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Contextual influences on reference
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Abstract:
We consider a number of ways in which the understood reference of a definite noun phrase—definite description, pronoun, demonstrative, indexical or proper name—may depend on the context in which it is uttered. Contextual influences are reflected in phenomena such as anaphora and familiarity presuppositions, descriptive incompleteness, domain restriction, dependence on a shifted perspective in intensional contexts resulting in *de re*, *de dicto* and *de se* interpretations, and inclusion of context-sensitive predicates. Careful investigation of particular types of context dependence has played an important role in the evolution of semantic theories of these NP types over the past fifty years. But outstanding puzzles about how context influences reference pose challenges to the most influential current semantic theories of some NP types, including direct reference theories of indexicals and demonstratives, and rigid designator accounts of proper names.

1. **Introduction**[1]

It is not linguistic expressions themselves which refer, but speakers who refer in using them (Strawson 1950). The difference lies in what it is to make an utterance in discourse. Following Bar-Hillel (1971), we take an utterance to be an ordered pair <s,c> of a linguistic constituent *s* and a context of utterance *c*. As is common, we take *c* to specify a great deal of information not only about the concrete situation in which the utterance was made—the speaker, addressee, location, time, etc.—but also about the interlocutors' Common Ground and perhaps other information that is systematically tracked in a conversational record. The linguistic constituent *s* itself has a *conventional content* (or *character*, if one follows Kaplan 1977) which we'll assume is truth conditional. But its meaning is another matter. A simple example:

(1) [To a companion seated in a café, looking out the window:] Look at that UPS guy over on the corner. <u>The man</u> obviously needs help with that big package.

Assuming there's no more than one UPS guy on the corner in question, the speaker will have succeeded in referring to him with *the man*, even if there are other men on the same corner. Yet in and of itself, that definite description fails to have sufficiently rich descriptive content to pick out the intended referent. It is clear that the speaker is assuming that her addressee will draw the inferences required from the context of the preceding discourse, in which she's just pointed out the UPS guy (and no other men), to conclude that said UPS guy was who she meant to refer to.

Consider the matter from a Gricean point of view:

"U meant$_{nn}$ something by uttering x" is true iff, for some audience A, U uttered x intending:
(1) A to produce a particular response *r*
(2) A to think (recognize) that U intends (1)
(3) A to fulfill (1) on the basis of his fulfillment of (2).   (Grice 1957)
[Moreover,] there is no inference-element E such that U uttered x intending both (1') that A's determination of *r* should rely on E and (2') that A should think U to intend that (1') be false.
(Grice 1969:99)

If in uttering a sentence *s* in context *c* a speaker *U* meant$_{nn}$ to proffer that the proposition *p* is true, then **the speaker's intended meaning** in uttering <s,c> was *p* (or, perhaps more strictly, the speaker meant for the addressee to recognize that the speaker intended to proffer *p*). But the relationship between an uttered sentence *s* and the proposition expressed *p* may be quite complex, involving the resolution of presuppositions, vagueness, and ambiguity, and the recognition of intended conversational implicatures. Similarly, if the constituent uttered was a definite noun phrase *np*, it may be that by the utterance <np,c> the speaker meant$_{nn}$ to refer to some singular individual *e*. But the relationship between the conventional content of *np* and the intended referent *e* may require the resolution of the same kinds of factors as in the sentential case, always mediated by the understood context *c*. Arguably, linguistic reference is typically far less direct (in the sense of 'conventionally given') than is often assumed.

Then the leading questions that arise in a compositional account of interpretation are: (i) How do speakers use linguistic expressions to refer *in contexts of utterance*? And (ii) how does conventional content constrain such use? If we aim for a generative account of meaning, in which we predict all and only the meanings which will arise given conventional content, syntactic structure and context of utterance, then we take the gap between content and meaning to be a problem of context dependence. The following types of context-dependence are found across all types of referring expressions:

> anaphora and familiarity presuppositions
> descriptive incompleteness and domain restriction
> dependence on a shifted perspective
> dependence on context-sensitive predicates

Even those NP-types that most theorists agree to be referential, proper nouns, display these types of context-dependence, and hence cannot be successfully used to refer without adequate contextual clues to their intended referent. For example, *Mary* doesn't uniquely pick out any individual. It's only in context that its use conveys singular reference, permitting the addressee to pick out the intended referent. In this sense, we might say that *Mary* is an incomplete name, and thus its use to refer is essentially context-dependent. Similarly, the central puzzles pertaining to *de re* belief attribution involve proper names like *Ortcutt* (Quine 1956) and *London* vs. *Londres* (Kripke 1979). One might say that the interpretation of these names in a given context depends on the guise under which the *res* denoted is known to the speaker or some other agent relevant in the context of utterance, and hence on that agent's perspective on the *res*. This argues that these types of context dependence are central to how we retrieve intended reference generally, even in NP types often taken to be relatively context-insensitive.

Following common usage, I'll refer collectively to those NP types which are canonically used to refer as the **definite NPs** (Lyons 1999, Abbott 2010). Depending on the inventory of NPs in a

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given language, these will certainly include proper names; indexicals and demonstratives; and pronouns. In some languages, like English, it also includes definite descriptions, or their closely related kin. For example, in Bulu (Bantu) (Barlew 2015), there is a non-demonstrative definite determiner *te-* which differs from English *the* in important respects, but forms NPs which are used to pick out entities that the speaker has reason to believe the addressee is paying attention to. And in languages without definite determiners, like Japanese or Serbo-Croatian, bare NPs— those without article or determiner—may sometimes be used to refer, as well. But here we will focus on the English definites, though I take them to illustrate problems of more general interest.

2. Reflexes of context in reference

2.1. <u>Anaphora and Familiarity Presuppositions</u>:

Even with proper names there's reason to think that their felicitous use by competent speakers presupposes familiarity on the part of the addressee. But this familiarity doesn't require some kind of personal acquaintance with the individual which a name picks out. Rather, in order for a proper name to be felicitously used, the name must be properly introduced to the addressee. For example, the use of *Ernest* in (2) is a bit odd:

(2)   There is a gentleman in Hertfordshire. Ernest is engaged to two women.

