# Indirectness and Intentions in Metasemantics*

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There are many context-dependent expressions in language. Obvious examples include indexicals and demonstratives like *it* or *that*, which require supplementation from the context to fix their referents. In recent years, there has been a great deal of discussion of other sorts of cases, where context dependence does not simply attach to an overtly pronounced word, but to some other linguistic component. Much attention has been paid to cases where the component is a hidden or unpronounced expression, that is only revealed through semantic or syntactic analysis. Many of these take the form of parameters in the appropriate syntactic representations of sentences, whose values are set by context.[1]

It has proved fruitful to distinguish several different questions about these sorts of parameters. First, of course, what are they, and if they are not pronounced or are otherwise hidden, how do we know they are there? Second, what are their semantic properties; and specifically, what semantic values do they have? Third, how does context fix those values? This final question

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[1]The literature on this is large, but highlights include Bach (1994), Perry (1996), Recanati (2004), Sperber & Wilson (1998), Stanley (2000), and Stanley & Szabó (2000). I explore my own take on this issue in Glanzberg (2016).

asks about what has come to be called the *metasemantics* of contextual parameters.[2]

There are two linked issues about the metasemantics of contextual parameters I shall explore in this paper. First, in earlier work (Glanzberg, 2007, 2016), I have argued that different sorts of context-dependent expressions, including different sorts of contextual parameters, have different metasemantics. In particular, I distinguished what I call *direct* from *indirect* metasemantics. The model for direct semantics is that of demonstratives. It is especially clear on an intentional account of the metasemantics of demonstratives, where a speaker's referential intention fixes the referent of a demonstrative. In this case, one single factor determines its value. In contrast, I have argued that many contextual parameters have an indirect metasemantics, on which multiple factors work to fix the parameter's value. It can be a further matter of context just how those multiple factors combine in any given case. The example I shall focus on here, as I did in other work, is that of the *standard* for a gradable adjective. Take a simple case like:

(1) Max is tall.

How tall someone needs to be to count as tall is a matter of context. The *standard*, as I shall discuss in more detail in a moment, is the parameter that determines this. It sets how tall you have to be in a given context to count as tall. I have argued that multiple factors influence how the value of this parameter is set in context, including salient objects, speakers' intentions, lexical meaning, and so on. Thus, I have claimed, the standard has an indirect metasemantics.

The second issue I shall explore is the place of speakers' intentions in metasemantics. The model of direct metasemantics I have used is that of an

[2]This distinction comes from discussions of reference, where Kaplan (1989a) and Stalnaker (1997) observed that it is useful to distinguish the semantic value of a referring expression from how that value is fixed. (Kaplan introduced the term 'metasemantic'.) The semantic/metasemantic distinction applies naturally to context-dependent expressions, where the question of how a semantic value is fixed thus becomes the question of how context fixes it. This is a part of the general area of pragmatics, but it is a highly focused part, so using the term 'metasemantics' to single it out has proved useful (even if it is jarring to some to see it called 'meta*semantics*'). The extension of the distinction to context-dependent expressions was mentioned by Kaplan (1989a). It was made explicit by Stanley & Szabó (2000) and discussed extensively in my (2007). Since then, the metasemantics of context-dependent expressions has become lively research area. See e.g. King (2014a).

intentional metasemantics for demonstratives, while the case I have made for indirect metasemantics highlights factors that go beyond speakers' intentions. This raises the question of how closely the two are linked. In particular, it raises the question of whether a metasemantics based solely on speakers' intentions must be direct.

My first goal in this paper is to review and expand my arguments in favor of indirect metasemantics, still using the standard as my example. My second goal is to ask how much an indirect metasemantics must depart from an intention-based metasemantics. The indirect metasemantics I shall present and defend includes much more than speakers' intentions, and gives such intentions a limited role. But I shall also note an option for a more fully intention-based but indirect metasemantics. I shall argue in favor of my own version. But I shall also note that deciding between them requires deciding a range of complex issues, and I shall not resolve all of them here. It requires deciding not only a range of specific issues about cognition, but some fundamental ones about how communication works. Thus, I shall make a case for indirect metasemantics, and a conditional case that it should not be thoroughly intentional, while highlight some important considerations that go into choosing which form a metasemantics should take.

I shall structure my defense of indirect metasemantics around a recent paper of King (2014a). King offers a carefully crafted intention-base metasemantics, and challenges my preferred metasemantics for the standard for gradable adjectives. I shall first review and strengthen my arguments for indirect metasemantics in section 1. Next, I shall review and examine King's alternative in section 2. I shall argue there that King must adopt an equally indirect, but intention-based alternative. I shall defend my preferred, less intentional version in section 3. I shall also highlight there some difficult issues that could decide the choice between my approach and King's. I shall conclude briefly in section 4.

# 1 Indirect Metasemantics

In this section, I shall make my case for indirect metasemantics, concentrating on the standard for gradable adjectives. The case will be supplemented in some ways in the next section, but the main set of arguments will be presented here.

Before getting to those arguments, I shall begin by reviewing some as-

sumptions about semantics which will be our starting points.

As we will be discussing gradable adjectives at length, let us begin by reviewing their semantics. Gradable adjectives are those like *long, fast, bright, heavy, large, happy, cold, smart*, etc. They take degree modifiers like *very*. Roughly, they seem to report degrees of the relevant property. This is embodied in a common degree analysis of their meanings.

This analysis takes gradable adjectives to be functions from individuals to degrees on a scale.[3] For example, the meaning of *tall* is given by a function to degrees on a scale (called a *measure function*):

(2) $[\![\text{tall}]\!](x) = d$ a degree of tallness

This analysis is very natural for comparative constructions. For instance, we have:[4]

(3) a. Max is taller than Mary.
b. $\mathbf{tall}(\mathbf{Max}) > \mathbf{tall}(\mathbf{Mary})$

(Of course, this is abstracting away from a lot of details about the comparative construction.)

The analysis of the positive form, i.e. the non-comparative form like *Max is tall*, makes it like an implicit comparative, comparing the degree assigned to an individual to a contextually provided value, called the *standard*. A simple version is:

(4) a. Max is tall.
b. $\mathbf{tall}(\mathbf{Max}) > d_c$

Here $d_c$ is the standard, which is a contextually provided degree of tallness. To be tall in a context is to have degree of tallness greater than $d_c$.

To show just a little more compositional structure, note that we can give the comparative and positive forms related syntactic analyses along the lines of Kennedy (1997, 2007):

(5) a. $[_{\text{DegP}}\ [_{\text{Deg}'}\ [_{\text{Deg}}$ -er ] $[_{\text{A}}$ tall ] ] $[_{\text{PP}}$ than Mary ] ]

[3] This theory has a long history. See among places Barker (2002), Bartsch & Vennemann (1973), Bierwisch (1989), Cresswell (1977), Heim (1985), Kennedy (1997, 2007), Rett (2015), and von Stechow (1984). Alternative theories have been developed by Burnett (2014) and Klein (1980).

