Conditionals, Meaning and Mood

Dissertation Defense

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Outline

William Starr | Conditionals, Meaning and Mood: Dissertation Defense | Rutgers University 0/46

Background

The Project

Natural Language Semantics

1. Explaining language use requires more than a syntactic characterization of language and general principles of rational and social interaction (pragmatics) (*pace* Grice 1957; Chomsky 1957: 102-3)
2. It requires a semantic characterization of that language

- Languages are tools for doing things
- Semantics aims to capture what it is about linguistic expressions that allow them to have these functions

Background

The Genesis of Truth-Conditional Semantics

- The formal languages studied by Frege and Tarski were tools for representing reality
- Their semantic characterizations reflected this:
  - Specifying the meaning of a formula involves specifying the conditions under which it is true
- The interpretation function $[\![\cdot]\!]$ maps a formula ϕ to its truth-conditions $[\![\phi]\!]$

Background
Truth-Conditional Semantics, The Slogan

- Frege and Tarski disavowed the direct application of their semantics to natural language
- Yet Davidson (1967), Lewis (1970) and Montague (1970) proposed to do just that

Truth-Conditional Semantics (TCS)

To specify the meaning of a sentence is to specify the conditions under which that sentence is true.

Background
Truth-Conditional Semantics, The Point

What does TCS buy you?

1. TCS explains why our ability to understand natural language is productive and systematic
2. TCS explains why our ability to recognize entailments is productive and systematic
3. TCS provides an external justification of entailment
4. TCS can provide detailed analyses of particular sentences which reconcile conflicting intuitions (e.g. Russell 1905)

Background
Truth-Conditional Semantics, Counterpoint

- Of course, not everyone buys TCS...
- Its main competitor in the philosophical literature is use-theoretic semantics

Use-Theoretic Semantics (UTS)

To specify the meaning of a sentence is to specify its use (E.g. Brandom 1994; Horwich 1998)

Background
Two Empirical Use-Theoretic Critiques of TCS

The Non-Declarative Critique

TCS fails for non-declarative sentences. Indeed, non-declaratives require appealing to the social practices in which language use is embedded. (Austin 1962; Searle 1969; Dummett 1976)

The Conditional Critique

TCS fails for indicative conditionals. The assertion of an indicative conditional is not the assertion of a truth-conditional content, but rather the conditional assertion of the consequent's content. (See Edgington 2008)

The Dissertation

The Reconciliation, The Intensification

Reconcile:

1. Explanatory merits of TCS deserve to be preserved
2. Use-theoretic critiques raise serious problems for TCS
3. UTS for mood and conditionals face well-known serious problems
4. UTS doesn't preserve merits of TCS

Intensify:

1. Conditionals and mood pose further problems for both TCS and UTS

The Dissertation

The Road to Reconciliation

The Checkpoints:

1. Exhibit phenomena that intensify the dilemma between TCS and UTS
   - Phenomena which neither approach can accomodate
2. Develop a particular formalization and interpretation of dynamic semantics
   - One which blends TCS and UTS, but marks a significant departure from both
3. Show that this semantics reconciles even the intensified dilemma between TCS and UTS

Information

A Convenient Model

The Possible Worlds Model of Information

- Think of a set of possible worlds as distinguishing ways the world might be (possibilities in the set) from ways it isn't (possibilities excluded from the set)
- This is what information (or a 'proposition') does

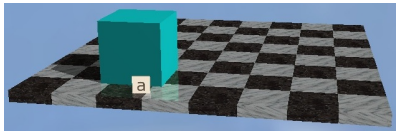
- This view on the nature of content is not required, but is convenient to operate with
- **Truth Conditional Semantics**: pair each sentence ϕ with a proposition $[\![\phi]\!]$

Stalnaker (1984)