Either (a) Ernest is an individual already known to the addressee (at least 'by name'), in which case the second sentence seems like a non sequitur when uttered after the first, or else (b) the speaker intends by use of the name to refer to the aforementioned gentleman in Hertfordshire. However in the second case, if the gentleman were familiar to the addressee then the speaker wouldn't have used the first sentence; but if he wasn't familiar prior to this, the speaker hasn't really properly introduced the name, so that the addressee is being required to accommodate the answer to *Who's Ernest? and what's he got to do with Hertfordshire?*

There are a number of ways that a name can be properly introduced. Here are just a few:

<u>Cumming's (2008) "naming construction"</u>:
(3)   There is a gentleman in Hertfordshire by the name of 'Ernest'. Ernest is engaged to two
         women.

<u>Appositives, also a construction for naming</u>:
(4)   There is a gentleman in Hertfordshire, Ernest. Ernest is engaged to two women.
(5)   I'd like you to meet my friend Ernest. Ernest is engaged to two women.

<u>Deictic introduction ritual</u>:
(6)   A speaking to two companions: Charles (nodding and gesturing to Charles), this is
         Ernest (nodding and gesturing to Ernest). Earnest (nodding and gesturing to Ernest),
         Charles (nodding and gesturing to Charles).

But the original way that a name is introduced into the language is via a dubbing event:

<u>Dubbing</u>:
(7)   A: Who's that?
       B: I dunno. Let's call him 'Ernest'. I think Ernest is awfully cute, don't you?

Compare (7) with *I hereby dub thee Sir Ernest*, or a naming by parents. In these cases, there is a socially granted authority vested in the dubber. But nicknames and nonce cases like (7) do frequently occur, and the resulting association can persist just as well in the informal cases as in the more formal ones.

A dubbing might be regarded as the origin of the type of causal chain that Kripke (1972) argued underlies the direct referentiality of proper names: The dubbing conventionally associates the name with its intended referent. The other types of proper introduction could then be regarded as the establishment of new links, extending the chain to the new acquaintance so that s/he is familiar with it and may use the name correctly. Thereafter, it is felicitous to use the proper name with that newly introduced acquaintance to (directly) refer to the intended bearer of the name. So even proper names bear a familiarity presupposition, albeit of a special type.

All definite NPs tend to carry familiarity presuppositions, though the particular character of these presuppositions may differ between different definite NP types. The strictest type of familiarity presupposition is anaphora, wherein the speaker intends that the intended referent be retrieved via coreference with a preceding NP. But there are other means of making the intended referent contextually salient, and hence helping to fix the NP's meaning. In third person pronouns, demonstratives and definite descriptions we find the following types of uses, reflecting the properties of generalized anaphoricity outlined by Partee (1984):[2]

<u>coreferential with an antecedent NP</u>:
(8)   A man and a boy were coming down the street. <u>The man</u> looked worried.
(9)   A man was walking down the street. <u>He</u> looked worried.
(10)   I saw one quilt which was quite abstract, with lots of asymmetric diagonals. <u>Another one</u> was more traditional, worked in an old Amish pattern. <u>This quilt</u> was less busy than the other, but just as bold.

<u>with a non-linguistically salient referent</u>:
(11)   [Context: looking together at a house:] <u>The roof</u> needs fixing.
(12)   [Context: looking together at a house:] <u>It</u> needs a coat of paint.
(13)   [Context: looking together at a house:] <u>That roof</u> needs fixing.

The non-linguistic salience of the intended referent illustrated for definite descriptions in (11) is much like that displayed in the canonical use of demonstratives, as in (13). Because the neuter singular pronoun *it,* unlike the 3rd person masculine and feminine or plural pronouns, has no demonstrative uses (Maclaran 1982), its use in (12) cannot be demonstrative.

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[2] Whether such definite NPs are *always* anaphoric is more controversial. For our purposes, what matters is that they do have such uses. See Heim (1982), Lyons (1999), and Abbott (2010) for enlightening overviews of the relevant literature.

All three of these NP types also have bound variable interpretations, where they have a quantificational or irrealis antecedent:

quantificationally bound:
(14)   At the boy scout camp, every father and son that built a fire together decided that the boy would gather brush and wood while the man made a clearing and laid the fire.
(15)   Every couple that built a fire together decided that she would gather brush and wood while he made a clearing and laid the fire.
(16)   Every dog in my neighborhood, even the meanest, has an owner who thinks that that dog is a sweetie.

donkey anaphora:[3]
(17)   If a cat and a dog have a fight, the cat usually wins.
(18)   If John sees a car he likes, he should buy it.
(19)   If an upwardly mobile yuppie sees that a neighbor has a car, he usually worries that that car is cooler than his.

The underlined NPs in (17) – (19) are instances of the donkey pronouns discussed by Geach (1962), the problems they present for anaphora and semantics admirably explained in the first chapter of Heim (1982) (and see §3 below). Each takes as its antecedent (the discourse referents for) an arbitrary instance of an entity introduced by an indefinite NP in the conditional antecedent.

Speaker and addressee are always in some sense salient in a context, serving to satisfy the familiarity presupposition of indexical *I* and *you*.

The range of familiarity presuppositions exemplified above argues that in the general case, definite NPs so-used require only **weak familiarity** (Roberts 2002,2003,2005), that is, that the context of utterance entail the existence of the relevant entity (and, for proper names, of the relevant causal chain, as above). Thus, cases like (8) – (10) where there is an explicit coreferential antecedent—satisfying strong familiarity—are a special case.

2.2. Descriptive incompleteness

Some definite NPs depend for their successful referential use on their descriptive content, in some cases almost entirely: consider, e.g., the nominal complement of *the* in *the owner of 189 Schermerhorn St. throughout 2011* or *the tallest mountain in West Virginia*. Assuming there was exactly one owner of said building during the period in question, then by virtue of the descriptive content alone, the first definite seems to refer to that individual. And superlatives of their nature pick out a single individual (assuming some individual does satisfy their descriptive content). But it is not always the case that a definite's descriptive content is sufficient to pick out the intended referent on a particular felicitous use. Nor do such definites always have an explicit antecedent which in some sense adequately 'fills out' the descriptive content.

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[3] These are so-called because of the original examples introduced by Geach (1962): *If a farmer owns a donkey, he beats it*, and *Every farmer who owns a donkey beats it*, the underlined pronouns called 'donkey pronouns'.

If an NP's descriptive content is not rich enough to pick out the intended referent, yet the NP evidently felicitously refers, then that content must be in some sense sufficient in the context of utterance. The definite description *the man* in (1) has an antecedent, *that UPS guy over on the corner*, and that seems sufficient to make the description's content referentially adequate. If the NP doesn't have an overt antecedent, as in (8) – (10), the speaker must rely on other contextual factors to make it clear what she intends to refer to. Pronouns, of course, are the limit case, due to their extremely poor descriptive content. Yet uses of pronouns without explicit antecedents, as in (12), are quite common and felicitous. The more interesting question theoretically is when they are *not* acceptable.