[4] $[\![\alpha]\!]$ is the semantic value of $\alpha$. Were I need to mention specific semantic values, I shall put them in boldface. So, $[\![\text{tall}]\!] = \mathbf{tall}$.

b. $[_{\text{DegP}}\ [_{\text{Deg}}\ pos\ ]\ [_{\text{A}}\ \text{tall}\ ]\ ]$

As we are treating adjectives as measure functions, the semantics of *pos* is then:

(6) $[\![[_{\text{Deg}}\ pos\ ]]\!] = \lambda g \lambda x.g(x) > d_c$

Again, this is a rough-and-ready version of the analysis, but it is enough detail for our purposes.[5]

I shall return to some issues about the status of *pos* in section 3. For now, we may observe that this brief glance at the semantics of gradable adjectives shows the presence of a contextual parameter: the standard $d_c$. It is implicit, as we do not pronounce it. It does not come from nowhere, of course! On the analysis we are considering, it is contributed by *pos*, which is a silent Deg morpheme building the positive form. $d_c$ is thus what in other work (Glanzberg, 2016) I have called a *functional* parameter, as it comes from a functional element like Deg, and it behaves very differently from overt context-dependent elements like demonstratives.

Functional parameters, I have claimed, receive an indirect metasemantics. Focusing on the standard, I shall review and develop my case for this claim. To begin, let us start by considering some ideas about how $d_c$ might be set.

A natural and common view of the way the standard is fixed is that it is derived from a contextually given comparison class via an appropriate norm. This is made vivid when we use *for*-phrases (cf. Klein, 1980), like:

(7) Max is tall for a professional basketball player.

This clearly pushes the standard up very high. Apparently, the average height of an NBA basketball player in 2016-17 is 6'7".[6] Assuming our norm is an average, we might expect the standard for (7) to be near to 6'7", which is much higher than it would be in many contexts.

This view is part a semantic view, and part a metasemantic one. The semantics implicit in the comparison class view, and explicit in Bartsch & Vennemann (1973), is that:

(8) $[\![[_{\text{Deg}}\ pos\ ]]\!] = \lambda g \lambda k_{\langle e,t\rangle} \lambda x.g(x) > norm(k)(g)$

[5]The references in footnote 3 also discuss the positive form, and disagree over some of the details. For instance, Barker (2002) and Rett (2015) do not use this sort of *pos* analysis. The version presented here follows Kennedy (2007), though this is not his final proposal for the semantics of *pos*. For an extensive overview of the comparative, see Morzycki (2016).

[6]According to http://www.basketballinsiders.com/2016-17-nba-roster-survey/.

Here $k$ is a comparison class, and *norm* is function that determines the central tendency of $g$-degrees of members of $k$. For specificity, we can safely assume *norm* is just the mean value of $g$-degrees of members of $k$.

Semantically, what before we presented as $d_c$ is here given by $norm(k)(g)$. So, our parameter is really $k$, and its semantic value is a class of individuals. The metasemantics must fix the relevant comparison class, which is usually taken to be a class of salient individuals in the context.

This would be an option for a *direct* metasemantics. Though it is not that much like the metasemantics of demonstratives, it posits one specific contextual factor—salient individuals—to fix the value of the parameter $k$.

In earlier work (Glanzberg, 2007), I have followed Kennedy (2007) in rejecting this view. The main reason I reject it is that there are contexts where the norm value on the comparison class is not the standard.[7] Kennedy observes that the analysis that fixes the standard via a norm of being average applied to a comparison class (expressed by a *for*-phrase) predicts that the following should be contradictory:

(9) Nadia's height is greater than the average height for a gymnast, but she is still not tall for a gymnast.

It is easy to find contexts where this is not contradictory. We can also find contexts where it is not contradictory if we change the norm, e.g. to the mode or median height, and likewise for any other norm that is plausible given the meaning of *tall*. Hence, no fixed norm applied to a comparison class will be able to uniformly get the right truth conditions.[8]

With Kennedy, I concluded that the standard is not uniformly computed from a comparison class, and that a comparison class is not itself a contextual parameter in a gradable predicate. The comparison class is certainly a factor in determining the standard, and as we will see in a moment, an important one. But it is not semantically coded to do the job all by itself, and the metasemantics must take into account more than comparison classes.

Following Kennedy & McNally (2005), we can observe another important factor in some cases. The scale structure that an adjective lexically encodes can be crucial. Kennedy and McNally observe that 'absolute' adjectives like

[7]Kennedy also argues that *for*-phrases trigger a *presupposition* that objects fall within the class fixed by the *for*-NP, rather than providing a comparison class argument.

[8]Kennedy (2007) and Fara (2000) also discuss ways that the norm plus comparison class analysis does not adequately address problems related to vagueness and the Sorites paradox. Kennedy credits the observation in (9) to Bogusławski (1975).

*open* and *straight*, which have a minimum or maximum value for their scale, at least usually require the extreme value to be taken. Consider:

(10) a. The door is open.
b. The rod is straight.

To be straight is to be completely straight, and so to have the maximum value on the scale. To be open is to be even a small amount open, and so to have above the minimum value on the scale.[9] Crucially, we see little or no context dependence in absolute cases. The reason is that the lexical meaning of the adjective does all the work, and nothing else about the context (typically) matters. Hence, comparison classes can be overruled by lexical meaning.

We thus have at least two factors that contribute to setting the standard: comparison class, and lexical meaning. Both can contribute, but neither is sufficient to fix standards for all adjectives in all contexts.

I have argued that other factors can play a role too. Most of the kinds of things that influence context can. Not surprisingly, shared presuppositions can (as we learned from Stalnaker (1978), among many others). Consider:

(11) Context: We are at a summit on international development. Shared presuppositions about the problems facing poor nations, and the things that can be done to fix them, make it clear that individuals or countries can only make an impact with contributions of $10 million or more. I make manifest my intention to count average philosophers as rich, by holding up photos of conferences and saying 'look at all those rich people'.

Assertion: We should try to get money from philosophers because they are rich.

Absent any other clear contextual information, the claim that philosophers are rich just appears false in this context (though of course, it could be true in a context where we were talking about, say, relative income in the United States). In this case, the shared presuppositions about our purposes in classifying as rich beat out an attempt to make a salient comparison class, and they beat out a fairly clear communicative intention.

In other cases, a comparison class can exert a stronger influence than common ground information that is presupposed by all parties. For instance:

[9]Kennedy (2007) and Kennedy & McNally (2005) argue that these must take the limit value. A more modest position is that they usually do. Related ideas are discussed by Cruse (1986) and Winter & Rotstein (2004).

(12) Context: We surrounded by basketball players, and everyone is talking about basketball. I happen to be obsessed with jockeys, and you know that I am. A 5' 5" high man walks into the room. I say:

Assertion: He is tall.

It appears very hard to hear this as true. In this case, the standard is influenced by the salient group in the immediate environment, which can provide a comparison class. Our shared knowledge of my obsession with jockeys, and the communicative intention that goes with it, does not overrule this.

Work in pragmatics has also shown how previous discourse can affect context in different ways than mere presupposition.[10] We see that at work with standards too. If we supplement (12) with some discourse, the situation changes:

(13) Context: We surrounded by basketball players, and everyone is talking about basketball. I happen to be obsessed with jockeys, and you know that I am. A 5' 5" high man walks into the room.

Discourse: I am going to a horse race later today. I just know that the shorter jockey will win. They always do. You have to be under 5' to do really well.

Assertion: He is too tall.

I am not sure how firm the judgement is here, but it is much more easy to hear as true. So, overt discourse can override prior presuppositions, and can implicitly guide us to different comparison classes we well.

We have thus seen a number of factors that can contribute to setting the value of the standard parameter in context. Comparison classes, standing presuppositions, overt discourse, and lexical meaning, can all play a role. There are presumably more factors that can, but these are some. Depending on the context, we can find that different elements play a more or less central role. This makes the metasemantics of the standard indirect.

