up moves* (questions) and *payoff moves* (assertions).
 - (1) **Relevance to the QUD (Roberts 1996)**
A move m is Relevant to the question under discussion q iff m either introduces a partial answer to q (m is an assertion) or is part of a strategy to answer q (m is a question).
- Later revisions split the definition by utterance type.
 - (2) **Relevance for assertions (Simons et al. 2011)**
An assertion is relevant if it contextually entails a partial or complete answer to the QUD.
 - (3) **Relevance for questions (Simons et al. 2011)**
A question is relevant if it has an answer which contextually entails a partial or complete answer to the QUD.
- Note how (3) formalizes being “part of a strategy to answer [the QUD]”.

2.2 Imperatives

- Neither Roberts (1996) nor Simons et al. (2011) provide a definition of Relevance for commands, the canonical contributions of imperative clauses.
- Roberts (2004) adds imperatives to the *set-up move* portion of the definition of Relevance.
 - (4) **Relevance to the QUD (Roberts 2004), emphasis added**
A move m ... is Relevant to the question under discussion q iff m either introduces a partial answer to q (m is an assertion) or is part of a strategy to answer q (m is a question subordinate to q or an imperative whose realization would plausibly help to answer q).
- However, (4) does not lend itself to precise evaluation like (2) and (3) do.

- I have proposed a definition of command Relevance based on the concept that imperatives introduce preferences (Starr 2010; 2012).

(5) **Relevance for commands (Cormany to appear)**

A command is relevant if what it prefers contextually entails a partial or complete answer to the QUD.

2.3 Generalizing Relevance

- The goal: “...a more general definition of Relevance, wherein behavior is Relevant to a goal to the extent that it potentially contributes to achieving that goal.” (Roberts Forthcoming)¹
- I focus on the propositional content present in all utterance types (Cormany to appear).
- Utterances vary in *illocutionary relation* (Murray 2010), a function that takes the discourse context and a proposition, and returns an updated, structured context.
- The definitions of Relevance vary in a parallel fashion.
 - An assertion is relevant if it [provides an] answer to the QUD.
Declaratives canonically perform set intersection (asserting).
 - A question is relevant if it has an answer which [provides an] answer to the QUD.
Interrogatives canonically impose a partition or cover (questioning).
 - A command is relevant if it what it prefers [provides an] answer to the QUD.
Imperatives canonically impose a preference relation (commanding).
- I exploit this parallelism to compose a unified definition of Relevance.

(6) **Unified Definition of Relevance**

An utterance is relevant if the propositional argument of its illocutionary relation contextually entails a partial or complete answer to the QUD.

- A more formal definition will follow, after looking at the details of preference semantics.

¹Roberts appeals to both *domain goals* and the QUD (*linguistic goals*).

3 Imperative Preferences

3.1 Preference Semantics (Starr 2010; 2012)

- Starr (2012) has a similar view on the roles of different utterance types:
“[D]eclaratives provide information by eliminating worlds ... interrogatives introduce alternatives by grouping those worlds into sets, *imperatives order alternatives*.” (emphasis original)
- Preference semantics is an extension of inquisitive semantics (Groenendijk and Roelofsen 2009).
- The information state is represented in terms of a *preference state* R .
 - A single preference is an ordered pair of propositions, e.g. $\langle \{w_0, w_1\}, \{w_2, w_3\} \rangle$
 - A proposition can be preferred to the empty set $\langle \{w_0, w_1\}, \emptyset \rangle$, but not vice versa $\langle \emptyset, \{w_0, w_1\} \rangle$.
 - R is the set containing all mutually assumed preferences.

3.2 Update Rules

- An utterance takes a scope proposition and, depending on the utterance type, performs a given type of update on R . These rules encode illocutionary relations.
- Updates can introduce a new alternative of the form $\langle p, \emptyset \rangle$ or $\langle p, \neg p \rangle$.
- They may also modify one or both terms of an existing preference, e.g. $\langle a, \emptyset \rangle \longrightarrow \langle a \cap p, \emptyset \rangle$.

3.3 Imperative Updates

- In Starr’s (2012) semantics, updating a state R with a command to do p does three things:
 1. Admits all of the preferences in R .
 2. Introduces a global preference for all p -worlds over all $\neg p$ -worlds $\langle p, \neg p \rangle$
 3. Introduces local preferences within already-present alternatives $\langle a \cap p, a - p \rangle$
- An example of such an update:
 - Initial preference state $R_0: \{ \langle \{w_0, w_1, w_2, w_3\}, \emptyset \rangle \}$
Four worlds under consideration, no preferences relative to each other.
 - Imperative utterance *Jump!* prefers a proposition $j = \{w_1, w_2, w_3, w_4\}$
Note: some members of j are not under consideration.
 - Updated preference state $R_1: \{ \langle \{w_0, w_1, w_2, w_3\}, \emptyset \rangle, \langle \{w_1, w_2, w_3\}, \{w_0\} \rangle \}$

4 Preferences and QUDs

- Cormany (2012; in preparation) show how imperatives are sensitive to the current QUD.
- The alternatives under consideration (in part) determine an imperative's Relevance and felicity.

4.1 Successfully Addressing the QUD

- Consider the alternatives (obliquely) introduced by the following utterance:

(7) A: I don't know where to go for lunch today.

- Alternatives: $\{A \text{ goes to the cafeteria for lunch, } A \text{ goes to the hot dog stand for lunch, } A \text{ goes to the taco place for lunch}\}$
- These form a preference state $R = \{\langle c, \emptyset \rangle, \langle h, \emptyset \rangle, \langle t, \emptyset \rangle\}$
- R can then be updated with a command preferring one option, say t .

(8) B: Go to the taco place!