Information

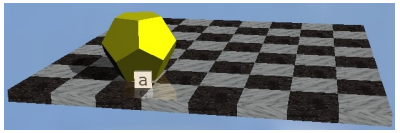
A Convenient Model

Start with a space of possibilities $W = \{w_1, w_2, w_3, w_4\}$

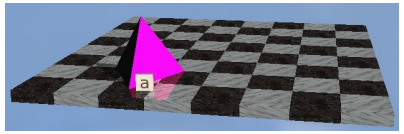


w_1

w_2



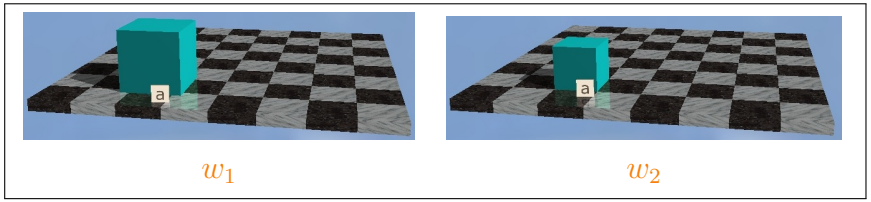
w_3



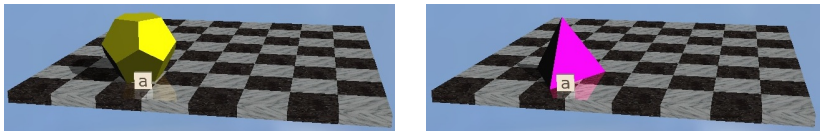
w_4

Information
The Convenient Model Meets Truth-Conditonal Semantics

- $[\![\mathsf{Cube(a)}]\!] = \{w_1, w_2\}$ ('Cube(a)': ***a*** *is a cube*)



w_1 w_2



w_3 w_4

Information Change and Semantics
Two Views

- Everybody agrees that conversation takes place against an ever-changing background of information
  - Call that info c (for *contextual possibilities/info*)
  - Classic models: Stalnaker (1978), Lewis (1979)

Classical Picture Semantics delivers propositions and pragmatics provides rules for changing background information

Dynamic Picture Semantics operates on background information. Propositions are abstractions of those operations.

In Short: meaning is information vs. meaning is information change potential

Information
The Convenient Model Meets a Different Kind of Semantics

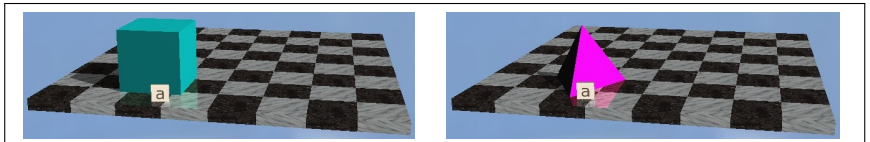
Informational Dynamic Semantics

1. Assign each ϕ a function $[\phi]$ characterizing how it changes the information embodied by c: $c[\phi] = c'$
2. Think of this information as a way of tracking the agent's current state of mind
3. $[\phi]$ is the characteristic role that ϕ plays in changing an agent's mental states

Formal Inspirations: Pratt (1976); Heim (1982); Veltman (1996)

Informational Dynamic Semantics
A Simple Example

- $c[\mathsf{Cube(a)}] = \{w \in c \mid I(w, \mathsf{a}) \in I(w, \mathsf{Cube})\}$
- $c = \{w_1, w_4\}[\mathsf{Cube(a)}] = ?$



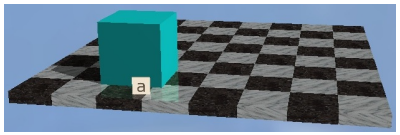
w_1 w_4

c

Informational Dynamic Semantics

A Simple Example

- $c[\mathsf{Cube(a)}] = \{w \in c \mid I(w, \mathsf{a}) \in I(w, \mathsf{Cube})\}$
- $c = \{w_1, w_4\}[\mathsf{Cube(a)}] = \{w_1\}$



w_1

Informational Dynamic Semantics

Semantic Concepts

Support (or *Verification*)

$c \vDash \phi \iff c[\phi] = c$

Entailment

$\phi_1, \ldots, \phi_n \vDash \psi \iff c[\phi_1] \cdots [\phi_n] \vDash \psi$

Truth in *w*

$w \vDash \phi \iff \{w\}[\phi] = \{w\}$

Propositions

$[\![\phi]\!] = \{w \mid w \vDash \phi\}$

Informational Dynamic Semantics

What's the Point?

Question

- What does IDS buy us?
- Isn't $c[\mathsf{Cube(a)}] = c \cap [\![\mathsf{Cube(a)}]\!]$?

- One kind of answer:
  - Yes, but some interesting operators can be defined for which the equation $c[\phi] = c \cap [\![\phi]\!]$ does not hold (e.g. Veltman 1996; Groenendijk & Stokhof 1991)
- But what if we doubt the importance of these results?