The point of the indirect metasemantics is that these competing features have to be combined, and combining them is itself something that takes place in context. There are general rules that might be invoked. Kennedy suggests an interpretive economy principle that asks us to maximize the use

[10]Some classic examples of this are from work of Heim (1992) and Roberts (1996).

of lexical content over contextual factors. But like most contextual rules, this is defeasible. A contextual parameter with an indirect metasemantics must be set by the various pieces of information context provides, but context does not simply hand us a value for such a parameter, nor does it hand us a uniform rule for computing the value from a specific piece of contextual information. Rather, a range of contextual information and computational rules must be taken into account and weighed in working out the value from context.

Finally, we should ask if experimental work can help shed light on what metasemantics the standard must have. Not that much is know about how we compute standards in real time. However, I do believe that what experimental evidence there is is compatible with the indirect metasemantics I have advocated.

Experiments conducted by Barner & Snedeker (2008) show that even by age 4, children are able to use statistical properties of objects in their environment to compute standards, and also use clues from nouns to select comparison class objects. In a somewhat related vein Schmidt et al. (2009) also found that adults performed some statistics on comparison classes. They compared several models of what those statistics might be, and got results preferring either a range-based model (the top percentage of the range) or a clustering model developed for general categorization. Both of these were preferred over a model based on mean and standard deviation. Solt & Gotzner (2012) also confirm that adults are sensitive to the statistics of comparison classes. They have somewhat different findings than Schmidt et al. (2009), and in particular highlight the role of rich measurement systems, allowing some way of defining distance between degrees. (Hence, when it comes to the pragmatics of the standard, an interval scale is not sufficient.) They show this result both for adjectives associated with numerical measurement systems and those without.

Syrett et al. (2010) focused on the difference between relative and absolute adjectives, and found evidence that both children and adults assign substantially context-invariant meanings to absolute adjectives, but are sensitive to contextual standards for relative ones. Rips & Turnbull (1980) find a similar contrast between relative gradable and non-gradable adjectives in adults. Studying adults using a variety of methods (response times for acceptability judgments, eye tracking in reading, choice of interpretation, and acceptability rating), Frazier et al. (2008) found that the difference between maximum and minimum standard adjectives proposed by Kennedy & McNally (2005) and

Winter & Rotstein (2004) is respected in comprehension, and that the scale structure is accessed in the course of comprehension. They also find support for Kennedy's interpretive economy proposal, and add a kind of locality in processing constraint to supplement it.

I doubt these results conclusively show what happens in the real-time processing of standards, but they are compatible with the indirect approach. They show clear roles for different factors, including comparison classes and lexical meanings. This is a key part of the indirect view.

These results also highlight something else that is important about the indirect view. The experimental results show how we, even as children, are able to implicitly do substantial statistics in the course of our pragmatic interactions. This is not an isolated phenomenon. We are simply good at implicitly doing some statistics.[11] But we do it in a highly sub-personal way, constituting more a sensitivity to statistical facts in our environment than an overt intention to compute such statistics. Indeed, the algorithms we use might be highly complex. (For instance, one of the models Schmidt et al. (2009) consider works with partitions on the comparison class, and Guassian distributions defined over those partitions.) But the complexity is not by itself a problem. It is an interesting fact about us that we are able to do such complex statistics, even as children. Complex or not, the evidence is that we can. But it is a distinctive ability that we bring to a number of learning and reasoning tasks, and one that is highly tacit. As I shall discuss more in section 3, this kind of distinctive and tacit ability marks another important aspect of the indirect approach. It is a distinct cognitive ability we can access in fixing standards. It can make a contribution to fixing standards, on the indirect view.

We thus have a case for the indirect metasemantics of the standard. We have seen multiple factors that can contribute to fixing the standard, including comparison classes, presuppositions, overt discourse, lexical meaning, and presumably more. In different contexts, these are weighed differently. In context, we must combine the various factors, by whatever defeasible rules we might rey on. In doing so, we can access cognitive abilities, like our ability to do tacit complex statistics on comparison classes. Thus, we have a metasemantics that is very indirect.

[11] This is a very broad idea in psychology, with a huge literature. Some references, specific to language learning, are Frank et al. (2009), McMurray et al. (2012), Smith et al. (2014), Xu & Tenenbaum (2007), and Yu & Smith (2012).

# 2 The Role of Intentions

The version of indirect metasemantics I have just articulated and defended downplays the role of speakers' intentions. They are certainly a factor that can contribute, but they are one among many. As I presented them, comparison classes in the immediate environment of a context and lexical meaning are factors that are not understood as speakers' intentions. Indeed, we saw cases above where these sorts of factors can override a speaker's communicative intentions.

In earlier work (Glanzberg, 2007, 2016), I argued explicitly that there is only a limited role for intentions in this metasemantics. I shall now reconsider that argument, and examine a challenge to it from King (2014a). King argues in favor of a uniform intentional analysis of the metasemantics of context-dependent expressions, and argues I underestimated the role intentions play in metasemantics. My main goal in this section is to support my argument for indirect metasemantics, by showing that King's favored version is still, I claim, indirect. But in doing so, I also want to reconsider where and how intentions might play a role. In the next section, I shall argue in favor of my less thoroughly intentional approach.

In addition to the importance of what I see as non-intentional factors, the main reason I argued for a limited role for intentions is that I doubt speakers will often have intentions that are specifically about the standard. They will often not have any idea what such a thing is, which limits the sorts of intentions they can have. To make matters worse, the standard comes from *pos*, and it is doubtful many speakers have any idea there is such a tacit piece of syntax towards which to direct intentions. This is not to say speakers have no intentions that relate to classifying or comparing that affect the standard value. They usually will have many of those intentions. But they will often not be intentions to refer to or otherwise pick out a single standard value, and they will only in very rare cases be intentions to set a value of a parameter provided by *pos*. This is in contrast to an intentional direct metasemantics for demonstratives. In that case, speakers can have full and overt referential intentions to pick out a specific object by using a demonstrative, and intend that object to be the referent of the demonstrative expression.

We see speakers' lack of such specific intentions about the standard in how difficult it is for speakers to answer queries about the standard in many cases, and how hard the queries can be to formulate successfully:

(14) a. Max is rich.
b. i. How rich is rich?
ii. What do you mean rich?
iii. ? By what standard?
c. i. Well, you know, really rich.
ii. Well, you said Mary was rich, and so is Max.
iii. We are talking about Google.

This contrasts with cases of demonstratives, where we can ask about referential intentions and in most cases get clear answers:

(15) Context: Looking at two paintings right next to each-other in a museum.
a. That is beautiful.
b. i. Which one do you mean?
ii. Which one are you intending to refer to?
c. i. The one on the left.
ii. I was talking about the one on the left.

With demonstratives and the referential intentions that back them, we can query directly about the referent and get a clear answer. With the standard, we often get only partial or indirect answers, which do not seem to refer to the standard in many cases. Similarly, we cannot often query about the standard directly, but have to come up with indirect ways to ask about what fixes it. The demonstrative case shows evidence of a direct metasemantics, probably an intention-based one, at work. The standard case shows evidence of an indirect metasemantics making only minimal use of intentions.[12]

There are speaker intentions here, of course, but not like referential ones. They are better described as intentions to compare and measure. Indeed, we saw how some of intentions can work to fix standards in examples like (11) and (12). But we also saw that those sorts of intentions are among many competing factors. From these intentions, plus the effects of the wider

[12]I have adopted an intention-based direct metasemantics for demonstratives as a model of a direct metasemantics. The classic issue for the metasemantics of demonstratives is wither it is speakers' intentions or something overt, like a gesture, that fixes their reference. Famously, Kaplan (1989b) opted for the latter, but then changed his mind in Kaplan (1989a). I have not argued for the intentional alternative, but King (2013, 2014b) develops a good case for a sophisticated intention-based view.

context, including previous discourse and the environment in which a claim is being made, a standard emerges. As the role of comparison classes makes vivid, often salient examples or groups have a great deal to do with how the standard is fixed. But there is often nothing like a single referential intention at work.