In canonical uses of demonstrative NPs, accompanied by a deictic gesture, the gesture may be sufficiently clear to pick out a unique entity satisfying the descriptive content of the NP. That might be the case in (13), for example. But even deixis needn't suffice. Consider:

(20)   [Police officer, following in the path of another running man through a crowd of people, points at the runner ahead:] Stop that man!

Even though there are many men in the crowd, *that man* accompanied by the gesture will probably succeed in referring to the man being chased. But then it does not do so either in virtue of the combination of the descriptive content *man* and the gesture—in the direction the policeman is pointing there may be many men. Instead, the evident chase itself and the stereotypical character of situations in which police chase criminals both play a crucial role in successful reference.

2.3. Domain restriction

Quantificational operators, including quantificational determiners, adverbs of quantification, tense operators and modals, are most often intended to be understood relative to some intended implicit restriction on their domain of quantification. In the context suggested for (21), the speaker most likely intends to use the vocative *everyone* to refer to (and thereby call to) the students in that classroom:

(21)   [in a classroom:] Everyone get out your notebooks.

Though the class of quantificational NPs which includes *everyone* is not considered referential, domain restriction does come to bear on reference in at least two ways.

First, on some analyses, like that of Russell (1905) or Neale (1990) definite descriptions involve existential quantification, the domain explicitly restricted by the nominal complement. Then one way of contending with the problem of incomplete descriptions is to argue that the speaker is understood to intend that they be interpreted with a contextually appropriate domain restriction. E.g., the existential operator that's part of the logical form of *the man* in (8) would be understood as ranging over the set of men walking down the street with a boy in the situation of utterance, yielding the relevant man. In (11), the existential associated with *the roof* would be understood to range over the set of roofs the interlocutors are considering; in felicitous use this is a singleton set, and the Russellian truth conditions are satisfied. This is one way one might understand so-

called *E-type* (or *D-type*) analyses of definite descriptions and unbound pronouns (Evans 1977,1980; Neale 1990; Elbourne 2005,2013)—as investigations of how the domain of the existential gets "filled in". The virtue of this approach to free (unbound) definites across discourse is that it appeals to a phenomenon, domain restriction, which is independently attested and about which there is a significant literature (von Fintel 1994, Roberts 1995, Stanley & Szabo 2000).

Another way in which domain restriction may come to bear on the interpretation of definite NPs is illustrated here:

(22)   A thief broke into the house. <u>The bastard</u> stole the silver.
(23)   A thief might break into the house. <u>The bastard</u> would steal the silver.

In each of these pairs, the epithet *the bastard* is clearly intended to be anaphoric to the thief introduced in the first utterance. Let's assume that the anaphoric relationship is fairly straightforward in (22), where one is reasonable irritated with someone that steals one's silver, so that the demeaning epithet is understood to apply to the antecedent thief. But there are technical difficulties explaining how the comparable anaphora is licensed in (23). This is brought out in comparing (23) with (24):

(24)   A thief might break into the house. Yesterday I saw <u>the bastard</u> sneaking into the garage.

For many, (24) is also acceptable, but here *the bastard* has a different sense. In (23) we most naturally take -the first sentence to speculate about some arbitrary thief—any thief—possibly breaking in. So *the bastard* refers not to any particular person, but attributes another property to that arbitrary thief. But in (24), we can only understand *the bastard* to be a particular individual, so that *a thief* must be understood itself to refer to a particular thief the speaker has in mind.

This illustrates the following principle (Chierchia & Rooth 1984; Roberts 1996b):

Scope constraint on anaphoric relations: If NP x is to be a potential anaphoric antecedent for NP y, then any quantificational elements which have scope over x must have scope over y as well.

Technically, this means that in (23) both *a thief* and *the bastard* take narrow scope relative to the modals in their respective sentences (*might*, *would*), while on the only acceptable interpretation in (24), in order to serve as antecedent for *the bastard*, *a thief* must take wide scope relative to *might*, as required by the scope constraint.

Roberts (1989,1996b) argues that the kind of interpretation observed in (23) is licensed by a phenomenon she calls *modal subordination*, wherein the modal *would* that takes scope over the anaphoric definite is understood to have its domain restricted to only range over scenarios in which a thief breaks into the house—the sort of situation described in the first utterance. Since there is no modal in the second sentence in (24), modal subordination is not possible. Then because the scope constraint precludes an antecedent taking narrow scope with respect to an operator that doesn't have scope over the anaphoric element, the only reading possible is one where *a thief* itself is understood to take wide scope—a **specific indefinite** interpretation, wherein the speaker is taken to have a particular thief in mind.

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Some might take the use of the definite under modal subordination, as in (23), to be non-referential, since the intended denotation is not a singular individual. Perhaps, but note that modal subordination can set up what seems like clear reference, as in (25):

(25)   A: A mouse must have gotten into the pasta. <u>It</u> could have gotten in through that hole in
            the back of the cabinet.
        B: Yes, I see: Those are <u>the little bastard's</u> teeth marks on the linguini.

Consider how this parallels Strawson's example (cited in Neale 1990; discussed in Roberts 2005)

(26)   A: A man jumped off the cliff.
        B: <u>He</u> didn't jump, he was pushed.

In (26A), the speaker intends to refer to someone; in (26B), the speaker takes issue with the description provided by A, but still intends to refer to the same person A had in mind, the pronoun understood to mean something like 'the person who apparently jumped on the occasion in question'. Similarly, in (25A), the speaker considers a hypothetical mouse, while in (25B) the speaker just assumes that the mouse is real and contributes further information about it. So the understood interpretation of *the little bastard* in (25B) is 'the (irritating) mouse who got into the pasta'. This content must be contextually retrieved, as is the case in (25). In each case, B simply assumes there was an entity of the relevant sort and, in saying something about it, supposes that A can follow along.

2.4. <u>Shifted perspective</u>

Intensional contexts play another role in the interpretation of definite NPs, besides the anaphora resolution we find in modal subordination. If an NP falls within the scope of an attitude predicate or epistemic modal, the context may trigger a shift in the interpretation to an interpretation *de dicto*, *de re* or *de se*.