Informational Dynamic Semantics

What's the Point?

Question

- What does IDS buy us?
- Isn't $c[\mathsf{Cube(a)}] = c \cap [\![\mathsf{Cube(a)}]\!]$?

Another Kind of Answer

Even if this equation *always* holds, IDS allows information-change to be part of the sentence's semantics.

- So arguments in favor encoding information-change semantically are arguments for IDS
- This point generalizes in an important way...

Generalized Dynamic Semantics

Getting to the Point

Important Point

Suppose we recognized a need for other kinds of contents in semantic theory. Then DS would allow sentences to encode ways in which those kinds of contents change too.

- So the kind of arguments described for IDS would be possible in these settings too
  - Arguments that meaning needs to be a kind of content-change, rather than content
- Yet even with these diverse kinds of content, there would be one unified concept of meaning

Generalized Dynamic Semantics

The Point(s)

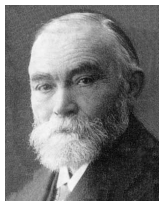
1. There are phenomena involving conditionals that require meaning to be content-change
2. Accounting for these phenomena brings with it a uniform analysis of the phenomena that have divided TCS and UTS analyses of conditionals
3. There are phenomena involving mood that require meaning to be content-change
4. Accounting for these phenomena respects the insights of both TCS and UTS approaches to mood

Conditionals

Two Competing Theories

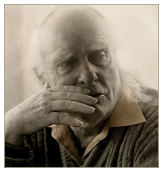
Propositional Theories

1. Conditionals express propositions, i.e. they have truth-conditions
2. The meaning of a conditional is its truth-conditions
3. The meaning of *if* is rendered as a two-place function, mapping two propositions to a third one



Frege (1893)

Lewis (1973)



Grice (1989a)

Conditionals

Two Competing Theories

Suppositional Theories

1. The assertion of a conditional does not involve the assertion of a conditional proposition
2. Instead, the *if*-clause marks a supposition under which the consequent alone is asserted

von Wright (1957)

Adams (1975)

Edgington (1995)

The Debate
Between Propositional and Suppositional Theories

- This debate ranges over an array of phenomena
  - It remains hotly contested (Bennett 2003; Stalnaker 2005; Lycan 2006; Edgington 2008)
- It is a specific instance of a broader debate about the nature of meaning

The Propositional View A sentence's meaning consists in the way it represents the world as being

The Suppositional View A sentence's meaning consists in the role it plays in communicative and cognitive acts (assertion, acceptance, etc.)

The Interrogative Link
If in Interrogative Environments

Under Interrogative Verbs (Harman 1979)

(1) Albert wondered **if** Mabel loved John

(2) Mabel asked **if** John was going to the party

But, also:

Interrogative Equatives

(3) The future is coming. The question is **if** we will be ready for it.

The Interrogative Link
The Problem

Interrogative *If*s

(1) Albert wondered **if** Mabel loved John

(2) Mabel asked **if** John was going to the party

(3) The future is coming. The question is **if** we will be ready for it.

The Problem Posed by (1)-(3)

1. No binary operation on truth-values or propositions
2. No suppositional speech act

The Interrogative Link
Advertising Conditionals

(4) Do you need an efficient car? (Then) Honda has the vehicle for you

(5) Single? You haven't visited Match.com

(6) Art thou bound unto a wife? Seek not to be loosed. Art thou loosed from a wife? Seek not a wife. (*Corinthians 7:27*, cited by Jespersen 1940: 374)

- Jespersen (1940: 374): the 2nd sentence of (6) is issued in a context where an affirmative answer (*yes*) to the preceding question is being supposed

Enriching the Suppositional Process

Ramsey's Test & Hypothetical Information Change

The Ramsey Test (Ramsey 1931a: 247)

"If two people are arguing 'If p, will q?' and are both in doubt as to p, they are adding p hypothetically to their stock of knowledge, and arguing on that basis about q..."

- This test may be enriched to reflect the interrogative contribution of *if* p

The Enriched Ramsey Test

If two people are arguing 'If p, will q?', they are adding p? hypothetically to the stock issues guiding their inquiry, and arguing on the basis of a hypothetical affirmative resolution of that issue about q

The Enriched Ramsey Test

A Rough Paraphrase

(7) If Bob danced, Leland danced

(7′) a. Suppose we are wondering if Bob danced...
b. ...and it turns out that he did.
c. Then it will follow that Leland danced.