The indirect view thus makes room for intentions, but they play a limited role, as part of a broader indirect metasemantics. They need not be the determining factor, and may not be available in all contexts.

In recent work, King (2014a) has challenged this conclusion. He argues that I underestimated the role of intentions. I shall discuss King's own view, and how it relates to mine, in a moment. But first, I want to make a concession on this issue. My position in Glanzberg (2007) was that we cannot have intentions specifically about the standard. I just ran through some arguments for this claim, but I put it more cautiously that we often do not. King pointed out ways that we can sometimes have intentions directed towards a standard, in spite of these arguments. I have implicitly already conceded to King that we can indeed sometimes have such intentions. Hence, I have put my claim now that we often do not. To make this concession clear, I now hold that this is as strong a claim as the evidence justifies.

In fact, it appears that we can sometimes have relatively clear intentions to set standards. Here is an example. On the internet, you may find a group of *Tall Clubs International*.[13] They list the following rules:

(16) TCI Membership requirements. Minimum height: 6'2" for men, 5'10" for women, or taller, when measured in stocking feet.

In this kind of case, it seems we do have an intention that fixes the standard. We may not call it 'the standard', but we intend to fix a cut-off for what counts as tall. It seems we can have intentions to set standards, at least in some cases. In some cases, these can play a key role in setting the standard.[14]

[13] http://www.tall.org/. They have member clubs world-wide.

[14] One more minor point. In earlier work (e.g. Glanzberg, 2007), I relied on a formulation of the semantics of gradable predicates that closely followed Kennedy (2007). This version relies not on a standard value $d_c$, but on a function $s$ that takes lexical and contextual inputs. I was mostly concerned to follow Kennedy in making vivid the role of lexical content in fixing some standards, but I have since come to realize that Kennedy's proposal is actually stronger than just that. King (2014a) points out that it may be easier for speakers to have intentions about standard values $d_c$ than about this functions. For this reason, and to avoid some of Kennedy's specific committments, I now prefer the $d_c$ version.

Even so, there are several questions this raises. One is how often this sort of case happens. We may have intentions in some special cases about height or wealth, but do we about brightness, roughness, etc.? There is work that tries to quantify brightness in psychophysics,[15] and perhaps if you know enough about it, you could intend to set a value for brightness the same way the Tall Clubs International intend to set a standard for tallness. But this seems to be a highly unusual case, and not the normal way speakers proceed. Moreover, the kinds of examples I gave in (14) make me doubt that substantial intentions directed towards standards are that common, even in cases where we *can* form such intentions. In many cases, we operate without such specific intentions. The contrast with (15) also makes me suspect that when we do have such intentions, they are often not like the referential intentions involved with demonstratives. Finally, even if we have intentions to set standards, these may not go with any grasp of what parameter is being set, as speakers may still not know about *pos* or $d_c$. Unlike referential intentions, these intentions still seem more about how to classify, and not how to fix the value of an expression we use.

I do not challenge that in most any utterance, there are a wealth of communicative intentions at play, and the indirect metasemantics makes room for them. But we often do not have intentions specifically about standards. When we do have such intentions, they are often not like the ones we use to pick out an object and publicly refer to it. I concede that intentions can do those things, but often they do not. The indirect metasemantics allows for both options.

With that in mind, I want to turn to King's positive proposal. In a series of works (King, 2013, 2014a,b), King has advanced a uniform metasemantics for virtually all context-dependent expressions (of a class he calls 'supplementives'). King's account is much more thoroughly intentional than the one I have offered for the standard for gradable adjectives (though I do accept his account for demonstratives). Even with the concession I made above, his is a substantially different view. Perhaps more importantly, given that his metasemantics is the same for demonstratives and the standard, we might wonder if he thereby defends a direct metasemantics for the standard. I shall now examine how direct King's metasemantics is. I shall argue that for the standard, he winds up with a position that is in fact *indirect*, though intention-based. This in the end supports my claim that some metaseman-

[15] A classic in this literature is Stevens (1975).

tics is indirect, as a leading alternative to my preferred view is also indirect. Once that is established, we can return to the issue of how intentional a metasemantics should be. This will be the focus of the discussion to follow in section 3.

King's positive view is that he calls the 'coordination account'. In outline, the account of this:

(17) The semantic value of a context-dependent expression $d$ in a context $c$ is that element (object, or appropriate other value) $o$ that meets the following two conditions:
   a. The speaker intends $o$ to be the value of $d$ in $c$.
   b. A competent, attentive, reasonable hearer who knows the common ground of the conversation at the time of utterance would know that the speaker intends $o$ to be the value of $d$ in $c$.

In short, the speaker intents the term to have a value, and the intention must be known to anyone who knows the common ground. The intention must thus be manifest in the conversation somehow.

This is clearly an intention-based metasemantics. It also appears like it might be uniformly direct. Not only does it give demonstratives and the standard the same metasemantics, it makes that metasemantics one of what appear to be referential intentions; at least, intentions to set semantic values. King's version is a highly sophisticated intention-based metasemantics, and I shall not challenge it as a metasemantics for demonstratives.[16] I am willing to extend it beyond overt demonstratives, to what I have called *thematic parameters*. But the question remains whether it really offers a direct metasemantics for functional parameters like the standard, where I maintain we need an indirect metasemantics of the kind I discussed above.

King's idea for the standard (King, 2014a) is that the speaker's intentions may determine a cut-off degree in a different way than we might expect in simple cases of demonstratives.[17] He gives the example of *smart*. We may not have intentions about degrees of smartness, but we might have intentions about *kinds* of people who will count as smart. Presumably even if we do

[16]My own view is that in some special cases, the speaker's intention can fix the value of demonstrative even if it is not fully manifest. So, I do quibble with some details of King's analysis. But it is not my goal to argue this point here, and King's developments do offer a very strong form of the intentional view of the metasemantics of demonstratives.

[17]As we discussed above, maybe in some special cases we have something more like referential intentions.

not know about the parameter $d_c$ or *pos* or degrees of smartness, we do know that it is gradable and we need to set a cut-off for *smart*. We do that via our intentions towards kinds. We direct our intentions towards kinds of people and those in turn determine a standard for *smart*. More generally, we can direct our intentions towards kinds of objects, and then those in turn determine an appropriate standard.

In the end, I shall ask if it is most useful to think of what happens in cases like King's as only involving intentions. But first, I claim that that King's metasemantics remains *indirect*, in spite of initial appearances.

As always, we should start by contrasting the case of demonstratives with that of the standard. For a perceptual demonstrative, for instance, we might expect the speaker to perceptually individuate an object, intend to refer to it, and make that intention public via pointing or some other way of manifesting a referential intention. They will know which expression's value they thereby fix. For the standard, on King's theory, the speaker will intend to count a certain kind of people as smart. That in turn fixes a standard for smartness. They may understand that this creates a cut-off, but they may well not know there is a parameter whose value needs to be set. King's metasemantics thus marks a clear contrast between simple cases for demonstratives and cases like the standard. And for the standard, the metasemantic process King proposes already has some indirectness, as it runs through a kind to reach a degree value.

