Affecting meaning: Subjectivity and evaluativity in gradable adjectives

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Chapter 6
Testing and tasting: a sketch of a model

In chapter 5, we argued that broadening the focus of intentionality that is pertinent for linguistic meaning is a key to the subjectivity of predicates of personal taste (PPTs) and other relative gradable adjectives (RGAs). We developed an outline of embodied intentionality: our affective relations to things, people, situations, and ideas partly shape cognition, so it is only reasonable to consider that discourse is also concerned with them. The way we suggested this could be thought of is by looking at how expected patterns of behaviour, linguistic and non-linguistic, are associated with evaluative judgements.

In this chapter we sketch a semantic model of RGAs showing how our analysis can be bootstrapped in an update semantics system. We choose update semantics because this approach is flexible enough to model meanings as operations on intentional states, operations involving exchanging information and signaling expectations. The model, however, should not be seen as an attempt to give a full-fledged and exact representation of the analysis of embodied intentionality as presented in chapter 5. It should be better regarded as an exercise in which we see how far we can get with the means available in update semantics.

How we think the system and the philosophical analysis are related will be discussed in section 6.1. We will also comment on why we choose an update framework and a partial semantics. In section 6.2, we lay out the definitions we need to get a working model, and we discuss the analysis of gradability that comes out of it. We review this formalisation in section 6.3 concerning its position with respect to the debate on the semantics of PPTs. While we hope there is something here for everybody, — the contextualist, the relativist, the absolutist, and the expressivist — we also hope to avoid some of the theory-internal problems and riddles.

1This model has been developed as joint work with Frank Veltman. It has been presented in various venues: University of Tilburg, University of Utrecht, Peking University, University of Maryland College Park, and University of Barcelona. We are grateful to these audiences for the feedback they provided.
6.1 Preliminary discussion

Why give a formal model? There is a straightforward answer: the issue of whether and in what sense subjectivity plays a role in the meaning of gradable adjectives has been raised in the context of the struggle among different strategies to formalise the semantics for PPTs. So we formulate our analysis in formal terms to be able to compare it with the other players on the field. But this does not really say how we believe formal modeling relates to the natural language phenomena we started out with, and how formal modeling relates to the philosophical argument we have constructed so far. This is what we deal with in subsection 6.1.1.

In subsection 6.1.2, we discuss our choice of update semantics as the framework in which we sketch the model. We shall argue that this choice is justified mainly for philosophical rather than technical reasons. Given the analysis in the previous chapter, we know that we need to focus on the very idea of an intentional state, how it changes during a conversation, how this constrains the further judgements they can accept. This is something update semantics is designed to deal with.

In subsection 6.1.3, we give an argument in support of our choice of a partial setting for the semantics we offer. The core idea behind this choice is that agents deal only with a few objects at a time, and that if one is forced to decide at once how to evaluate every possible sentence, then one has to get more precise than gradable adjectives admit.

6.1.1 Why give a formal model?

We have given a philosophical analysis of the meaning of evaluative judgements. Two issues have to be addressed here: how does the model we present relate to the natural language phenomena we departed from? And how does it relate to the philosophical analysis we offered?

There are more and less traditional ways to see the relation between natural language phenomena and formal systems devised by semanticists. The word ‘model’ may be used as a purely technical term, to designate a mathematical structure which is deployed to interpret the sentences of a formal language consisting of predicate, function, and constant symbols, of variables, quantifiers, and connectives. But usually, a further step is made, for it is very common to see that formal modeling is thought of as an effort to represent natural language phenomena, “in the sense that all the relevant properties of the natural language are assumed to be adequately represented by properties of the formal system.”

It is thought that semantic modeling is a matter of achieving a systematic representation relation conceived as a translation between the formal system and the natural language expressions that are modeled. A sufficient similarity between natural and formal language is assumed in order to think of the sentences in a

\[^2\text{Cf., Stokhof [2011], p. 7.}\]
The point we raise here is that our modeling task focuses on structural aspects of the initial phenomena, to offer a better analysis of how subjectivity relates to the meaning of PPTs and other RGAs. The model we offer is not intended to stand on a par with respect to the predictive power of existing approaches to gradability, but to make explicit some aspects of the conceptual considerations on subjectivity and meaning that we have offered in preceding chapters. We sketch this system to show that a broader conception of linguistic meaning can be accommodated within an existing, well-established, and independently motivated semantic framework, by showing how it can lead to a cogent and hopefully interesting logical model.

How does the system stand with respect to the foundational analysis we have offered? Just like fashion models serve to present clothes but do not really represent women as such (i.e., women who do not work as fashion models), a formal model can be seen as a manikin, as a simplified silhouette which is useful to display clothes but which is not meant to bear all resemblances with the people who actually wear those clothes. We do not offer the system as representation of the analysis of embodied intentionality, nor do we believe that we give something like the logic of embodied intentionality. The system provides a proof of concept that will let us see whether our reasoning in chapter can lead to a systematic treatment of structural features of the meaning of evaluative judgements.

6.1.2 Why do this in update semantics?

We start with a brief attempt to justify why we offer a model in the form of an update system along the lines developed by Veltman [1996]. The weight of tradition inclines the scales in favour of truth-conditional models, and it seems that unless one has good reasons for departing from this framework, one should not abandon it. Update systems belong to the dynamic strand in semantics, so we have to try to persuade the reader that it might be ok to be a bit less orthodox

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3This sufficient similarity is best worded by Montague [1970]: “There is in my opinion no important theoretical difference between natural languages and the artificial languages of logicians; indeed, I consider it possible to comprehend the syntax and semantics of both kinds of languages within a single natural and mathematically precise theory.”

4Veltman [1985] puts this as follows: “Giving a formal analysis of an informal argument is like drawing a cartoon: one has to leave out everything that is unimportant, exaggerate the few things left and when this is properly done the result can be a striking characterization of what is going on.” Our view is very close to this one, except that we do not make the claim that what is left out of the model is unimportant.

5In a sense, this is reasonable: formal semantics takes care of regions of language bit by bit, and it is better to keep modeling within one framework because this would make it easier to put the pieces together at some point, at least that is what is hoped.

6Update semantics is a framework within dynamic semantics. Theories in dynamic semantics differ importantly with respect to how they conceive of the notion of meaning. The differences among systems are discussed in Stokhof [2014].
Chapter 6. Testing and tasting: a sketch of a model

for some purposes. The argument we give shows that update semantics provides a smooth fit for the modeling task at hand.