Quine (1956) tells a famous story, along the following lines:[4] Ralph lives in a small New England town, where he's acquainted with the mayor, a fellow named Ortcutt. Ralph generally takes Ortcutt to be a fine-upstanding citizen. However, while out walking in a rather rough section of town one evening, Ralph observes a strange fellow lurking about in a trench coat, with a broad-brimmed hat pulled down to shade his face. Unbeknownst to Ralph, the man is Ortcutt.

Suppose that Ralph is accompanied by his friends Mark and Evan. He tells Mark of his concern about this shady character, who he thinks is a spy, and then runs off to find a policeman. Mark might report Ralph's concern to Evan by truthfully uttering (27):

(27)   Ralph believes that the man in the broad-brimmed hat is a spy.

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[4] I have embroidered the story in various ways and added the first examples in (27) for pedagogical purposes, to try to bring out the point of the puzzle as I believe Quine intended it, and to clarify its relationship to the distinction between *de dicto* and *de re*.

Now suppose instead that Ralph is accompanied by his friends Steve and Zack, who both work in the mayor's office and know His Honor's habit of going about at night incognito to keep his finger on the pulse of the city. Ralph quickly tells them about his concern and runs off to find a policeman. Steve might turn to Zack and utter (28):

(28)   Ralph believes that the mayor is a spy!

It's clear in the scenarios described that both (27) and (28) are true. Ralph thinks that the person he knows as the man in the broad-brimmed hat is a spy. And the suspicious attire of the guy that Steve and Zack know to be the mayor has led Ralph to believe that he's a spy. But of course there's another sense in which (28) is false. Ralph wouldn't describe the suspected spy as *the mayor*—Steve uses that description in his report of Ralph's beliefs because he knows that Zack understands who the "spy" really is. The false sense of (28) is said to involve a *de dicto* interpretation of the NP *the mayor*, while on the true interpretation it is understood *de re*. On the *de re* interpretation, the speaker uses the NP to pick out the individual that he and the addressee know to uniquely bear that description, and says of that individual that Ralph believes he is a spy. (See Keshet (2008) and Keshet & Schwarz (present volume) for discussion of the relevant literature on the *de dicto* and *de re* interpretations and semantic constraints on their occurrence.)

Note that instead of uttering (28), Steve might report Ralph's concern to Zack using the proper name of their boss, as in (29):

(29)   Ralph believes that Ortcutt is a spy!

This, too, seems like a correct report of Ralph's belief. Again, since Ralph doesn't know that the man in question is Ortcutt, this is a *de re* belief attribution. However, since Ralph also believes of Ortcutt, the man he knows as the mayor, that he is an upstanding citizen, (30) is true as well:

(30)   Ralph believes that Ortcutt is not a spy.

One might say that (30) is true on a *de dicto* interpretation, since Ralph does hold this belief of the man he knows to be named *Ortcutt*. However, it is true *de re* as well: Of the man we know as Ortcutt, Ralph believes that he is not a spy. Moreover, although the understanding in question is one in which though Ralph is mistaken about Ortcutt's identity, he is not being portrayed as irrational—as believing both that *p* and that *not-p*.

The fact that both (29) and (30) seem to be true in this way, both involving *de re* interpretations of the same proper name, gives rise to a puzzle that Quine calls the "double vision problem". How can these two reports of Ralph's beliefs *de re* both be true without entailing a contradiction in his thinking? Intuitively, the problem arises because Ralph is familiar with the same individual, the *res* Ortcutt, under two distinct guises, reasonably failing to recognize them as guises of the same individual. This suggests that in intensional contexts, the *de re/de dicto* distinction in NP interpretation is not sufficiently fine-grained to permit us to characterize all the kinds of interpretations attested. Perhaps such attitudes do not involve a relation to an individual *simpliciter*, but to an individual *under a guise*. Then the problem is how to reflect the required distinctions between *de re* interpretations in intensional contexts.

Because proper names are taken to be rigid designators, denoting the same individual (the actual bearer) in all possible worlds (see the article in this volume on Proper Names), the double vision problem is especially evident when proper names occur in attitude complements. Closely related problems of *de re* belief attribution have been pointed out by Kripke (1979) and many others since (see Aloni 2001, Chapter 2, for an excellent overview of the relevant literature). These puzzles suggest that the understood meaning of a proper name, at least in such intensional contexts, may be something richer than just the entity which bears it.

Another problem with interpretations under the scope of intensional operators is that of how to characterize interpretations *de se*. Here is an illustration, after a famous example due to Morgan (1973):[5]

(31)   [Context: The baseball player Ernie Banks gets hit on the head and develops total amnesia. He doesn't know his name or remember anything about his past, though he is lucid. During his long recuperation, he reads in the newspapers about a baseball player named Ernie Banks, and becomes fascinated with the guy's career. His social worker reports to a nurse:]
         <u>Ernie Banks</u> thinks <u>he</u> is one of the greatest shortstops of all time.

This is another type of *de re* interpretation: Banks has a belief about this guy he reads about, a fellow by the name of *Ernie Banks*. What he doesn't recognize is that he *is* that guy, though clearly the speaker knows they are one and the same individual. But despite the speaker's intended anaphoric relationship between the underlined coreferential NPs, Banks' evident lack of self-recognition leads to a difference in truth conditions. Hence, we must assume that this leads to a possible difference in interpretation of *he*. The interpretation on which Banks realizes he is Banks is called the *de se* interpretation; the one we see in (31), the non-*de se*.

Again, these non-*de se* interpretations generally arise in attitude reports, where the subject of the matrix verb is coreferential with a pronoun in the complement sentence. But we can see a parallel with the so-called *referential* interpretations of Donnellan (1966):

(32)   Smith's murderer is insane.
(33)   The man in the corner drinking a martini is my boss.

Consider (32) uttered in a courtroom from one observer to the other. Suppose he says this nodding toward the person on trial, accused of murdering Smith. The fellow is evidently insane, and most people take him to be the murderer. Then, goes the story, the definite description may successfully pick out the accused, even though either the speaker or the addressee may secretly know that the accused is actually not the murderer—one of them may be! Or consider (33) in a situation in which there is exactly one man in the corner sipping a colorless liquid from a martini glass. Though the speaker knows that it's actually just chilled water, still this description might seem like the clearest way to draw the addressee's attention to the man she wishes to refer to,

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[5] As I finish this article, the real Ernie Banks has just passed away in Chicago. RIP Ernie Banks, and thanks for the memories!

despite the falsity of the description. She's not trying to mislead, just to be communicatively effective, to say something about *that individual*.