- What effect does (8) have on R ?
 - Adds a global preference: $\{\langle c, \emptyset \rangle, \langle h, \emptyset \rangle, \langle t, \emptyset \rangle, \underline{\langle t, \neg t \rangle}\}$
 - Adds local preferences:
 - $\{\langle c, \emptyset \rangle, \langle h, \emptyset \rangle, \langle t, \emptyset \rangle, \langle t, \neg t \rangle, \underline{\langle c \cap t, \emptyset \rangle}, \underline{\langle h \cap t, \emptyset \rangle}, \underline{\langle t \cap t, \emptyset \rangle}\}$ intersect each a with t
 - $\{\langle c, \emptyset \rangle, \langle h, \emptyset \rangle, \langle t, \emptyset \rangle, \langle t, \underline{c \cup h} \rangle, \underline{\langle \emptyset, \emptyset \rangle}, \underline{\langle \emptyset, \emptyset \rangle}, \langle t, \emptyset \rangle\}$ alternatives are mutually exclusive
 - $\{\langle c, \emptyset \rangle, \langle h, \emptyset \rangle, \langle t, \emptyset \rangle, \langle t, c \cup h \rangle\}$ remove empty and redundant preferences
 - In this case, the local preferences have no effect.
- $\langle t, c \cup h \rangle$ is added to R ; the QUD is thus addressed by the imperative.

4.2 Failing to Address the QUD

- How can an imperative fail to address the QUD, i.e. not be Relevant, under the preference model?
- Follow the same QUD-introducing utterance (7) with:

(9) B: Bring me a sandwich! (*prefers b*)

- The updated preference state is $\{\langle c, \emptyset \rangle, \langle h, \emptyset \rangle, \langle t, \emptyset \rangle, \langle b, \neg b \rangle\}$.
- The new state provides no new information about the previous alternatives, unlike (8).
- Thus (9) is not Relevant, and therefore not felicitous.
- Imperatives that prefer all alternatives equally, or eliminate all alternatives are also infelicitous; see Starr (2012) for full derivations.

5 Unifying Relevance Under Preferences

- The method used above for determining imperative Relevance can be extended to all clause types.

5.1 All Utterance Types in Preference Semantics

- Preference semantics has representations for all utterance types.
 - Assertions use a singleton alternative to filter possible worlds: $\{\langle p, \emptyset \rangle\}$
 - Questions introduce alternatives (sets of propositions): $\{\langle p, \emptyset \rangle, \langle q, \emptyset \rangle, \dots\}$
 - Imperatives prefer a proposition over its complement: $\{\langle p, \neg p \rangle\}$ ²
- Formal similarity: each type places its scope proposition as the first element of a preference: $\langle p, x \rangle$

5.2 Towards a Formalization

- The dynamics of preference semantics allows a formal definition of Relevance.
- To be Relevant, an utterance must satisfy the following:³
 - The utterance must introduce a preference whose first element entails an element of one of the alternatives under consideration.
 - The utterance must alter the preference state R (no re-assertion, no re-statement of the QUD, no re-iteration of commands).
- An initial formalization of these requirements:

²Imperatives cannot relate disparate propositions: $\langle p, q \rangle$. Other elements, such as *rather* in English, may do this.

³Independently, the utterance must not violate any general conditions on felicity, especially the prohibition against introducing absurd preferences $\langle \emptyset, x \rangle$.

(10) **Unified Relevance in Preference Semantics**

An utterance U is Relevant iff

$$\exists \langle p, x \rangle \in R[U] - R : p \subseteq a \ \& \ (\langle a, a' \rangle \in R \vee \langle a', a \rangle \in R)$$

- The definition proposed in (10) predicts the Relevance facts for (8) and (9), repeated as (11).

(11) A: I don't know where to go for lunch today.

B1: Go to the taco place!

B2: #Bring me a sandwich!

(12) **Computation of Relevance for *Go to the taco place!***

$$R = \{\langle c, \emptyset \rangle, \langle h, \emptyset \rangle, \langle t, \emptyset \rangle\}$$

$$R[U] = \{\langle c, \emptyset \rangle, \langle h, \emptyset \rangle, \langle t, \emptyset \rangle, \langle t, c \cup h \rangle\}$$

$$R[U] - R = \{\langle t, c \cup h \rangle\}$$

$t \subseteq t \ \& \ \langle t, \emptyset \rangle \in R$, therefore Relevant.

(13) **Computation of Relevance for *Bring me a sandwich!***

$$R = \{\langle c, \emptyset \rangle, \langle h, \emptyset \rangle, \langle t, \emptyset \rangle\}$$

$$R[U] = \{\langle c, \emptyset \rangle, \langle h, \emptyset \rangle, \langle t, \emptyset \rangle, \langle b, \neg b \rangle\}$$

$$R[U] - R = \{\langle b, \neg b \rangle\}$$

$b \not\subseteq c, b \not\subseteq h, b \not\subseteq t$, therefore not Relevant.

- Another interpretation of *Bring me a sandwich!* is to assume Grice's (1989) Cooperative Principle.
 - Then A tries to infer a reason why b entails one of c, h, t . (Perhaps the cafeteria is the only place that sells sandwiches.)
 - An utterance with no plausible tie to one of the alternatives (e.g. *Stand on your head!*) will still be judged not Relevant.
- Thus universal Relevance is successful, but many refinements are possible, including:
 - Accounting for information structure in imperative responses to QUDs (Cormany 2012).
 - Accounting for probabilistic answers to QUDs (Simons et al. 2011: fn. 3)
 - Accounting for modal questions and responses.
- Relevance is sufficiently general to cover major utterance types, and should extend to minor utterance types, given the appropriate update semantics.

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