In contrast to static semantics, where the meaning of a sentence is given by the conditions under which it is true and where logical consequence is defined in terms of truth-preservation, a slogan summarising the take of update semantics on meaning is that you know the meaning of a sentence, not if you know its truth-conditions, but if you know the change it brings about in the intentional state of anyone who wants to incorporate the information conveyed by it.\footnote{Since this is a slogan, it is bound to be too narrow. The word ‘information’ is problematic because it gives the impression that intentional states as we care about when modeling evaluative judgements may be purely thetic, but as we saw in chapter 5, this is not so.} The focus on the way a state changes when a sentence is incorporated to an agent’s state, and a sentence’s meaning is more aptly seen as a function defining a transition from state to state. This allows us to see what a speaker seeks with her utterances, and the impact these have on the addressee. The cornerstone notion is acceptance (also known as support) the situation in which a state is such that incorporating a sentence makes no change on one’s state, and validity is thereby defined.

A fine feature of update semantics is that both context of utterance and context of assessment are elements of its basic architecture. Update semantics does not consider the meaning of a sentence to be given simply by how language and world relate, but rather to be given at a more abstract level, at the level of the impact a sentence has on agents’ states, considering separately the speaker and the addressee. (What matters most is indeed the addressee’s perspective, but for this one has to distinguish it from the speaker’s.) What their states are like at the beginning of a conversation, and how they change, are the coordinates on the basis of which meaning operates. A speaker is supposed to utter sentences she already accepts, and update functions tell us how an addressee’s state has to change if she accepts the sentences the speaker utters. For this reason, this semantic framework does not take interpretation to be a business of building representations of the world, but rather a business of keeping ourselves attuned to the situations we inhabit, and not just through the (partial) propositional knowledge we may have thereof. Meaning as given in update semantics is well-suited to go beyond the boundaries of disembodied intentionality. To cross those boundaries, the first crucial step will be to give a definition of an intentional state, one that accommodates this more encompassing view on cognition.

Conversation is often given between and among equals: normally, our interlocutors are similar to us in relevant respects. But it may happen that they are not, like when speaker and addressee are obviously non-peers — like the case of a teacher speaking to her students, telling them, e.g., that an exercise is difficult, or a caretaker talking to a child, telling her that the baby food she is being fed is tasty —, and then what really matters is the addressee’s position. This phenomenon is not limited to evaluative judgements: it extends to, e.g., presup-
positions\(^8\) and epistemic modalities, which raises doubts on the idea that placing oneself in someone else’s shoes\(^9\) is a defining feature of PPTs. To make sense of such cases, we must keep track of the positions of the speaker and addressee, separately. As we shall see in section 6.2, in such cases the truth of the sentence is not relativised to the addressee; the speaker is, in a very specific sense, incoherent, a phenomenon that occurs whenever a speaker’s claims are not accepted in her own state.

In recent years, update semantics has been seen as an expressivist undertaking, given that in such frameworks the meaning of some linguistic expressions is not understood as a matter of world-inquiry but as tests or probes on intentional states themselves, independently of what the actual world is like.\(^10\) Update semantics is thought to be expressivist because, it is argued, “understanding entailment as support preservation rather than truth preservation is essential to the expressivist approach.”\(^11\) Our first warning is the following: if update semantics is thought to be expressivist because classical propositions do not suffice to cover the palette of meaning it harbours, then one could well say that any update system is expressivist, and that the meaning of, e.g., epistemic modals or imperatives as modeled in such systems have expressive meaning. Expressivism is associated to the claim that normative sentences, ethical or aesthetic, are not truth-apt, i.e., meaning that they not have a proposition as its semantic value at a context. However, update semantics neither claims that there are sentences that cannot be evaluated for truth, nor that there are sentences which do not have a proposition as its semantic value at a context. It proposes a new way to conceive of propositions, and it takes acceptance or support to be a more basic notion than truth, and a more adequate one to analyse the meaning of certain sentences. A second, more pressing warning is the following: if one declares anything that falls beyond classical propositional meaning to be non-cognitive content, it is because one has decided that the boundaries of cognition lie strictly within classical propositional meaning. And the point is, there seems to be no justified reason to set the limits of cognition here, other than the well-earned reputation and stability of truth-conditional semantics. Yet a third warning is this: if one still wants to call our view expressivist, one should note that our model will have no trouble handling negation and Frege-Geach examples (as we discuss below in appendix A). The key here is to leave behind the division between sorts of sentences, sorts of meanings, sorts of mental states that the expressivist assumes. This is partly what the

\(^8\)Karawani [2014] gives a new twist to the discussion about the presuppositions of counterfactuals by arguing that in case of disagreement the speaker sometimes can assert “if A had been the case...” in a context where only the addressee believes that A is false.

\(^9\)What Lasersohn [2005] calls the exocentric perspective, though he characterises it in a very specific, truth-conditional way, as “assessing sentences for truth relative to contexts in which someone other than ourselves is specified as the judge”. (p. 670)

\(^10\)Hellie [2013], Willer [2014], to some extent promoted and enticed by Yalcin [2007].

\(^11\)See Hellie [2013], p. 11
model we sketch shows how to do. So the system we offer stands in this sense differs in crucial respects from expressivist views on PPTs. The upshot of these warnings is, we believe, that understanding entailment as support preservation as we do is, in a sense, an overcoming of expressivism rather than its confirmation.

For those already familiar with other systems in update semantics, it may come as a surprise to speak of intentional states, rather than informational or cognitive states. This terminological choice may sound like a trivial subtlety, but it is meant to highlight the complexity of states as we define below when compared with the states required for update systems dealing with, e.g., epistemic modalities, states as partial records of information about what is the case. When you want to deal with other moods like imperatives and, as we will see below, when dealing with evaluative judgements, information is not all that matters, for one has to make room for expectations as characterised below.

Evaluative judgements are heavily context-dependent, as we have seen, since what one has already accepted constrains the judgements one can accept next. Suppose you have accepted *Alf is tall*, and *Bea is taller than Alf*. You are then bound to call Bea tall, and if someone says the opposite you will not accept her judgement. Instead, if so far one has only accepted *Bea is taller than Alf*, then in absence of other information one may accept *Bea is tall*, *Alf is tall*, or *Neither Alf nor Bea is tall*. Context dependence of this guise is at the core of dynamic meaning as presented in update semantics, as well as in some of its predecessors in the dynamic tradition.

So to what extent does the system we sketch model the affective dimension of intentionality? Given that we think of the model as a simplified display, what is kept and what is lost? Evaluative judgements, we argued in chapter 5, signal patterns of behaviour, linguistic and non-linguistic, associated with the PPTs or other RGAs they feature. Unrestricted judgements like *This cake is tasty* and restricted ones like *I find this cake tasty*, signal the speaker’s own commitments, but only the former lays down normative expectations onto the addressee and other potential interlocutors. In the system sketched below the affective dimension is seized by incorporating tests into agents’ basic states, and expectations concerning the responses and judgements of other agents. Here follows a brief, informal explanation, mainly intended to highlight what is taken and left from the analysis in the preceding chapter.