Kripke (1977) offers arguments that the so-called referential use does not arise from ambiguity in the definite article itself, but from pragmatic factors. Abbott (2010, §6.3-4; 2014) argues against Kripke. There is as yet no consensus on how this interpretation arises.

In (32) and (33), there is a difference between the description the speaker believes will successfully pick out the intended referent from the addressee's point of view and that referent's actual properties. This intriguingly parallels a difference in the cases of *de re* or non-*de se* interpretations: The relevant description (*the man in the broad-brimmed hat*) or proper name (*Ortcutt*, the pronoun's antecedent *Ernie Banks*) doesn't accurately describe the intended referent from the point of view of the agent of the attitude (Ralph, Banks himself). But in all of these types of interpretation, the "incorrect" definite does successfully pick out the intended referent *for the speaker and addressee*. In all these cases, then, it is a shift in perspective which is essential to understanding the intended interpretation.

2.5. <u>Context-sensitive predicates</u>:

Another general type of context-sensitivity displayed by referential NPs involves the use of predicates which are vague or imprecise, whose application is a matter of personal taste, or which require coercion for appropriate interpretation in a given context. Here are some examples:

<u>vagueness</u>:
(34)   [To the school photographer:] Take pictures of <u>the tall boys in the kindergarten class</u>.

<u>imprecision</u>:
(35)   I'm going to visit <u>the hexagonal country in western Europe</u>.

<u>personal taste</u>:
(36)   [To a friend who doesn't like sweets:] Give me all of <u>those tasty cookies</u>.

<u>coercion</u>:
(37)   [Context: In a room with only silk flowers.] Put <u>the flowers</u> on the table.
(38)   I listened to <u>the rain</u>.

To understand what she's being asked to do, the addressee in (34), (36) or (37) must grasp the intended extension of the predicate *tall*, *tasty* or *flower*, respectively; this will require making a judgment about what counts as being tall in that class, whose taste is at issue, and what counts as being a flower—certainly not, in the context in (37), being the reproductive organ of a plant. (35) can mean that the speaker is going to France, but only if we grant an imprecise description of that country as being hexagonal. And the speaker in (38) surely means that she listened to the sound that the rain made falling on the roof or the pavement, quite unlike the interpretation of *I listened to the sound that John made*.

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The interpretation of a complex definite NP may also involve a conversational implicature, as we see in:

(39)   Some of my colleagues and I come to work every day. I drive, but the fellow who rides his bike always gets to the office before me.

(40)   [Discussing with a friend the people we heard at Karaoke the previous night:] I was most impressed with the man who sounded rather like someone trying to sing "Sweet Caroline".

The underlined definite in (39) is clearly intended to refer to the (presumably unique) fellow who rides his bike *to work*, so that it is relevant to the proposition expressed in the previous sentence. In (40), *the man who sounded rather like someone trying to sing "Sweet Caroline"* seems like an unnecessarily wordy description of someone singing that song. But it tends to suggest that the fellow did a rather poor job. In fact, one might successfully use this description to pick that poor singer out even if during the course of the evening many people sang "Sweet Caroline", so long as one was particularly bad.

Of course, all the above might be attributed to domain restriction on some accounts. The point here is that the kinds of contextual factors one needs to take into account to understand the intended domain restriction are varied and subtle—the resolution of intended standards for vagueness, precision, and taste; implicature generation; etc.

3. <u>Reference in context, Context in reference</u>

The wide range of phenomena illustrated above put meat on the bones of Strawson's claim: If definite NPs are those that are most frequently referential, and if their interpretations are so frequently dependent on context for resolution of anaphora, retrieval of incomplete descriptive content and domain restriction, perspective, and other pragmatic factors, it becomes clear that instead of the NPs themselves referring, speakers *use* these NPs to refer *in context*. That is, with most NPs there *is* no fixed reference outside of context. Even if we take proper names to be unambiguous rigid designators, we have to explain (a) the anaphoric constraints on their felicity, discussed above, and (b) how perspective may come to bear on their interpretations in context. Definite descriptions are regularly and successfully used to refer, yet on almost all analyses (e.g. Russell 1905, Heim 1982, Neale 1990, Elbourne 2005) they are not referential *per se*, but either quantificational or anaphoric.

Then it seems reasonable to assume that an adequate theory of reference cannot be developed without coming to grips with what constitutes a meaningful utterance of a linguistic expression. Assuming Bar Hillel's notion of utterance, answering the question of how a speaker successfully conveys her referential intentions involves addressing two others: The first is what types of contextual factors interlocutors regularly draw on in the course of successful reference, across the range of NP-types that give rise to referential interpretations. Addressing this question involves developing a theory of the notion of *context of utterance*. The second question, building on the answer to the first, is just how such a context interacts with conventional content

in the course of interpretation. Here we can only point to trends in the relevant literature which suggest the state of the art.

Especially influential early theories of context were developed by Kaplan (1977), Stalnaker (1979) and Lewis (1979), and were implemented in compositional theories of interpretation, like that of Montague (1973) and his successors. Context in such theories was considered static, given once and for all at the outset of interpretation of an utterance. Following Kaplan (1977), context was usually expressed as a set of indices of evaluation which fix the values of specific types of indexical expressions (see the discussions in Lewis 1970, Cresswell1973). These might be limited to the so-called *pure indexicals* (like *I, you, now*) whose values are fixed by distinguished elements of the context (the speaker, addressee, time of utterance, etc.). But generally in contemporary philosophy of language and linguistic semantics, indexicality is extended to include other anaphoric elements whose antecedents must be contextually retrieved. If they are not quantificationally bound, pronouns and demonstratives unaccompanied by deixis are treated as free variables in logical form, and the indices of evaluation are taken to include an assignment of values (interpretations, referents) to these variables. In these accounts, canonical uses of demonstratives (accompanied by deixis) are assigned values via a distinct deictic index, involving the same kind of mechanism as the assignment of the actual speaker to be the value of *I*, etc.—fixing a contextual value for pure indexicals. And definite descriptions are treated as quantificational, more or less along the lines of Russell's (1905) account, with the descriptive content serving as a domain restriction on the existential operator. Hence, in these classical accounts of context-in-reference, there is no unified account of the way in which demonstratives and definite descriptions, like pronouns, may be anaphoric, as illustrated above.

Note also that no attempt is made in such theories to account for how the intended values are retrieved in a particular context of utterance; the assignment function and other indices are just a way to funnel pragmatically relevant values into the compositional interpretation. The result of this interpretation is assumed to be the truth conditional content of the utterance—a proposition (for an indicative), question (for an interrogative) or suggestion (for an imperative). But after truth conditional interpretation, the context is understood to interact once more with the compositionally determined content, to adjust it in ways that lead to Gricean implicatures and the like.