Many of the points I made above in favor of an indirect metasemantics can be re-cast in King's intentional terms. This will make clear just how indirect King's proposal must be in the long run, if it is to handle a full range of cases. First, let us look at the role of kinds of individuals. King is right that we can sometimes fix standards via kinds. But the evidence, both from examples like (12) and the experimental evidence I reviewed in section 1, shows that we can also fix standards by reference to statistical properties of salient individuals in a comparison class. We might have intentions corresponding to those salient individuals, which we might express in terms like *the salient things around here*. So we have at least two comparison class-oriented options for how our intentions might go: intention to fix a standard via a kind, or via the statistical regularities across salient individuals. We have multiple options, and both make an indirect path from what we intend to the resulting value.

We have also seen, both from examples like (10) and experimental evidence, that lexical content can change the situation, leading to much less context dependence, and little reliance on either of the options we just con-

sidered. If we are to take King's line, that would relate to a different sort of intentions, specific to the lexical meanings of absolute adjectives. We might, for instance, have a tacit intention to describe things as *completely open*. So, we have multiple roles for comparison classes and a role for lexical content as part of our metasemantics, even if we view it as intentional. Each comes with different kinds of intentions, and the intentions can be to varying degrees complex and tacit.

The same can be said for the role of prior discourse. Now, we might see prior discourse as making parts of our complex communicative intentions manifest. And so, we might describe the affects of discourse on the standard in intentional terms. But still, it changes the options for how we are to integrate salient individuals into our process of determining the standard, as we see with example (13). We also see with example (11) and its contrast with (13) that presuppositions can compete with overt discourse for fixing the standard. If these are all intentions, or the making of intentions manifest, then we have multiple kinds of intentions or ways to make them manifest. In different contexts, these contribute differently to fixing the standard, and how they contribute can be a matter of context. This is a re-casting in intentional terms of the full case I made above for an indirect metasemantics.

What this shows, I believe, is that if we wish, we can offer an *intention-based indirect metasemantics* for parameters like the standard. We can describe what fixes the standard as a complex set of communicative intentions, making reference to multiple sorts of contextual factors, that must be integrated in a contextually appropriate way to indirectly fix a standard. We can, with King, require those intentions to be publicly manifest. The contrast with demonstratives still stands. What we have is an indirect metasemantics. In light of the arguments I gave in section 1 and here, I believe that the best way to understand King's proposal is precisely as an intention-based indirect metasemantics, when it comes to parameters like the standard.

I take this as further support for an indirect metasemantics for parameters like the standard. In addition to the arguments I gave in section 1, we find that King's very different approach also winds up providing an indirect metasemantics when it comes to the standard.

But that leaves open the question of whether we should opt for King's intentional version, or the version I described above, which leaves only a limited role for intentions (even with the concession I made that there is a greater role sometimes!). In the next section, I shall argue that a fully intentional description of the metasemantics is not the best option. Rather,

I shall claim, my original version that makes a place for intentions among many factors is a better description of how our metasemantics works. But I shall also note some issues that need to decided before a final decision on the matter can be made.

# 3 Cognition and Semantics

Much of what happens in communication in intentional, and so the intention-based metasemantics is tempting. But I think there are reason not to uniformly describe things this way. Not everything involved in fixing the standard is best seen through the lense of intentions.

To see this, let us consider how our communicative intentions interact with linguistic elements, both overt and hidden. To begin, let us consider this idea quite generally, rather than with regard to the standard in particular. Our communicative intentions are typically to describe events or states ('eventualities' of various kinds). We do this in language mainly by using a range of predicates and terms that capture important features of eventualities. Grammar provides us a range of lexical categories that express these. Verbs, nouns, and adjectives (and adverbs) provide us a rich range of predicates, and we build terms out of nouns, pronouns, and so on. The work of capturing our views of the world and communicating them is carried mostly by the lexical categories, and that is where our communicative intentions are mostly encoded and expressed.

As is well-known, language goes beyond this in providing so-called functional expressions, that provide what is sometimes loosely described as 'grammatical glue' that helps form sentences. Determiners, tenses, and so on are functional categories. It should be stressed that many of these have content, but they are not themselves direct components of event descriptions; rather, they are part of how we structure those in our languages.[18]

To illustrate the difference in how we think and intend to communicate with the two sorts of categories, consider tense and time. We certainly often intend to place descriptions of events in time. But tense is not simply that. First of all, tense structures a clause syntactically. I doubt our intentions to place events in time relate that closely to the syntactic form of a TP (Tense

[18]See any syntax textbook, and the general discussions of Baker (2003), Fukui (2001), and Grimshaw (2005). Much of the original work on functional categories stems from Abney (1987). I have discussed some aspects of this in my Glanzberg (2008, 2014).

Phrase), or the grammar of inflection. And second, tense expresses time in distinctive ways. Overtly, English has a past tense *-ed* (plus irregular forms), but has little if any marking of present tense, and future mostly comes out with the expression *will* that behaves more like a modal. And of course, we have many other kinds of temporal expressions, including adverbials and indexicals. Our intentions to place events in time intersect with the functions of tense in only a few ways. This is all the more so if our intentions go with the overt structure of tense we see, as then we will often place events in time without using tense at all. If tense is tacitly present more than we see overtly in English, then still, our intentions do not clearly correspond with tense, as opposed to other overt forms or apparent surface forms. The functional 'glue' that builds clauses overlaps with our communicative intentions in some ways, but is not simply an encoding of them.

Now, we can return to our main topic of gradable adjectives and the standard. We will see there the same contrast between lexical and functional, and this in turn will help us to understand the role of degrees in our thinking and our intentions. Let us start with the major lexical category A (Adjective). Within that domain, the semantic hypothesis we are exploring is that gradable adjectives fundamentally express some form of measurement. We should expect, with the lexical category, that this fits with our ways of describing and communicating about eventualities. It should relate to communicative intentions in some close way. I shall return to this in a moment.

But as with all expressions, there is more to the story than that. Our grammars impose structure that fits concepts into the specific semantic and syntactic categories we use. (In other work (Glanzberg, 2014) I have called this 'packaging'.) Lexically, gradable adjectives have two linked features that make this happen. Their semantics provides dense linear ordered scales, and they need an extended projection DegP introducing the functional element Deg in order to compose in most cases.[19] The latter is a common view in current syntax: most every lexical category first builds an 'extended projection' with higher functional elements.

Most of our evidence for both comes from the grammar of comparatives. If we ask why scales for adjectives are connected and transitive, we look to the comparative:

[19] As I mentioned in section 1, there is some dispute about this, but it is a well-supported hypothesis, and it renders the points I shall make her most explicit. Other options for the syntax-semantic interface would get similar results in the end.

(18) a. For any $a$ and $b$ of type $D_e$ (restricted to material objects), $a$ is heavier than $b$ or $b$ is heavier than $a$ or $a$ and $b$ are equally heavy.

b. If $a$ is heavier than $b$, and $b$ is heavier than $c$, then $a$ is heavier than $c$.

Thus, I claim, it is the grammar of Deg, most vivible in the comparative, that reveals the semantic structure by which we encode adjectival meaning. In turn, the semantic structure of adjectives is formatted to be able to project into Deg, to produce usable forms. But the presence of Deg is not transparent to many speakers, nor is the structure of overt comparative phrases. Nor is the packaging into dense linear orderings that they require. But that it the key piece of grammar that takes our general ability to measure and builds real lexical items. Thus, in the abstract sense of linguistic competence, we may 'know' these features of adjectival phrases are there (or behave in ways they dictate), but that comes from whatever gives us competence with abstract, functional aspects of grammar. We do not often voice specific intentions around those aspects of language.