Tests allow us to integrate the input provided by embodiment into the semantics, standing for the response someone may have when she tastes something to check whether she finds it tasty. They work as theoretical simplifications, however, for we give no details here about how tests for different RGAs differ, and we simply consider yes/no alternatives standing for the positive or negative response an agent would give, maybe non-linguistically, to the question: *Do you*...
find this $G$?, where $G$ stands for a PPT or other RGA.

A judgement like *This cake is tasty* comes with expectations about other people’s responses to the object under assessment. Other people are expected to find it tasty as well, even when we know they do not share our responses. Once we have accepted the general statement *Cakes are tasty*, when we do not know whether a given cake is tasty, we expect it to be tasty. When all we know about Alf is that he is a man, we expect him to be normal, neither tall nor short, and we use *tall* and *short* only if this expectation is overruled by what we learn next.

Obviously, *people* has to be qualified. We do not expect children to find cognac tasty. We expect people to partake in our strongly evaluative judgements, but not just any people. When a speaker lays down a normative claim on others, these are others who are as experienced as the speaker is. Unrestricted judgements presuppose community because expectations lay down bonds with agents whose intentional states are structured like ours.\footnote{One can find here an echo of the Kantian assumption that other’s cognitive abilities are structured very much like ours. See chapter 4, subsection 4.1.2.} We normally assume that our interlocutors are similar to us in relevant respects, and normally we are guided by coherence and consistency as given below in definition 6.2.1. As mentioned before, when speaker and addressee are obviously non-peers — like the case of a teacher speaking to her students, telling them, e.g., than an exercise is difficult —, what matters is the addressee’s position. In such case, the discourse is consistent, but not coherent.

Expectations are double-edged, with a descriptive and also a *normative* character.\footnote{These two aspects do not come apart, as the aspects of meaning that expressivists distinguish. We see this once we elaborate formally this view on expectations.} We expect not just what we know can plausibly be the case, but also, sometimes, what we know is not or will not be satisfied. So if Alf tells Bea that he expects the train to be late, that says something about the time when the train was supposed to come and the time that it might actually come. But we also hold expectations towards our students; we expect them to work hard, even if we know that normally only a few may actually put substantial effort into their study work. We expect cakes to be tasty, even if supermarket cakes are often disappointing. In such cases, what we expect and what is actually the case may, and often do, come apart.

Certainly, we expect others to agree with us whenever we utter a judgement, evaluative or non-evaluative. The differences lies in the sort of expectations that they raise. A speaker expects an addressee to accept her non-evaluative judgements like *Alf is dead* or *Bea is pregnant*, either because the addressee has evidence for such judgements or because she trusts the speaker and assumes that, if asked for evidence backing up those judgements, the speaker could provide it. A speaker expects an addressee to accept her evaluative judgements like *This cake is tasty* or *That pianist is skilful*, not by virtue of a piece of evidence, but on the basis of the normative assumption that if the addressee were to try the cake or
listen to the pianist in question, she would agree with her. The outcome of that
test is expected to be like our own, this is the Kantian element of our analysis.
And yet, this expectation on others is not founded on evidence, and can therefore
not be imposed on others by mere discursive means, as argued in chapter 4.

6.1.3 Why choose a partial setting?

As a last preparatory point, we wish to give some philosophical grounding for the
choice of partial interpretations in the update system we offer. The influential
degree-based view on gradability assumes that in any context there is a cut-off
point, a degree above which one calls objects, e.g., long and under which one
calls objects short. So nowadays it is quite common to think that interpreting a
gradable adjective is possible only when a line is drawn. The update system we
sketch works out the contention that such core idea can and should better be
abandoned[16].

The reason why we do not assume that cut-off points are needed for the in-
terpretation of gradable adjectives is related to the so-called Tolerance Principle
already mentioned in chapter 2 subsection 2.1.2[17]. If there is no significant dif-
ference between two objects in respects relevant to A, then either A applies to both
or to neither. One can try to find a way to reject this principle[18] or leave it
as it is, in which case we are forced to conclude that the use of at least some
gradable adjectives is intrinsically inconsistent. We believe it is best to leave the
principle as it is, for normally we only deal with restricted samples, not with a
full range of cases[19]. In those circumstances the Tolerance Principle does not
give rise to inconsistency. Only when confronted with sequences of objects showing
hardly perceptible differences we get into trouble if with behold the principle[20].
But then gradable adjectives are not meant to be used in those situations; what
we should use there is other, finer tools; we should no longer talk in terms of
tall, hot, big, etc., but in terms of degrees centigrade, or millimeters, or grains of
wheat[21]. Of course, we can perceive the difference between two grains of wheat

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[17] There we presented Dummett 1975’s diagnosis of the predicament we face with the Sorites
paradox. As we saw there, a Sorites can be constructed for an adjective A when its use is seen
to be guided by this principle.
[18] This is how for instance supervaluation theories, a variety within the delineation-based
approach to gradability, react to the Sorites. Having ranges of admissible precisifications,
supervaluationists extend classical logic and thus avoid the trap posed by Tolerance. The
range of possible cut-off points makes it possible to extend classical logic and create a space of
borderline cases, so that one can move from cases one calls tall to cases one calls not tall by
going through instances which are neither clearly tall, nor clearly not tall.
[20] In such cases, we are forced into a Sorites, and we have to block the conclusion of the
reasoning.
[21] One could call this a Wittgensteinian solution. Compare: “The sign post is in order if under
or of a difference in very few millimeters in the length of two lines. The former, we can achieve by touch or sight, the latter we can achieve with the aid of an instrument. But the point is that these fine distinctions are not what we primarily communicate by using gradable adjectives. When we say that a segment AB is 2mm longer than a segment CD, which of course we can say and which makes perfect sense, we are extending the application of an adjective like long. This can be done but not without risk, and this is what the Sorites reasoning lays bare.

We endorse and exploit partiality to make sure that we model the interpretation of gradable adjectives as a piecemeal process. Cut-off points are a powerful technical device but not a fundamental concept to model gradable adjectives. We can draw lines if we need to, for specific purposes. We do not need to rely on cut-off points to say whether someone is tall, when something is tasty. We tag objects with adjectives like tall, hot, expensive when certain responses are prompted, when we are required to decide how to categorise them. We are indifferent to lots of things. We do not have, and more importantly need not be supposed to have, a response to every object of a kind, or to objects of all kinds. Under certain circumstances, we stop being indifferent, we are bound to react and thus we care. The partial changes of our intentional state are signaled by linguistic expressions that show how we are affected and what we learn. When we do have a response, this can be one in which we call tall, objects that we call short, and objects which we call neither tall nor short. So for us partiality is the means to resist the temptation to make these adjectives too precise, to treat them as scientific tools instead of granting them the role they play in letting us signal linguistically with the variety of ways in which we can respond to our environment.