Stalnaker (1979) argues for a richer notion of the context of utterance than just a set of indices, taking it to be the interlocutors' Common Ground, which he models as the set of propositions which they take each other to (purport to) believe. He argues that the Common Ground includes not only the information encoded in Kaplan's indices and the propositions explicitly asserted (and accepted) in the discourse, but all kinds of implicitly shared information as well—the existence of those entities generally familiar to the interlocutors, cultural information, the information to which the interlocutors jointly have perceptual access in the context of utterance, etc. The experimental work of Clark and his group (summarized in 1996) and of Tanenhaus and his associates (e.g. Chambers et al. 2002, Hannah & Tanenhaus 2004, Tanenhaus et al. 2004, Hanna & Brennan 2007) argues that access to the Common Ground, understood to include such non-explicit information, plays a central role in anaphora resolution and other referential tasks, and is implicitly assumed by speakers and addressees alike. It is now generally assumed in linguistic semantics and psycholinguistics that the appropriate notion of context should have at

least the richness of the Common Ground—a body of information which interlocutors have reason to believe that each other have access to in the context of utterance. This includes a large body of consensual encyclopedic information, as well as the ability to reason over that information to generate implicatures. A richer notion of context is assumed in many dynamic theories of interpretation, cited below, as well as in work developing the scoreboard notion of Lewis (1979) (see Roberts in press 2015).

If we take anaphora, in the broader sense discussed and illustrated above, to amount to a requirement for mere weak familiarity, then the implicit content in the Common Ground plays a crucial role in resolving the intended referent in a very large percentage of uses of all types of definite NPs. For example, weak familiarity clearly plays an important role in the cases involving coreference with a non-linguistically salient referent, as in (11) – (13) above, and in those cases that Clark (1981) called bridging anaphora, as in (41):

(41)   . . . John entered the room. <u>The ceiling</u> was painted blue.

Here we readily understand *the ceiling* to refer to the ceiling of the room John has just entered. Bridging generally involves an implicitly relational interpretation of the head of the definite: 'ceiling of x', where *x* is anaphoric to some contextually salient entity. The speaker can assume that the addressee will be able to retrieve the intended referent, though the relation is merely implicit, because in our society the fact that rooms have ceilings is encyclopedic information in our shared Common Ground. The encyclopedic information in the Common Ground also plays a crucial role in the resolution of vagueness and imprecision, coercion, and other pragmatic factors in the interpretation of predicates.

But like Kaplan's model, Stalnaker's conception of context is essentially static, still presenting a two-phase view of the interaction of context with conventionally given content. These two-phase models of the interaction of context with the conventional contribution of the constituents of an expression uttered encounter a number of problems in addressing the kinds of phenomena considered in the previous sections. Consider first the problem of anaphora resolution.

Donkey sentences, like those in (17)-(19) above pose a significant problem for theories of static context. In these, the "donkey pronoun" (*it* in (18)) or other definite (the definite article in (17), the demonstrative in (19)) occurs in the consequent of a conditional; this is also illustrated in (42) below. Donkey anaphora can also take place when the donkey pronoun occurs in the scope of a quantificational determiner or other operator in the utterance, while its antecedent is introduced in the conditional's antecedent/in the operator's overt domain restriction, as exemplified in (44). But true quantificational binding cannot take place between the antecedent and consequent of a conditional, or between the restriction and scope of an operator more generally, as we see in (43) and (45), which both contrast with (46) where the binding is available (under the usual c-command relation between quantificational antecedent and bound element):

(42)   If a farmer owns <u>a donkey</u>, he should treat <u>it</u> well.
(43)   #If a farmer owns <u>every donkey</u>, he treats <u>it</u> well.
(44)   Most farmers who own <u>a donkey</u> treat <u>it</u> well.
(45)   #Most farmers who own <u>every donkey</u> treat <u>it</u> well.

(46)   <u>Every donkey</u> owned by a farmer appreciates the fact that he treats <u>it</u> well.

This means that the variable corresponding to a donkey pronoun is free, not bound, because its antecedent is not available to bind it at the outset—on the basis of the context at the onset of utterance—but instead needs to be added *in the course of interpretation* to the contextually available information about possible values for free pronouns. This problem led to work on dynamic theories of interpretation, prominently those of Kamp (1981) and Heim (1982), with subsequent work due to Groenendijk & Stokhof (1990), Muskens (1996), and Martin (2013), among others. In all these theories, the notion of context is dynamic in that (a) it is updated in the course of interpretation, so that (as noted by Groenendijk & Stokhof 1993) $\varphi \wedge \psi$ needn't have the same interpretation as $\psi \wedge \varphi$, as we see in (47a) vs. (47b).

(47)   a. John loved her and he married Jane. [*her* presumably refers to someone other than Jane]
        b. John married Jane and he loved her.   [*her* presumably refers to Jane]

And (b) contextual information may be not only updated from utterance to utterance, but also regularly "downdated", so that information made available in the course of utterance under the scope of an operator may no longer be accessible for the interpretation of subsequent context-sensitive expressions (respecting the Scope Constraint above). We see downdating in (48a):

(48)   a. If John sees <u>a car</u> he likes, he should buy <u>it</u>. He probably took <u>it</u> for a test drive already.
        b. John saw a car he likes. He probably took it for a test drive already.

Here the donkey pronoun *it* in the consequent of the first sentence may take *a car* as antecedent, illustrating the canonical relationship in a conditional with the indefinite in the antecedent. Thus, the context should be temporarily updated as a consequence of the interpretation of the antecedent, with (hypothetical) information that there's a car John sees and likes, in order to offer an antecedent to *it* in the consequent.   But on the natural assumption that the indefinite in the conditional is non-specific, after interpretation of the conditional the hypothetically updated context is downdated again so that there is no anaphorically available car in the context of utterance for the second sentence. This explains the fact that, the pronoun in the follow-up *He probably took it for a test drive already* is odd, either (i) infelicitous because without an antecedent, or else (ii) awkwardly forcing the specific reading of the conditional indefinite found in (48b), as we saw in the forced specific reading of *the bastard* in (24) above, resulting in a revised interpretation of the conditional.