I highlight these points, because they remind us that apparatus like precise scale structures and standards are products of grammar, whose relation to how we think and communicate itself can be highly indirect, as it is with tense. Humans, along with many animals including rats, are equipped with the ability to represent a range of magnitudes (e.g. Cantlon et al., 2009; Feigenson, 2007; Meck & Chuch, 1983). Well-studied ones include length, time, and pitch, and also brightness, warmth, weight, etc. Of course, the most-studied one is number (e.g. Carey, 2009; Dehaene, 2011; Gallistel & Gelman, 1992). Many of these cognitive abilities correspond to adjectives like *fast, large*, or *bright*. On the basis of this, it is safe to assume that our measuring talk is linked to our abilities to measure various quantities, and to convey those measurements. Our adjectival meanings do reflect ways we can think about eventualities.

These representations are 'analog' or 'approximate', in that they give continuous representations even when the underlying phenomena are discreet. Their behavioral signature is Weber's law: discrimination of magnitudes is a function of their ratios. For this reason, the relation between the ways we think about magnitudes and the ways they are semantically represented are themselves fairly indirect. This is much as we have seen with other cases, like the relation between our thinking about time and the grammar of tense. My own view is that for approximate magnitudes, our behavioral responses

at best form a constraint on underspecified semantic representations. I do not need to argue that case fully here, but only to note that the semantics is not a direct encoding of our cognitive abilities.[20]

Though our main topic is the metasemantics of the standard, this detour through the semantics, grammar, and cognition of adjectives makes two points about underlying indirectness for gradable adjectives, even before we look at the standard itself. There are at least two ways that the semantics and syntax of gradable adjectives already sets up indirectness. One, as we just saw, is that the mapping from our magnitude representation systems to lexical representations is complicated. But also, our grip on the linguistic locus of magnitude and comparison is tacit. It comes form our tacit grasp of the structure of DegP. We have that, but we have in whatever way we tacitly grasp syntax, not in virtue of thinking about magnitudes. We thus find two features of indirectness in the syntax and semantics gradable adjectives:

1. Our ability to think about magnitudes and compare them is only indirectly mapped to lexical representations.

2. Our grasp of the linguistic encoding of magnitude and comparison is provided by our tacit grasp of the grammar of DegP, not our ability to measure and compare.

The link between our thinking and our intentions to communicate those thoughts and the forms of expressions we use in language and their meanings is already indirect, and involves multiple distinct cognitive capacities.

With all this in mind, let us finally return to the task of fixing the standard in context. Let me offer what I think the best description of what we do in many cases of that task. First, we start with our understanding of events and states, which provides us with thoughts we intend to communicate. When it comes to the properties expressed by adjectives, our appreciation of events often derives from our abilities to approximately represent magnitudes. Grammar already puts two steps between those thoughts and intentions and the fixing of a standard. It imposes a structure of precise degrees where we often have little precise thought. And, it structures the task as one of fixing a value for a functional parameter supplied by a functional head like *pos* that we only grasp through tacit knowledge of grammar.

Might those two suffice to fix a standard? In some cases, perhaps. I think the most likely cases are not those where we rely on approximate

[20]I argue this at length in work in preparation, and touch on it in Glanzberg (2014).

representations in our thinking, but where we rely on more overtly articulated concepts, often scientific ones. In cases like this, we might find the kind of specific intentions that we saw in example (16). We also might see this in mature uses of claims like:

(19) Styrofoam is not dense.

In cases like these, we might possess knowledge (often scientific knowledge) that could allow us to fix precise degrees on a scale. Using this, we could form intentions to fix cut-offs.

But even in these cases, where we might posses mature scientific knowledge that could allow us to fix a precise degree on a scale, we rarely have those sorts of intentions overtly. Why not? The role of comparison classes is central here. We are in fact sensitive to statistics of comparison classes in our environment, and our communicative practices often rely on that. After all, having a precise value in mind does not fix the way the implicit comparison will happen. Grammar requires there is one, and often, it is our ability to respond to statistical regularities that steps in to make it happen.

So, we have at least three factors that go into our fixing a standard: grammatical competence, ability to represent the kinds of magnitudes in question, often only approximately, and our ability to respond to statistics.

But the moral of the arguments for indirect metasemantics is that there is more to the story even than this. Lexical meaning can override sensitivity to statistics. Overt discourse can change comparison classes, and override background presuppositions. Generally, we posses a number of ways to affect how parameters are set in rich conversational settings, and we can use any of them.

Communicative intentions are most vivid here with the roles of presupposition and overt discourse which can make a speaker's intentions clear. But intentions only functions in combination with other aspects of cognition. Grammatical competence is, presumably, a highly special purpose ability (a module, I presume). Our ability to do statistics is a highly general-purpose ability we have that seems to affect a range of leaning and reasoning situations, but it likewise highly tacit, and not something we form overt intentions about. Our ability to represent magnitudes is partly shared with rats, which show little if any communicative intentions.

Now, if we stretch the notion of intention enough, I suppose that is alright to call any of these intentions. And in cases like (19), overt intentions seem more important than the tacit knowledge of grammar that also plays a role.

But always putting things in terms of a stretched notion of intention elides important distinctions. Some aspects of the metasemantics of the standard are familiar ordinary communicative intentions. But some are highly tacit abilities. Some are special purpose, while some are general-purpose. These can serve our communicative intentions without being intentions. That is clear from tacit knowledge of syntax, but it holds for tacit abilities to do statistics too. Fixing a standard is a process that draws on many of these distinct kinds of abilities. The version of the indirect metasemantics I prefer keeps track of these distinctions. It can appeal to intentions specifically, in cases like previous discourse, while appealing just as specifically to our abilities to do statistics or our grammatical competence. I think this is the most revealing way to capture the metasemantics of the standard. Hence, I do not opt for a thoroughly intention-based metasemantics. I thus conclude that the metasemantics of parameters is indirect, and also, that the indirectness is not best described in uniformly intentional terms. Intentions are crucial, but not the only factor.

There is a reply from defenders of intention-based metasemantics that we should pause to consider. I have highlighted a variety of cognitive resources we draw on to think about properties expressed by gradable predicates, to structure those thoughts in language, and to fix standards in context. Not all of these are intentions, and not all of them are fundamentally about communication. But still, we can employ basic, often tacit, cognitive resources to serve a variety of functions. Our perceptual abilities serve our motor abilities when we run to catch a ball, for instance. Is what we see with the standard genuinely a mix of intentions and non-intentional cognitive factors, or rather a mix of intentions, some of which are based on underlying tacit non-intentional factors? I have suggested the former gives us a more accurate picture of what happens when we fix the standard, and so is a better metasemantics. But it is open to intentionalists to pursue the latter.[21]

I have already given my reasons why I prefer the less intentional version. It offers a more refined account of the facts, that keeps track of more information about how the standard is set. But there is a reason that intentionalists can offer for preferring their option. One might hold that if any of the non-intentional resources I have mentioned—tacit statistics, magnitude representation systems, grammatical competence, etc.—are to serve commu-

[21]Though he has not endorsed this particular formulation, King (p.c.) has told me he thinks this line of thinking is important.

nication, they must do so via communicative intentions. If one holds this view, then the only role for these kinds of resources is to produce complex communicative intentions. If so, then the intentionalist responce we just considered is obligatory, and nearly a tautology.

I do *not* hold this view. I shall not here attempt a full defense of my position. It is too large an issue to address in this paper. For the most part, I shall rest with the my defense of indirect metasemantics, and the conditional claim that if one does not take this view of communication, then my less intentional version of the metasemantics is better. But, I shall briefly discuss some points surrounding the two competing views of communication, and give some indication of why I prefer a less intentional view of it too.