To wrap up, let us repeat that the system we offer is a useful device, not a mimic or the essence of our prior discussion. The choice of update semantics is mainly driven by the flexibility of the notion of meaning it puts forward, and by how it focuses on what each agent brings to, and takes from, a conversation. A partial model allows us to make not so stringent and more reasonable commitments concerning the constraints required for successful interpretation of evaluative judgements.

normal circumstances, it fulfills its purpose." Wittgenstein 1958a, § 87. This Wittgensteinean solution relates to the one offered by Veltman and Muskens (described in Veltman 1987 and in van Deemter 2010 pp. xvi and 341), and to that of Van Rooij 2011a,b. This relates to the suggestion concerning partiality in Van Rooij 2011b: “According to one model, we measure the height of individuals up to a decimeter precise, while at another up to a centimeter, or a millimeter precise.” (p. 40). But that suggestion is mainly concerned with granularity: we can make finer and finer distinctions in a measurement. As we shall see, this picture might be ok for weakly evaluative adjectives, not really for strongly evaluatives.
6.2 Sketch of a model

In this section we present an update system for RGAs. The scope of adjectives covered by the system and the predictions it makes is thus considerably smaller than the scope of other semantic theories for gradable adjectives. As opted in chapter 2, we leave out of consideration absolute gradable adjectives, not because they do not deserve to be integrated in a model for gradability, but because their profile escapes to some extent the subjective and evaluative features that one can find in PPTs and other RGAs.

Our system sides with the delineation-based approach presented in chapter 3 subsection 3.1.3. This alternative allows us to escape the idea that gradability is, essentially, scalarity. The system presented here, based on the general framework in Veltman [1996], takes the meaning \([\varphi]\) of a sentence \(\varphi\) to be an operation on intentional states. The definition of these states will come below, but here is an overview of the main elements of the system.

6.2.1. Definition. [Ingredients for an update system]

1. An update system for a language \(L\) is given by:
   - A set \(\Sigma\) of intentional states.
   - A partial function \([.]\) which, when defined, assigns a state \(S[\varphi]\) to a sentence \(\varphi\) of \(L\) and a state \(S \in \Sigma\).

2. Sometimes the information conveyed by \(\varphi\) will already be subsumed by \(S\). In this case, we say that \(\varphi\) is accepted in \(S\), or that \(S\) supports \(\varphi\), and we write this as \(S \models \varphi\). In our case, this relation can be defined as:

\[
S \models \varphi \text{ iff } S[\varphi] = S
\]

3. An argument is valid if updating any state with the premises yields a state that supports the conclusion. \(\varphi_1, \ldots, \varphi_n \models \psi\) iff for every state \(S\),

\[
S[\varphi_1] \ldots [\varphi_n] \models \psi.
\]

4. Below, the empty set \(\emptyset\) will serve as the absurd state. It is a state agents will try to avoid because if you are in this state you are at a loss, cognitively speaking.

5. Two logical notions that will be instrumental for us are coherence and consistency:

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\(^{23}\)Our update system is dynamic, and to that extent it is similar to the analysis in Barker [2002, 2013]. But Barker takes a degree analysis of gradable adjectives as the basis for his dynamic approach. Another issue, but one we will not develop here, is that different dynamic semantic theories come with different notions of meaning, and the one underlying Barker’s theory may not be quite like the one involved in update semantics. Cf., Stokhof [2014].
6.2. Sketch of a model

- A discourse $\varphi_1, \ldots, \varphi_n$ is consistent iff there is some $S \in \Sigma$ such that $S[\varphi_1] \ldots [\varphi_n]$ exists and $S[\varphi_1] \ldots [\varphi_n] \neq \emptyset$.

- A discourse $\varphi_1, \ldots, \varphi_n$ is coherent iff there is some $S \in \Sigma$ such that $S[\varphi_1] \ldots [\varphi_n] = S$ and $S \neq \emptyset$.

Coherence and consistency are semantic notions for they tell us something about the update potential of a discourse. But they also govern the pragmatics of conversation, for a speaker is supposed to say only what she can accept herself, so what she says should be coherent, and an addressee is supposed to accept only what does not make her leap into the absurd state, so she should only accept consistent discourse.

In subsection 6.2.1 we present the technical toolkit containing the basic notions we will need. It will not mean much here, but we list them so that the reader has an easy reference: We will list features that RGAs should have (more succinctly than as presented in chapter 2). We will distinguish the usual notion of comparison class from a related notion we introduce: comparison base. With the help of this distinction, we will characterise homogeneous and heterogeneous adjectives. We will define a simple language for evaluative judgements. To give an interpretation, we will start with a situation, which will be the building block of basic intentional states. We will provide basic constraints on these states, and further constraints concerning strongly evaluatives. A useful notion of harmony will be introduced, and we will single out a special state, the minimal state, where we articulate an important constraint, normality. In subsection 6.2.2 we present the update rules for unrestricted judgements like *Alf is tall* and *This cake is tasty*. In subsection 6.2.3 we present the update rules for restricted judgements like *I find this cake tasty* and *Alf finds Bea beautiful*. In subsection 6.2.4, still in the simple setup, we introduce negation. In subsection 6.2.5, we briefly discuss the picture of gradability coming out of our view, how it resembles and differs from degree vs. delineation based accounts. In appendix A, we extend this system with logical connectives and first-order quantifiers.

### 6.2.1 Technical toolkit

Let $G$ stand for a gradable adjective. In the following $G$ counts as a RGA if:

1. $G$ can be used in both predicative and attributive position.

2. $G$ has a comparative $G$-er form\(^{24}\)

3. $G$ has a polar antonym (for which we write $\tilde{G}$).

4. $G$ and $\tilde{G}$ admit modification with degree adverbs like *very*.

\(^{24}\)For simplicity, we leave the superlative form aside in the model we sketch below.
5. It is logically possible for something to be neither $G$ nor $\bar{G}$.

6. If the object $x$ is $G$, then it should be logically possible for there to be an object $y$ that is $G$-er than $x$, and an object $z$ that is less $G$ than $x$.

We distinguish two kinds of RGA’s, the weakly evaluative and the strongly evaluative. They differ in that the comparative of a weakly evaluative adjective (like taller than, more expensive than) has a public, conventionalised method associated to it, whereas the comparative of a strongly evaluative adjective (like tastier than, more beautiful than) lacks this method. We leave out of our focus absolute gradable adjectives like wet vs. dry, like open vs. closed, privative adjectives like alleged, fake, and non-gradable adjectives like pregnant, married. For reasons of space and simplicity, we do not delve into details concerning adjectival polarity, that is, that for instance for the pair tall, short, tall is the positive element in the pair while short is the negative one. One could assume that $G$ corresponds to the positive and $\bar{G}$ to the negative case, but we are not making any specific commitments of this sort in what follows.