- This states the function of a conditional in terms of its contribution to the evolving body of information and issues that characterizes a conversation or inquiry
- If this statement can serve as a semantics, it holds promise for capturing the conditional-interrogative link

Chapter 2

In Outline

1. DS is exactly the tool we need for stating the meaning of a conditional (and its parts) in terms of its contribution to a body of information and issues
2. It can be used to translate the above remarks into a formally explicit semantics that captures the conditional-interrogative link
3. The logic and truth-conditions that come with this semantics combine the benefits of propositional and suppositional theories
4. Both accomplishments provide an argument for meaning as content-change

Two Species of Conditionals

Indicative v. Subjunctive

Conditionals (Two Species, Bad Terminology)

(8) If Bob danced, Leland danced
(*indicative conditional*)

(9) If Bob had danced, Leland would have danced
(*subjunctive conditional*)

- Any adequate semantic theory of conditionals must ultimately deliver a uniform analysis of the two species

How the Species Differ

Contrasts 1 & 2

Contrast 1

(10) # Bob never danced. If he danced, Leland danced.

(11) Bob never danced. If he had danced, Leland would have danced.

Contrast 2

(12) Bob always used to dance and if he danced, Leland danced too.

(13) # Bob always used to dance and if he had danced, Leland would have danced too.

A Natural Explanation

Of Contrast 1

Compatibility Hypothesis (Stalnaker 1975: §3)

1. Indicatives evoke antecedent-worlds compatible with c
2. Subjunctives evoke antecedent-worlds that may be incompatible with c

Contrast 1

(10) # Bob never danced. If he danced, Leland danced.

(11) Bob never danced. If he had danced, Leland would have danced.

A Natural Explanation

Of Contrast 2

Compatibility Hypothesis (Stalnaker 1975: §3)

1. Indicatives evoke antecedent-worlds compatible with c
2. Subjunctives evoke antecedent-worlds that may be incompatible with c

Contrast 2

(12) Bob always used to dance and if he danced, Leland danced too.

(13) # Bob always used to dance and if he had danced, Leland would have danced too.

Contrast 3

The Linguistic Encoding of Counterfactuality

(14) If Bob danced, Leland would dance

(15) Bob died yesterday. If he had died tomorrow instead, he would have been 98 years old.

- Across languages, there's something special about subjunctive antecedents
  - Either they contain a kind of 'remote modal' (e.g. Bittner 2010)
  - Or they involve a non-temporal interpretation of past tense morphology (e.g. Isard 1974; Iatridou 2000)
- So letting '$\triangleleft$' represent this contribution, subjunctives have the form $(\mathsf{if} \triangleleft \mathsf{p})\,\mathsf{q}$

Contrast 3
What it Implies

Compatibility Hypothesis (Stalnaker 1975: §3)

1. Indicatives evoke antecedent-worlds compatible with c
2. Subjunctives evoke antecedent-worlds that may be incompatible with c

- Since $\triangleleft$ is among the linguistic differences between indicatives and subjunctives, its semantics had better be part of the story of how the two species differ

Compatibility Encoding Hypothesis

By default, p concerns worlds in c. But $\triangleleft\mathsf{p}$ concerns the closest p-worlds with respect to c. These needn't be in c.

Stalnaker's Theory
Two Theses, Two Problems

Stalnaker's (1975) Theory:

1. Both species of conditional have the same semantics:
   - (if ϕ) ψ is true at w iff ψ is true at all of the ϕ-worlds most similar to w
2. But the assertion of an indicative is subject to a pragmatic constraint:
   - If $w \in c$, the ϕ-worlds most similar to w are in c
   - If $w \notin c$, ϕ-worlds outside c may be selected

Two Problems:

1. But then no meaning can be assigned to $\triangleleft$
2. And, the compatibility hypothesis is violated!

Chapter 3
In Outline

1. The semantics of $\triangleleft\mathsf{p}$ can easily be understood in terms of how it changes c:
   - Keep each p-world in c and replace each $\neg\mathsf{p}$-world with the most similar p-world
2. Add this to Ch.2's conditional semantics and you get:
   - A semantics that respects the compatibility hypothesis
   - An explanation of how compatibility is linguistically encoded
3. Plus an improvement in the logic and pragmatics:
   - Import-Export is valid, disjunctive antecedents simplify and reverse Sobel sequences are explainable pragmatically as a kind of modal subordination

Mood
Declarative, Interrogative and Imperative

(16) Maya is singing.