 To address such problems, Heim used the metaphor of a File to model the information interlocutors have about a particular entity (real or hypothetical); Kamp talks about his Discourse Representations as mental models containing information that's shared and updated during interpretation. In their theories, the donkey anaphora (and other types of presupposition satisfaction—see, e.g. Partee 1985) is a function of the dynamic update/downdate conventionally associated with conditionals, quantificational determiners, and other operators.

One might wonder whether the phenomenon of donkey anaphora is relevant to the discussion of *reference*, since the canonical examples like (42) and (44) don't seem to refer to particular individuals in the actual world. But an argument can be made that it is relevant to *understanding*

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intended reference in use. The reason is that reference is so often successful as a function of anaphora, as we saw in the first section. We also saw in (25) that an indefinite (*a mouse*) under the scope of a modal can set up anaphora with a definite description, thus referring to an actual mouse. We can do the same with donkey anaphora:

(49)   If a car has a manual transmission, then <u>its</u> driver has to know how to use <u>the gear shift</u>.
         <u>They</u> used to be on the steering column, but <u>mine</u> is on the floor.

In (49), the donkey pronoun *it* takes as antecedent *a car*, with *the gear shift* given a<u>n implicit</u> relational interpretation, bridging to the car: 'the gear shift of the car'.   Then both the generic bare plural *they* (referring to gear-shift-kind) and *mine* in the subsequent sentence are understood to be anaphorically dependent on *the gear shift*, *mine* referring to the particular gear shift in the speaker's car.

So successful reference is arguably, at least in many cases, partly a function of how the context of use plays a role in the successful resolution of anaphora, itself quite a complex phenomenon. Since it involves dynamic update and downdate, the notion of context needed for the retrieval of intended reference arguably must itself be dynamic, modeled as changing in the course of interpretation, in interaction with the utterance's conventional content.

There is so much to say about the other contextual influences noted above--domain restriction, descriptive incompleteness, and shifted perspective—but here I can say only a very little.

Domain restriction is generally regarded as presuppositional, typically as anaphoric; e.g. Rooth (1985,1992), von Fintel (1994), and Stanley & Szabo (2000) all assume that NPs like *everyone* in (21) and *the bastard* in (22) – (25) above are associated with an implicit free variable in logical form, whose value is the (group of) individual(s) over which the associated quantificational operator—the universal or existential quantifier associated with the determiner—is intended to range. This is a way of formally encoding the intuition that a competent speaker using these NPs assumes that, in (21), there is some salient group of students, or, in (22), some salient individual under discussion whom the speaker might dislike, and presupposes that the addressee can recognize that it is this individual or group of individuals which she intends as the domain of *every* or the existential associated with the definite article.

As with anaphora generally, how addressees retrieve the intended (group of) individual(s) to restrict the domain of an operator probably is related to how we understand who a speaker intends to refer to when she says *Mary called yesterday to say that she'll be coming a day later than she'd planned*. The proper name *Mary* is quite common. But the utterance itself implicates that the Mary in question is one the interlocutors know (implicated by the lack of introductory appositive, etc.), and that perhaps they had discussed Mary's plan to visit. This suggests that the speaker believes that there's no more than one Mary familiar in the common ground whom the addressees will take to plausibly have the relevant properties. If there were two Marys that were known to be coming, he'd have to say, for example, *Mary Russell* or *Mary Cummins*, in order to make the intended referent clear. Similarly in the examples of domain restriction. Like other presuppositions, in order to be felicitous, implicit domain restriction should be obvious in view of two factors in the context of utterance: the interlocutors' common ground, and the topic of

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discussion. If we're talking about what happened in a particular classroom yesterday, then in order to be relevant, the utterance of (21) should be relevant to that question, and hence relevant to the individuals in that situation. Roberts (1996/2012) would argue that the context offers a formal specification of the question under discussion, which would guide the resolution of this evident presupposition (surely the speaker doesn't mean that absolutely *everyone* in the whole world should get out their notebooks). The fact that the utterance is imperative suggests that the speaker is an individual in authority—perhaps a teacher, in keeping with the usual classroom scenario. Then the individuals over whom a teacher has authority in a classroom are usually the students; hence the intended domain for *everyone* is the set of students in the classroom. Thus, if a parent is sitting in that day, s/he wouldn't be automatically included in the presupposed domain. Some combination of the relevant question or situation under discussion, the classroom scenario, plus the plausibility of authority involved in the imperative, together (abductively) yield the intended restriction.

The issue of descriptive incompleteness is closely related. In fact, if one adopts a Russellian (Neale 1990), or Fregean (Heim 1992, Elbourne 2005) account of definite descriptions one might simply assume that the "missing" descriptive content is given by the domain restriction on the existential operator in the DP's Logical Form. Elbourne (2005,2013) adopts a variant of the domain restriction view in a situation semantics. He takes all DP interpretations to be restricted to a contextually given situation, and then the unique entity with the overt descriptive content of the definite must be found in that situation. Roberts (2003) argues for a different view, in which definite descriptions themselves are anaphoric, requiring a discourse referent antecedent (roughly, a "file" in the sense of Heim 1982). On Roberts' account, the overt descriptive content of a definite description, much like the person, gender and number on an English pronoun, only serves to guide anaphora resolution. Then, as with domain restriction, the question under discussion and general constraints on plausibility resolve the anaphoric presupposition *just in case* the overt descriptive content is sufficient to distinguish the intended referent from all others that are relevant at that point in the discussion.

Like anaphora resolution, the problem of shifted perspective in intensional contexts is complex. But there is a recent vein in the literature (Aloni 2001, Percus & Sauerland 2003a,b) that shows promise of illuminating what's at issue. The leading intuition is that an agent may have multiple perspectives on the same *res*. In some cases, where the perspectives are quite different and the resulting guises under which the *res* is known to the agent appear quite distinct, this may result in the agent having inconsistent beliefs about the same *res*. In such cases, the agent fails to recognize that these different guises are in fact guises of the same individual. Then the intended interpretation of the *de re* definite NP in an attitude context is shifted by a contextually-given perspective operator in such a way that the agent is reported as having an attitude towards the *res*-under-the-relevant-guise, from a particular conversationally relevant perspective. This, then, is a pragmatic account, rather than one that makes predicates like *believe* ambiguous between the usual relation to a proposition and a semantic three-place operator 'believe-of' (Quine 1956). One question for further research is how interlocutors come to understand that such a shifted perspective is relevant and appropriate in the interpretation of a proper name or other definite NP. Another is when the perspective-shifting operator is contextually available to influence interpretation.