Adjectives can modify nouns. They can be predicated of individual items as given by, e.g., this cake, this piece of young Gouda, but also to sorts of objects given by mass nouns, as given by, e.g., chocolate cake, cheese, etc. For the sake of simplicity of the formalisation, the domain of objects $D$ will only comprise individual items.

Context dependence is an essential feature of gradable adjectives. A short Dutch man may be called tall when compared to Chinese men. A man may be skilful as a mathematician but not as a violinist. To bring this out, semanticists often make use of comparison classes, that is, sets of objects that are similar in some way to the object under assessment. We wish to take up this notion but in a specific way, for these sets of objects are often related by set inclusion. For instance, Frisian men are Dutch men, Dutch men are European men, European men are men, men are human beings. A way to organise this landscape is to see that a gradable adjective may be seen to come with a set of comparison bases, given by a set of nouns. As examples, think for instance of: $c(tall) = \{\text{human being, building, tree, ...}\}$ or $c(\text{skilful}) = \{\text{mathematician, violinist, carpenter, ...}\}$. For each of these bases, we can make finer distinctions: among human beings there are men, women, European men, Dutch men, Frisian men, etc. We call these comparison classes. We reserve the term comparison base for the maximal case. It has been noted\(^{25}\) that English syntax shows there is a difference between prepositions as and for when used to specify sets of objects. The preposition for is used to pick out a comparison class, as in Mary is skilful for a six year old violinist. The comparison base, the maximal case, is picked by the preposition as, to say for instance Mary skilful as a carpenter, but not as a violinist. Here are the formal definitions:

\(^{25}\)See Morzycki [2013], ch. 2.
6.2. Sketch of a model

6.2.2. Definition. [Comparison base]
Let \( G \) be some RGA. The comparison base, \( c(G) \) for \( G \) is a set of nouns \( N \). If \( N \in c(G) \) then

1. all objects in the extension of \( N \) are comparable.\(^{26}\)
2. no proper subset of the extension of \( N \) is a comparison base.
3. every subset in the extension of \( N \) determines a comparison class relative to \( N \) for \( G \).

By “all objects are comparable” we mean that there is a uniform method — one that can be used throughout the comparison base — that yields for every two objects \( x \) and \( y \) as possible outcomes that either \( x \) is \( G \)-er than \( y \), or \( y \) is \( G \)-er than \( x \), or both are equally \( G \) (i.e., equally \( G \) given the method; very small differences are not always distinguishable).\(^{27}\) “Method” here should be understood in the widest sense of the word, as it could be by simple perceptual contact like observation, smell, taste or touch. If both \( x \) and \( y \) have the property expressed by \( N \) the conclusion cannot be that \( x \) and \( y \) are incomparable with respect to \( G \). Expertise or, otherwise said, how critical we are, works as a filter for the fine-grainedness of the comparison classes we consider. For instance, the more we learn and the more refined our palate becomes in wine tasting, the more distinctions we can make. This results in cutting up domains into more refined comparison bases: consider for instance how an occasional wine drinker would compare, e.g., Eiswein with Merlot, and how an expert would see these as incomparable sorts. Often the comparison base and comparison class associated to \( G \) in a given utterance are the same. In fact, we identify them whenever we have just general knowledge about the object under assessment.

On the basis of this way of looking at comparison bases and comparison classes, here is another distinction that will be useful.

6.2.3. Definition. [Homogeneous and heterogeneous adjectives]
Let \( G \) be some RGA.

1. \( G \) is homogeneous if an object can belong to at most one comparison base \( N \in c(G) \).
2. If \( G \) is not homogeneous, it is called heterogeneous.

Examples of homogeneous adjectives are, for instance, tall, expensive, hot. If Alf is a tall man, Alf cannot as well be a tall tree. Meanwhile, a skilful mathematician may also be a skilful violinist. With this distinction, we can tell

\(^{26}\)Here ‘extension’ just means “the class of things to which it is correctly applied”.
\(^{27}\)This is not necessarily a transitive relation. See the discussion of the Sorites paradox in subsection 6.1.3.
apart RGAs which have an intersective comparative from those which do not. In chapter 2 subsection 2.1.1 we said that for some gradable adjectives the corresponding comparative is intersective, as for instance with tall. From If Alf is a taller jockey than Bert and Alf and Bert are men, you infer Alf is a taller man than Bert. But for some gradable adjectives like skilful the comparative is non-intersective: from If Alf is a more skilful pianist than Bert and Alf and Bert are carpenters, you cannot infer Alf is a more skilful carpenter than Bert. Homogeneous adjectives have an intersective comparative because for every pair of objects there is only one possible comparison base. With these notions, if we endorse the observation concerning the prepositional phrase as a X as a means to introduce comparison bases we can see why for homogeneous adjectives it would be strange to say Alf is tall as a man but not as a tree, not so for heterogeneous adjectives: Alf is skilful as a mathematician but not as a violinist.

It is not easy to say how tasty, and beautiful fit in these categories. If we trust the observation concerning as and for, we can see that it not hard to say, for instance, that a certain dish is tasty as a dessert (instead of, e.g., as an entrée). This would suggest that tasty is heterogeneous. When we try the same with beautiful, the result is not as conclusive. One can say Bea is beautiful as an angel, but this relates to Bea is as beautiful as an angel. If one would think of \( c(\text{beautiful}) = \{\text{painting, sculpture, woman, \ldots}\} \) then it seems that beautiful is homogeneous, for it would be strange to say Bea is beautiful as a woman but not as a sculpture. But on the one hand, the observation about as and for is, as it stands, a speculation. On the other hand, as noted above, method and expertise interact in how communities cut up comparison bases. So it can be controversial whether an \( N \) is a comparison base or a comparison class for \( G=\text{tasty} \).

When comparison class and comparison base are left unspecified, it could be that enough information is available about \( I(a) \), the object under assessment, to establish the relevant comparison base \( N \). Then the default is to interpret \( G(a) \) in the comparison class given by \( I(N) \).

Note that in attributive judgments \( a \text{ is a } GN \) (formally \( GN(a) \)), the relevant comparison class is not always given by the noun \( N \).