(17) Is Maya sining?

(18) Maya, sing!

The Question

These are three distinct sentences with three distinct moods, but how are these distinctions reflected in their semantics?

Answer One
Mood Indicates Illocutionary Force

Answer One (Searle 1969: 30; Dummett 1976)

Mood marks the illocutionary force of the sentence's content.

- There is a distinction between content and force (Frege 1918: 293-4)
- Contents are propositions
- An illocutionary force is a way of using words to do something with that content (Austin 1962: 98-109)
- The things one can do with those words are determined by constitutive social conventions that are not part of the language (Searle 1969: 40; Dummett 1976: 216)

Answer One is Wrong
Mood isn't Quarantined

- As Frege observed, connectives cannot combine both contents and kinds of acts
- So if mood indicates force, it cannot scope under connectives or other words that operate on contents
- But in natural language, mood does scope under connectives and embedding verbs
  - *Is that true or is it false?*
  - *I wonder whether that is true*
- So two-tiered theories like Searle's are wrong

Answer Two
Content Pluralism, The Details

Content Pluralism

The three types of sentence "possess fundamentally different underlying content structures." (Belnap 1990: 5)

1. The content of an interrogative is its answerhood conditions (Hamblin 1958)
   - The set of propositions that are complete and direct answers (Hamblin 1973; Karttunen 1977)
2. The content of an imperative is a property of the addressee (Portner 2004; Hausser 1980: §4)
   - Or a prescription: a pair of contradictory propositions (Segerberg 1990; Vranas 2008)
3. The content of a declarative is a proposition

Content Pluralism
Better, but...

CP accounts for:

1. Moods embedded under verbs, e.g *wonder*
2. Several cases where mood scopes under connectives

- It cannot assign a meaning to the declarative mood
- But it also fails to account for many of the cases where mood scopes under connectives
  - These arise from the attempt to juggle three different sentential contents in one compositional system
- It offers no underlying conceptualization of meaning
- Content constrains use too little to explain why each sentence type is apt for a certain speech act

A Third Way
Of Doing Semantics for Mood

- Accept that each mood is correlated with a different kind of content structure
- Characterize inquiry and conversation in terms of how the three kinds of content change together
- But let meanings be ways of changing those contents
- A declarative $\triangleright$p eliminates $\neg$p-worlds
- This explains what declarative mood means and why declaratives are apt for assertion
- As for interrogatives and imperatives...

Information and Issues
Incorporating Hamblin's Picture

Issues

1. Thought and talk happen against a background of information and issues
   (Roberts 2004; Schaffer 2005; Groenendijk 2006; Yalcin 2008)
2. Issues are clusters of alternative propositions
   - Open alternatives that the agents are concerned with deciding between
3. Formally: a division of c into subsets

- Interrogative operators — e.g. $(?\cdot)$, $(\mathsf{if}\ \cdot)$ — don't change background information, but rather issues
- I.e. ?p divides c into the p-worlds and the $\neg$p-worlds

Preferences
The Final Ingredient

Preferences

1. Thought and talk not only eliminate possibilities and divide the live ones into competing alternatives
2. Thought and talk also lead to preferences among those alternatives (Ramsey 1931b; von Neumann & Morgenstern 1944; Savage 1954)

- Imperative operators don't change background info or issues, but rather preferences
- I.e. !p introduces a preference for the p-worlds in c over the $\neg$p-worlds in c

Chapter 4
In Outline

1. States the semantics for each mood in terms of how it changes a preference state
   - I.e. a binary relation over propositions
2. States the semantics of embedding verbs, disjunction, conjunction and conditionals as ways of changing preference states
3. Shows that this accounts for all of the examples that raised problems for illocutionary force and content pluralist theories
4. Thus demonstrating three advantages of identifying meaning with content change, rather than content

Conclusion

Conditionals, Meaning and Mood

Thesis

The meaning of a linguistic expression is the characteristic role it plays in changing mental states.

1. This preserves the merits of TCS
2. It answers the UTS critiques of TCS
3. It accounts for phenomena that neither TCS nor UCS can account for

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