As I have stressed, I do see a role for intentions in many places, including communication, of course! This is absolutely clear in the many cases of Gricean reasoning we see in communication. As I also said, I think when it comes to the main messages we wish to convey, there are communicative intentions at work.

But I also think that the scaffolding upon which we build our overt thoughts and communicative intentions need not be intentional at all, nor need the cognitive and linguistic abilities that provide the scaffolding underlie any specific communicative intentions. To put it simply, when it comes to lower-level cognitive and linguistic abilities, overlap of ability is enough, and we need not have intentions, shared intentions, or any other Gricean-inspired apparatus of communicative intentions corresponding to these. Such overlap of lower-level abilities is enough to serve communication and communicative intentions, even if it is not itself intentional.

Let us look at two cases that are easier than the standard: sound and syntax. We have substantial cognitive abilities to process speech sounds, which are known to depart from our abilities to hear sounds more generally.[22] This ability behaves a lot like a module in the sense of Fodor (1983). Among things, it is domain specific and automatic. We cannot turn it off. At the same time, we as ordinary speakers have no idea how that mechanism works. It is extremely complicated. It is doubtful we have any intentions at all surrounding this ability. Indeed, it is hard to know what such intentions would be, short of the loose description of 'wanting to say something'. We do not intend our speech sounds to take the shape they do, and we do not intend

[22]This point lies at the intersection of phonetics and phonology, but many good phonology textbooks will make it clear. See, for instance, Kenstowicz (1994).

specific aspects of their phonology, beyond the general intention to speak. We cannot intentionally control out ability to understand speech, which is automatic. Yet such intentions, I claim, are unnecessary. If each of us, as a speaker, processes speech sounds roughly the same way, communication succeeds. It is not necessary to have any communicative intentions surrounding that ability, beyond the general intention to speak and be understood. Our more general intentions to speak and be understood are fully served by having phonetic and phonological abilities, and others having overlapping ones. If they do, we succeed, if they do not, we may fail. I do not see a role for intentions here.

The same can be said for the more abstract aspects of syntax; especially, functional categories and the grammar they bring with them. As I already noted, we do not have anything like regular intentions going along with these. I doubt very much we have anything like communicative intentions corresponding to them, again except the very general one to 'say something'. As with sounds, overlap seems to me to suffice. If my hearer and I share enough grammar, communication succeeds and our communicative intentions are satisfied; if not, it fails. But no communicative intentions need to attach to functional aspects of grammar. Like the processing speech sounds, our understanding of grammar happens automatically, and either it overlaps across speakers or it does not.

The case I made above is that setting the standard relies on these kinds of abilities, and also other abilities like our ability to do tacit statistics, which are not fundamentally communicative at all. That is what I argued for at length. I now add the claim that these can affect communication by merely overlapping across speakers, and we need not, and should not, look for specific communicative intentions to which they are linked. I have not fully supported this claim, by any means. Even so, I hope to have made clear what the two general views of how lower-level cognitive abilities support communication are, and I have offered a few illustrative considerations about why one might prefer my non-intentional option.

I claimed that the less intentional indirect metasemantics I have offered is more accurate than an intention-based one such as King's. If we accept the view of communication I just endorsed, I think this is plausible, based on the available evidence. If we do not accept this view of communication, and insist on a more intentional view of communication, then the thoroughly intentional option seems required for the metasemantics as well. I thus make a conditional claim about the status of intentional indirect metasemantics. If

you opt for a view where underlying cognitive abilities can serve communication merely by overlap, then my less intentional version of the metasemantics is clearly preferable. It offers more detail and a more refined account of the facts, and does not look for intentions where they are not to be found. On the other hand, if you insist that only shared intentions can serve communication, then King's intentional version is preferable. But either way, the metasemantics for parameters like the standard must be indirect.

# 4 Conclusion

I have argued in favor of indirect metasemantics for functional parameters like the standard. We can identify multiple influences on the standard, including comparison classes, lexical content, overt discourse, speaker intentions, and so on. These must be combined in context, and in different contexts, they can combine differently. This makes the case for indirectness. Furthermore, I argued, a uniformly intentional metasemantics like King's must also be indirect, if it is to handle a full range of cases. Thus, indirectness is not a specific feature of my preferred form of metasemantics.

I also considered the role of intentions in metasemantics. I did note that there is a substantial role for intentions, and conceded that this role may go beyond what I suggested in earlier work. But, I argued against the kind of thoroughly intentional option King offers. I argued this mainly on cognitive grounds. The inputs to our cognition of standard values is multi-faceted. I argued that it relies on inputs from grammatical competence (both syntactic and semantic), various ways we can recognize magnitudes in our environment, how we are sensitive to statistical regularities, and so on. It also relies on our communicative intentions, but many of the factors on this list are not best described as intentions.

Finally, I noted that which option is right, mine or King's intentional option, depends on some very large-scale questions about how communication works. I sketched a view of communication that allows many of the cognitive abilities I just mentioned to serve communication by mere overlap, and not via intentions at all. I did not fully justify that view, and I take it to be an open question which view is really right. But I do offer a conditional claim about how intentional a metasemantics should be. If you opt for my view of communication, you should also opt for my less intentional metasemantics.

In closing, I would like to take up, briefly, one further issue that is some-

times raised as an objection against an indirect metasemantics. Saying that somehow, in context, multiple factors get integrated, may seem like a weak theory, that fails to explain what is actually happening. I take this to indicate a set of open questions, rather than an as objection to an indirect metasemantics. If I am right about the range of factors that go into setting functional parameters—both linguistic and cognitive factors—then immediate or general answers about how they combine are not likely to be found. Many of the factors are already difficult to describe individually, and how they integrate in communicative settings is not an easy matter. We have now seen that big-picture questions about the nature of communication must be added to this list of open problems. The indirect metasemantics is an initial characterization of how functional parameters are set in context, and indicates some of the issues and problems that need to be addressed to fully describe this process. Most of these problems remain open.

# References


Abney, S. P. (1987). *The English Noun Phrase in Its Sentential Aspect*. Ph.D. dissertation, Massachusetts Institute of Technology.

Bach, K. (1994). Conversational impliciture. *Mind and Language*, 9, 124–162.

Baker, M. C. (2003). *Lexical Categories*. Cambridge: Cambridge University Press.

Barker, C. (2002). The dynamics of vagueness. *Linguistics and Philosophy*, 25, 1–36.

Barner, D. & Snedeker, J. (2008). Compositionality and statistics in adjective acquisition: 4-year-olds interpret *tall* and *short* based on the size distibutions of novel noun referents. *Child Development*, 79, 594–608.

Bartsch, R. & Vennemann, T. (1973). *Semantic Structures: A Study in the Relation between Semantics and Syntax*. 2nd edn. Frankfurt: Athenäum.

Bierwisch, M. (1989). The semantics of gradation. In M. Bierwisch & E. Lang (Eds.), *Dimensional Adjectives*, pp. 71–261. Berlin: Springer-Verlag.

Bogusławski, A. (1975). Measures are measures: In defense of the diversity of comparatives and positives. *Linguistische Berichte*, 36, 1–9.

Burnett, H. (2014). A delineation solution to the puzzles of absolute adjectives. *Linguistics and Philosophy*, 37, 1–39.

Cantlon, J. F., Platt, M. L., & Brannon, E. M. (2009). Beyond the number domain. *Trends in Cognitive Science*, 13, 83–91.