(1) a. John owns an expensive BMW 28  
b. He is a wealthy son of a bitch

Example (1-a) does not necessarily mean that the car that John bought is expensive for a BMW. Nor does example (1-b) mean that he counts as wealthy compared to all other sons of bitches. Since the role of deprecatives such as s.o.b. in example (1-b) introduces further issues, let us focus on example example (1-a). This case is, we believe ambiguous. The speaker may want to say that John’s new

28This example is similar to ex. (16) in Kennedy [2007]. The point he makes with this and the following examples in his paper is that the standard of comparison that is necessary for his model of gradability is not always fixed by the noun \( N \).
6.2. Sketch of a model

BMW is expensive among BMWs, or that it is an expensive car which happens
to be a BMW. We believe that this is an open issue if no surrounding discourse
is given. What this example shows as well is that unless surrounding discourse
eliminates this possibility, one can resolve the interpretation of the judgement by
appealing to the maximal comparison base \( N = \text{cars} \).

For heterogeneous \( G \), sometimes there is not a clear default comparison base
like in the case of \textit{skilful}, which means that in such case a comparison base has
to be specified. For heterogeneous \( G \) like \textit{tasty}, however, we seem to manage fine,
at least much better than for \textit{skilful}. Someone may say: \textit{I don’t have a clue of
what this is, but it is tasty!}, and the addressee will not have trouble in getting
the point of the assessment. Wherein the difference lies between \textit{skilful} and \textit{tasty}
that could explain this difference is, we believe, lexical and not logical in nature.

At this point, we can already give a definition of the basic language we will
focus on in this chapter.

6.2.4. Definition. [A formal language for evaluative judgements]

A language \( \mathcal{L} \) has the following non-logical symbols:

i. a number of \textit{individual constants} \( a, b, c, \ldots \), among which \( i, \text{you}, (s)\text{he}, \)

ii. a number of \textit{nouns} \( N \), and

iii. a number of \textit{(relative gradable) adjectives} \( G \).

Every adjective \( G \) has an antonym \( \check{G} \) that is also an adjective. By definition
\( \check{G} = G \). The adjectives are subdivided in two ways: \textit{homogeneous vs. heterogeneous} adjectives, and \textit{weakly evaluative} versus \textit{strongly evaluative} adjectives.

The set of sentences \( \varphi \) of \( \mathcal{L} \) is the smallest set which includes:

1. Sentences of the form \( N(a) \).

2. Predicative judgements \( G(a), G\text{-er}(a, b) \) (to be read as \( a \text{ is } G\text{-er than } b \)).\(^{30}\)

3. \( \text{Find}(G, x)(a) \) and \( \text{Find}(G\text{-er}, x)(a, b) \), where \( x \in \{i, \text{you}, (s)\text{he}\} \).

4. Sentences of the form \( \neg \varphi \), for \( \varphi \) a sentence defined in (1)-(3).

With such a simple language, we can already make judgements close in mean-
ing to \textit{This is a cake}, \textit{This is tasty}, \textit{This cake is tasty}, \textit{This is a suitcase}, \textit{I find
this suitcase heavy}. Note that \textit{Find} is a relation determined by \( G \) between an
agent and an object. So \textit{Find} does not embed an unrestricted judgement as such.

\(^{29}\)In appendix \( A \) we expand this language with logical connectives and first-order quantifiers.

\(^{30}\)There is a slight sloppiness in this notation because here \( a \) stands for an object that we
either point at, as in \textit{This is tasty}, or that we determine by a noun phrase, as in \textit{This cake is
tasty}.\)
It is not a propositional attitude but an affective attitude. Once we give update rules, we can see how this is spelled out formally.

Now, to model the meaning of RGAs, we have to put in the picture the basic ingredients for intentional states. A situation, the building block of intentional states, does not just record the interpretation given so far to an adjective $G$ and a comparative $G$-er, but also records tests which appear to be just like interpretation functions, but which record the affective responses underlying these.

### 6.2.5. Definition. [Situation]

Let $\mathcal{L}$ be a language as defined in 6.2.4. Fix a set $A = \{\text{speaker, addressee, other}\}$ of agents, and a non-empty set $D$ of objects. Let $c(G)$ for every adjective $G$ be a nonempty set of nouns $N$. Each $N \in c(G)$ determines a comparison base for $G$.

A situation based on $A$ and $D$ and $c$ is a pair $\langle I, T \rangle$, where:

1. $I$ assigns:
   
   (a) to every individual constant $a$, an object $I(a) \in D$;
   
   (b) $I(i) = \text{speaker}, I(you) = \text{addressee}, I((s)he) = \text{other}$;
   
   (c) to each noun $N$, a total function $I(N)$ from $D$ into $\{\text{yes, no}\}$; if $G$ is homogeneous, then for every $d \in D$ there is at most one $N \in c(G)$ such that $d \in I(N)$;
   
   (d) to each triple consisting of an adjective $G$, a noun $N \in c(G)$, and a subset $C \subseteq I(N)$, a partial function $I(G, N, C)$ from $C$ into $\{\text{yes, no}\}$;
   
   (e) to each pair consisting of a comparative $G$-er and a noun $N \in c(G)$, a partial function $I(G$-er, $N)$ from $I(N) \times I(N)$ into $\{\text{yes, no}\}$.

2. $T$ assigns:
   
   (a) to each triple consisting of an adjective $G$, a noun $N \in c(G)$, and an agent $x \in A$, a partial function $T(G, N, x)$ from $N$ into $\{\text{yes, no}\}$;
   
   (b) to each triple consisting of a comparative $G$-er, a noun $N \in c(G)$ and an agent $x \in A$, a partial function $T(G$-er, $N, x)$ from $I(N) \times I(N)$ into $\{\text{yes, no}\}$.

The values $\{\text{yes, no}\}$ constituting the range of the interpretation function $I$ and the test function $T$ stand for something broader than truth values. They signal the response of the agent whose state we are describing to various sentences in various contexts. The value yes stands for agreement, and no for disagreement. We sometimes agree with someone, in particular with what she says, because we believe that what she says is true. We sometimes agree with someone because our responses are similar, for instance, when we listen to a piece music and we both love it (or hate it), or because we both have difficulty in lifting a suitcase. The values $\{\text{yes, no}\}$ are used to model our reactions in this wider sense.
Let $G$ be some RGA, $N$ determine a comparison base for $G$, and $C$ be some comparison class within $I(N)$. The interpretation function $I$ specifies which elements $d$ the agent judges to be $G$, that is when $I(G,N,C)(d) = \text{yes}$. It specifies as well which elements the agent judges to be $\tilde{G}$, when $I(\tilde{G},N,C)(d) = \text{yes}$. And it also fixes which elements the agent judges to be neither $G$, nor $\tilde{G}$, when both $I(G,N,C)(d) = \text{no}$, and $I(\tilde{G},N,C)(d) = \text{no}$. There may be a lot of objects in $C$ that have not yet been evaluated, that is when both $I(G,N,C)(d)$ and $I(\tilde{G},N,C)(d)$ are undefined.