For example, one might take the understood interpretation in examples involving so-called "referential" uses of definite descriptions to involve a similar perspectival interpretation. In examples like (32) or (33), even if the speaker takes someone other than the accused to be the murderer, or knows that the man holding the martini glass is just drinking water, she might use these descriptions to pick out the intended referents because she thinks that is how the addressee views these individuals, or at least that that is how the addressee thinks *she* views them. The point, then, is purely pragmatic, as argued by Kripke (1977): The speaker choses a description not because it is accurate, but because it is most likely to successfully pick out the individual she intends to refer to, given what she knows about the addressee's beliefs.

The notion of perspective arguably plays a role as well in the cases involving *de se* interpretation: In (31) there are two ways Ernie Banks might view Ernie Banks: as his own self, or as the famous Chicago shortstop. It is clear that these are in principle independent. The extra factor in these cases is how to model the subjective notion of *self* in the semantics of attitude predicates. Drawing on Quine (1956), Lewis (1979b) proposed the use of *centered worlds* to model the denotations of complements of attitude reports like that in (31).[6] Each centered world is an ordered pair of a world and an individual in that world, the individual being how the agent of the attitude sees himself in that world. A number of subsequent authors have proposed modifications of this general proposal and linguistic refinements; see Chierchia (1990), Percus & Sauerland (2003a,b), Anand (2006), Stalnaker (2008), and Pearson (2013) for especially relevant discussions and contributions. Roberts (2015b) weaves this understanding of *de se* interpretation and the other threads about perspective noted above into a unified account.

One final important point: The range of ways considered here in which context influences the understood reference of a definite noun phrase might be taken as reasons to reconsider prominent theories of the semantics of particular types of definites in which they are considered to be **directly referential** (Kaplan 1977 on demonstratives and indexicals) or **rigid designators** (Kripke 1972 on proper names). Recognition of the problems which anaphoric and bound variable uses pose for the usual deictic analysis of demonstratives led to King's (2001) account of demonstratives, an alternative to Kaplan in which they are quantificational. Roberts (2002) offers a different kind of account, in which demonstratives are anaphoric (subsuming the deictic uses as a special case), while Elbourne (2008) argues for a neo-Russellian ("Fregean") account in which existence and uniqueness are presupposed instead of proffered, with demonstratives turning out to be much like definite descriptions plus an optional demonstration. Recent work on languages in which the counterparts of English "pure" indexicals can be shifted under the scope of attitude predicates to refer to the agent of the attitude (Schlenker 2003, Anand & Nevins 2004, Sudo 2012, Deal 2013, and much on-going work across a wide range of languages) argues that there are, *pace* Kaplan, monsters! And Wechsler (2010) argues that there is a special, subjective aspect of the semantics of indexicals across all known human languages that cannot be captured by the direct reference accounts. Roberts (2015b) offers a new account of indexicality which aims to account for all these problems without Kaplanian Character or direct reference.

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[6] Lewis (1979) also argues that such examples show that the complement of an attitude predicate cannot be understood as a proposition, but must be a property instead. However, Stalnaker (2008) argues that this is incorrect, and offers a modification of Lewis' centered-worlds approach to *de se* phenomena in which the sentential complements do denote propositions, sets of centered worlds.

Similarly, Cumming (2008) argues for a non-rigid, "variabilist" approach to the semantics of proper names, and the anaphoric character of names sketched in the first section suggests there might be something to that view. It is premature to determine the merit of these proposals, but the problems they raise for the direct (or rigid) accounts cannot be ignored. In any case, as we have often seen in the earlier literature (Geach 1967, Kripke 1972, Morgan 1974, Kaplan 1977, Evans 1977, Heim 1982), a better understanding of the attested interpretations of definite NPs in particular kinds of contexts may ultimately lead us to empirically superior accounts of their conventional contents, as well.

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Contextual Influences, Research, Research Summaries. When we see someone doing something bad, we usually jump to the conclusion that the person is bad. Only later, if ever, do we consider the broader context—the social situation—which can strongly influence people's behavior. Many of the classic experiments in social psychology are famous because they show how easily situations can overwhelm our moral characters. Harness contextual triggers. Fostering ethical behavior requires creating an environment that reminds people of their moral principles. For instance, in one experiment by Lisa Shu and her colleagues students cheated less on an exam when the honor code was placed at the beginning of the exam than when it was placed at the end. The influence of context on interpersonal complementarity was examined using an event-contingent recording procedure. Setting and role status moderated the relation between how a person behaved and how the other person behaved. Individuals were more likely to respond with agreeable behavior to agreeableness in others when not at work than when at work and when in a high status work role relative to a low status work role. @article{Moskowitz2007ContextualIO, title={Contextual Influences on Interpersonal Complementarity}, author={D. Moskowitz and M. Ho and Anne-Marie Turcotte-Tremblay}, journal={Personality and Social Psychology Bulletin}, year={2007}, volume={33}, pages={1051 - 1063} }. Behavior is influenced by the emotional content—or valence—of stimuli in our environment. Positive stimuli facilitate approach, whereas negative stimuli facilitate defensive actions such as avoidance (flight) and attack (fight). Here we asked under which conditions approach-avoidance actions are influenced by contextual factors (i.e., reference-frame). We manipulated the reference-frame in which actions occurred by asking participants to move a symbolic manikin (representing the self) toward or away from a positive or negative stimulus, and move a stimulus toward or away from the manikin. We also controlled for the type of movements used to approach or avoid in each reference. Abstract: Two contextual variables that have theoretical roots in information processing, attribution, and social judgment theories were manipulated along with three levels of merchant-supplied reference price in a 2 x 2 x 3 analysis of variance design. Results support the hypothesized effects of consistency and distinctiveness as contextual variables that influence internal price standards and purchase evaluations. The three price levels resulted in a curvilinear pattern of results for the purchase evaluation and source credibility dependent variables, as hypothesized. However, contrary to assimilation-contrast theory, the impact of the merchant-supplied reference price on estimates of normal and fair prices was monotonic. Copyright 1989 by the University of Chicago. This paper addresses Structure-Interaction Theory (SIT), a theoretical framework that both describes communication messages as well as assists in making predictions about how human communication can be improved based on listener preferences for message structure or interaction. Communication messages may be characterized as existing on a continuum of structure-interaction. Communication structure is the inherent way information in a message is organized. A highly structured message is one in which the message is strategically organized using a planned arrangement of symbols to create meaning. Communication interaction is a way of viewing a message with give-and-take, less sustained "notes," more change in note sequence and briefer notes.