Carey, S. (2009). *The Origin of Concepts*. Oxford: Oxford University Press.

Cresswell, M. J. (1977). The semantics of degree. In B. Partee (Ed.), *Montague Grammar*, pp. 261–292. New York: Academic Press.

Cruse, D. A. (1986). *Lexical Semantics*. Cambridge: Cambridge University Press.

Dehaene, S. (2011). *The Number Sense: How the Mind Creates Mathematics*. 2nd edn. Oxford: Oxford University Press.

Fara, D. G. (2000). Shifting sands: An interest-relative theory of vagueness. *Philosophical Topics*, 20, 45–81. Originally published under the name 'Delia Graff'.

Feigenson, L. (2007). The equality of quantity. *Trends in Cognitive Science*, 11, 185–187.

Fodor, J. A. (1983). *The Modularity of Mind*. Cambridge: MIT Press.

Frank, M. C., Goodman, N. D., & Tenenbaum, J. B. (2009). Using speakers' referential intentions to model early cross-situational world learning. *Psychological Science*, 20, 578–585.

Frazier, L., Clifton Jr., C., & Stolterfoht, B. (2008). Scale structure: Processing minimum standard and maximum standard scalar adjectives. *Cognition*, 106, 299–324.

Fukui, N. (2001). Phrase structure. In M. Baltin & C. Collins (Eds.), *Handbook of Contemporary Syntactic Theory*, pp. 374–406. Oxford: Blackwell.

Gallistel, C. R. & Gelman, R. (1992). Preverbal and verbal counting and computation. *Cognition*, 44, 43–74.

Glanzberg, M. (2007). Context, content, and relativism. *Philosophical Studies*, 136, 1–29.

——— (2008). Metaphor and lexical semantics. *The Baltic International Yearbook of Cognition, Logic and Communication*, 3, 1–47. http://thebalticyearbook.org/journals/baltic/article/view/ 14/13.

——— (2014). Explanation and partiality in semantic theory. In A. Burgess & B. Sherman (Eds.), *Metasemantics: New Essays on the Foundations of Meaning*, pp. 259–292. Oxford: Oxford University Press.

——— (2016). Not all contextual parameters are alike. Unpublished manuscript.

Grimshaw, J. (2005). Extended projection. In *Words and Structure*, pp. 1–73. Stanford: CSLI Publications.

Heim, I. (1985). Notes on comparatives and related matters. Unpublished manuscript, University of Texas, Austin, available at http://semanticsarchive.net/Archive/zc0ZjY0M/.

——— (1992). Presupposition projection and the semantics of attitude verbs. *Journal of Semantics*, 9, 183–221.

Kaplan, D. (1989a). Afterthoughts. In J. Almog, J. Perry, & H. Wettstein (Eds.), *Themes from Kaplan*, pp. 565–614. Oxford: Oxford University Press.

——— (1989b). Demonstratives. In J. Almog, J. Perry, & H. Wettstein (Eds.), *Themes From Kaplan*, pp. 481–563. Oxford: Oxford University Press. First publication of a widely circulated manuscript dated 1977.

Kennedy, C. (1997). *Projecting the Adjective*. Ph.D. dissertation, University of California, Santa Cruz. Published by Garland, 1999.

——— (2007). Vagueness and grammar: The semantics of relative and absolute gradable adjectives. *Linguistics and Philosophy*, 30, 1–45.

Kennedy, C. & McNally, L. (2005). Scale structure, degree modification, and the semantics of gradable predicates. *Language*, 81, 345–381.

Kenstowicz, M. (1994). *Phonology in Generative Grammar*. Cambridge: Blackwell.

King, J. C. (2013). Supplementives, the coordination account, and conflicting intentions. *Philosophical Perspectives*, 27, 288–311.

——— (2014a). The metasemantics of contextual sensitivity. In A. Burgess & B. Sherman (Eds.), *Metasemantics: New Essays on the Foundations of Meaning*, pp. 97–118. Oxford: Oxford University Press.

——— (2014b). Speaker intentions in context. *Nous*, 48, 219–237.

Klein, E. (1980). A semantics for positive and comparative adjectives. *Linguistics and Philosophy*, 4, 1–45.

McMurray, B., Horst, J. S., & Samuelson, L. K. (2012). Word learning emerges from the interaction of online referent selection and slow associative learning. *Psychological Review*, 119, 831–877.

Meck, W. H. & Chuch, R. M. (1983). A mode control model for counting and timing processes. *Journal of Experimental Psychology: Animal Behavior Processes*, 9, 320–334.

Morzycki, M. (2016). *Modification*. Cambridge: Cambridge University Press.

Perry, J. (1996). Thought without representation. *Proceedings of the Aristotelian Society Supplementary Volume*, 60, 263–283.

Recanati, F. (2004). *Literal Meaning*. Cambridge: Cambridge University Press.

Rett, J. (2015). *The Semantics of Evaluativity*. Oxford: Oxford University Press.

Rips, L. J. & Turnbull, W. (1980). How big is big? Relative and absolute properties in memory. *Cognition*, 8, 145–174.

Roberts, C. (1996). Information structure in discourse: Towards an integrated formal theory of pragmatics. *Ohio State University Working Papers in Linguistics*, 49, 91–136.

Schmidt, L. A., Goodman, N. D., Barner, D., & Tenenbaum, J. B. (2009). How tall is *tall*? compositionality, statistics, and gradable adjectives. *Proceedings of the Annual Conference of the Cognitive Science Society*, 31, 3151–3156.

Smith, L. B., Suanda, S. H., & Yu, C. (2014). The unrealized promise of infant statistical word-referent learning. *Trends in Cognitive Science*, 18, 251–258.

Solt, S. & Gotzner, N. (2012). Experimenting with degrees. *Proceedings of Semantics and Linguistic Theory*, 22, 166–187.

Sperber, D. & Wilson, D. (1998). *Relevance*. Cambridge: Harvard University Press.

Stalnaker, R. C. (1978). Assertion. In P. Cole (Ed.), *Pragmatics*, vol. 9 of *Syntax and Semantics*, pp. 315–322. New York: Academic Press. Reprinted in Stalnaker (1999).

——— (1997). Reference and necessity. In B. Hale & C. Wright (Eds.), *Companion to the Philosophy of Language*, pp. 534–554. Oxford: Blackwell.

——— (1999). *Context and Content*. Oxford: Oxford University Press.

Stanley, J. (2000). Context and logical form. *Linguistics and Philosophy*, 23, 391–434.

Stanley, J. & Szabó, Z. G. (2000). On quantifier domain restriction. *Mind and Language*, 15, 219–261.

von Stechow, A. (1984). Comparing semantic theories of comparison. *Journal of Semantics*, 3, 1–77.

Stevens, S. S. (1975). *Psychophysics: Introduction to Its Perceptual, Neural, and Social Prospects*. New York: Wiley. Edited by G. Stevens.

Syrett, K., Kennedy, C., & Lidz, J. (2010). Meaning and context in children's understanding of gradable adjectives. *Journal of Semantics*, 27, 1–35.

Winter, Y. & Rotstein, C. (2004). Total adjectives vs. partial adjectives: Scale structure and higher-order modification. *Natural Language Semantics*, 12, 259–288.

Xu, F. & Tenenbaum, J. B. (2007). Word learning as Bayesian inference. *Psychological Review*, 114, 245–272.

Yu, C. & Smith, L. B. (2012). Modeling cross-situational word-referent learning: Prior questions. *Psychological Review*, 119, 21–39.