On top of this, the agents will call some elements $G$-er than some other elements, that is when $I(G\text{-}er,N)(d',d) = \text{yes}$. Actually, when they consider $d$ $G$ and $d'$ not $G$, or when they consider $d$ not $\tilde{G}$ and $d'$ $\tilde{G}$, they are committed to call $d$ $G$-er than $d'$. This is enforced by the Comparativity constraint specified below.

The $T$ function records for each $G$ and comparison base $N$ which objects the agent finds $G$. The ‘$T$’ stands for testing, which in the case of the adjective tasty amounts to tasting. The incorporation of these tests in the states enables us to integrate affective grip into the semantics, the response someone has when she checks for herself whether she finds something $G$. Different RGAs come with different tests, and for a particular adjective $G$ the test will vary with the comparison base. The comparison classes do not come in. Test functions are concerned with the relation between the subject and the object: it matters what kind of object this is, but that is all. In principle, it does not matter how this object compares to other objects of the same kind. Actually, it does, but only in an indirect way. Previous experiences have surely shaped and developed the subject’s taste in the course of time, but at a given moment, when asked whether she finds an object $G$, her response is all there is.

For simplicity, nouns are given a total interpretation. This way, we restrict ourselves to cases where the agents have complete information about the kind of objects they are dealing with. Of course, in reality this is not always the case, and a full development of the system would have to explain how exactly we proceed when this information is incomplete. But this way we can focus on the topic of this chapter, the interpretation of gradable adjectives.

Here are some constraints on the interpretation functions $I$. They determine the basic logical properties of gradable adjectives and their comparatives.

6.2.6. Definition. [Basic constraints]

1. **Transitivity:** If $I(G\text{-}er,N)(d,d') = \text{yes}$ and $I(G\text{-}er,N)(d',d'') = \text{yes}$, then $I(G\text{-}er,N)(d,d'') = \text{yes}$

2. **Asymmetry:** If $I(G\text{-}er,N)(d,d') = \text{yes}$, then $I(G\text{-}er,N)(d',d) = \text{no}$.

3. **Monotonicity:** If $I(G,N,C)(d) = \text{yes}$, and $I(G\text{-}er,N)(d',d) = \text{yes}$, then $I(G,N,C)(d') = \text{yes}$. 
4. **Comparativity:**
   (a) If \( I(G, N, C)(d) = \text{yes} \) and \( I(G, N, C)(d') = \text{no} \),
       then \( I(G\text{-er}, N)(d, d') = \text{yes} \).
   (b) If \( I(\tilde{G}, N, C)(d) = \text{no} \) and \( I(\tilde{G}, N, C)(d') = \text{yes} \),
       then \( I(G\text{-er}, N)(d, d') = \text{yes} \).

5. **Antonymy:**
   (a) If \( I(G\text{-er}, N)(d, d') = \text{yes} \) then \( I(\tilde{G}\text{-er}, N)(d, d') = \text{no} \).\[^{31}\]
   (b) If \( I(G, N, C)(d) = \text{yes} \), then \( I(\tilde{G}, N, C)(d) = \text{no} \).\[^{32}\]

6. **Tolerance:**\[^{33}\] If \( I(G\text{-er}, N)(d, d') = \text{no} \) and \( I(G\text{-er}, N)(d', d) = \text{no} \),
       then \( I(G, N, C)(d) = \text{yes/no} \) iff \( I(G, N, C)(d') = \text{yes/no} \).

7. **Switch:** Suppose \( C \subseteq C' \subseteq I(N) \). Then
   (+ -) There are \( d \in C \) such that \( I(G, N, C)(d) = \text{yes} \) and \( I(G, N, C')(d) = \text{no} \)
   only if there are \( d' \in C' \setminus C \) such that \( I(G, N, C')(d') = \text{yes} \);
   (- +) There are \( d \in C \) such that \( I(G, N, C)(d) = \text{no} \) and \( I(G, N, C')(d) = \text{yes} \)
   only if there are \( d' \in C' \setminus C \) such that \( I(G, N, C')(d') = \text{no} \).

Ideally, for a given RGA \( G \), comparison base \( N \), and comparison class \( C \), the
end result of the evaluation process would be a partition of \( C \) in a number of
equivalence classes, each consisting of objects that are *equally* \( G \). These equivalence
classes should be linearly ordered from the equivalence class containing the
\( G \)-est objects on the one end to the equivalence class containing \( \tilde{G} \)-est objects
on the other end. There can be several equivalence classes containing objects
that are \( G \) (some containing objects that are *very* \( G \), other containing objects
that are \( G \), but maybe less so than the very \( G \), etc.), several equivalence classes
containing objects that are \( \tilde{G} \), and in between these there may be a number
of equivalence classes containing objects that are neither \( G \) nor \( \tilde{G} \). Unfortunately,
this ideal is not always attainable.\[^{34}\] In practice, and in line with the *Tolerance*
constraint, our agents will consider two objects with property \( N \) *equally* \( G \) iff
there is no significant\[^{35}\] difference between them: both \( I(G\text{-er}, N)(d, d') = \text{no} \)
and \( I(G\text{-er}, N)(d', d) = \text{no} \). There is nothing wrong with this as long as the
following holds:

\[^{31}\]In many cases this can be strengthened to If \( I(G\text{-er}, N)(d, d') = \text{yes} \) then \( I(\tilde{G}\text{-er}, N)(d', d) = \text{yes} \). But *beautiful* and its antonym *ugly* show that this is not always
the case.

\[^{32}\]But it is certainly possible that both \( I(G, N, C)(d) = \text{no} \) and \( I(\tilde{G}, N, C)(d) = \text{no} \).

\[^{33}\]Here the assumption that \( d \) and \( d' \) are in a comparison base \( N \) if and only if they are
comparable is essential.

\[^{34}\]What follows is very much inspired by Dummett [1975].

\[^{35}\]We abstract away from the kind of difference (observational, or otherwise) that matters
here. We also neglect the fact the level of granularity is an important contextual factor. (There
is a story here with the moral that as the comparison class gets larger, the granularity level
should get finer.)
6.2. Sketch of a model

(*) For all \(d, d', d'' \in C\), if \(I(G-er, N)(d, d') = \text{no}\) and \(I(G-er, N)(d', d'') = \text{no}\), then \(I(G-er, N)(d, d'') = \text{no}\).

6.2.7. Proposition. Let \(\langle I, T \rangle\) be a situation. Define:

\[\text{Equally}(G, N, C)(d, d') \iff I(G-er, N)(d, d') = \text{no} \quad \text{and} \quad I(G-er, N)(d', d) = \text{no}\]

Suppose \(I(G-er, N, C)\) is total. Then, given Transitivity and Asymmetry, \(\text{Equally}(G, N, C)\) is an equivalence relation on \(C\) iff (*) holds.

The point is that in many comparison classes (*) will not hold. It may vary well happen that for some \(d, d', d'' \in C\) there is no significant difference between \(d\) and \(d'\), nor between \(d'\) and \(d''\), but there is a significant difference between \(d\). This means that in many cases one cannot clearly distinguish equivalence classes. Everything is blurred. In the worst case this may even lead to the Sorites paradox, where at the beginning of a chain of pairwise indistinguishable objects, there is an object that is clearly \(G\) whereas at the and there is an object that is clearly \(\bar{G}\).

As we already indicated, there is no reason to panic here. This is what vagueness amounts to. The fact that in some cases the machinery runs down does not mean that the machinery is useless.

Note that Switch is a cross-contextual constraint. To see its effects consider this example.

6.2.8. Example. Let \(D = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12\}\). Consider the sets 
\(C = \{1, 3, 4, 7, 9, 10\}\), and \(C' = \{1, 3, 4, 7, 9, 10, 12\}\).

(In the following we set a number in boldface if it is small according to the interpretation in question.)

Given (+ -) you can have:

\(I(\text{small, number, } C)\): \(\{1, 3, 4, 7, 9, 10\}\), and
\(I(\text{small, number, } C')\): \(\{1, 3, 7, 9, 10, 12\}\)

and you can also have:

\(I(\text{small, number, } C)\): \(\{1, 3, 7, 9, 10\}\), and
\(I(\text{small, number, } C')\): \(\{1, 3, 4, 7, 9, 10, 12\}\)

but this is not allowed:

\(I(\text{small, number, } C)\): \(\{1, 3, 4, 7, 9, 10\}\), while
\(I(\text{small, number, } C')\): \(\{1, 3, 4, 7, 9, 10, 12\}\).

If you have first decided that 1, 3, and 4 are the small numbers in the set \(\{1, 3, 4, 7, 9, 10\}\), you are not allowed, when 12 is added to this set, to call only 1 and 3 small.

Switch is not the only constraint with cross-contextual effects. Since the interpretation of the comparative does not depend on the comparison class (but only on the comparison base), the other constraints have cross contextual effects, too. For example Comparativity together with Asymmetry imply the following.
6.2.9. **Proposition (No reversal).**

If \( I(G,N,C)(d) = \text{yes} \) and \( I(G,N,C)(d') = \text{no} \), then for no \( C' \subseteq I(N) \), \( I(G,N,C')(d') = \text{yes} \) and \( I(G,N,C')(d) = \text{no} \).

Note that all the constraints defined above are imposed on the interpretation function \( I \). What holds for \( I \), need not hold for \( T \). The *Transitivity* constraint says that an agent who accepts that \( x \) is taller than \( y \), and \( y \) is taller than \( z \), has to accept that \( x \) is taller than \( z \). But from this it does not follow that an agent who accepts that somebody, say John, finds \( x \) taller than \( y \), and that John finds \( y \) taller than \( z \), should accept that John finds \( x \) taller than \( z \).

The constraints given above hold for all RGAs. The next one does not, it is specific for strongly evaluative adjectives. We discussed this constraint informally in chapter 4, subsection 4.1.1, when we said that unless we have our own experience with the object, you cannot formulate an aesthetic judgement (of beauty, of taste, etc.) As will become clear in due course, it enforces that for strongly evaluative adjectives \( G \), an agent can only accept \( G(a) \) if (s)he accepts \( \text{Find}(G,i)(a) \). This does not work the other way around. You can find something tasty, without having to commit yourself to the statement that it *is* tasty.

6.2.10. **Definition.** [Experience]

If \( G \) is strongly evaluative, the following holds.

1. If \( d \in \text{dom} \ I(G,N,N) \)\(^{36} \), then \( d \in \text{dom} \ T(G,N,\text{addressee}) \), and \( I(G,N,N)(d) = T(G,N,\text{addressee})(d) \)\(^{37} \).

2. If \( \langle d,d' \rangle \in \text{dom} \ I(G\text{-er},N) \), then \( \langle d,d' \rangle \in \text{dom} \ T(G\text{-er},N,\text{addressee}) \) and \( I(G\text{-er},N)(d,d') = T(G\text{-er},N,\text{addressee})(d,d') \).

When \( I(G,N,N)(d) = \text{yes} \), this means that \( d \) is judged \( G \) relative to all objects of the kind \( N \). This is as close as “absolutely \( G \)” a RGA can get. For weakly evaluative adjectives there is no logical relation between a statement of the form \( G(a) \) and the corresponding \( \text{Find}(G,i)(a) \) (the same goes for the comparative). As the Müller-Lyer example illustrates, they are logically independent. Still, if your personal experience does not correspond to what you believe to be actually the case, you will not feel happy, psychologically speaking. In such a case your state is not harmonious in the following sense of the word.

6.2.11. **Definition.** [Harmony]

Suppose \( \langle I,T \rangle \) is a situation. \( \langle I,T \rangle \) is harmonious if there are no \( G,N \), and \( d,d' \in D \) such that \( I(G,N,N)(d) = \text{yes/} \text{no} \) while \( T(G,N,\text{addressee})(d) = \text{no/} \text{yes} \), or \( I(G\text{-er},N)(d,d') = \text{yes/} \text{no} \) while \( T(G\text{-er},N,\text{addressee})(d,d') = \text{no/} \text{yes} \).

\(^{36}\text{dom} \ I(G,N,C) \) is the set of all \( d \in C \) for which \( I(G,N,C)(d) \) is defined.

\(^{37}\text{Recall that the addressee is the ‘owner’ of the state, the agent whose state we are trying to update.}\)
Disharmonious states are relatively rare. To a large extent, our experience and knowledge about the world remain in tune with one another.

In the following when we write ‘situation’, we will usually assume that we are talking about a state that satisfies the constraints mentioned above.

We can now develop the notion of an intentional state on which update rules will operate. In particular we can say what the expectations of an agent will be, given her current situation and evaluations.

6.2.12. Definition. [Basic state] A basic state $\sigma$ based on $A$ and $D$ has two components $\sigma = \langle \alpha_\sigma, \epsilon_\sigma \rangle$. The component $\alpha_\sigma$ will model the current evaluations, $\epsilon_\sigma$ will model the expectations about further evaluations. Both $\alpha_\sigma = \langle I_{\alpha_\sigma}, T_{\alpha_\sigma} \rangle$ and $\epsilon_\sigma = \langle I_{\epsilon_\sigma}, T_{\epsilon_\sigma} \rangle$ are situations in the sense of definition 6.2.5. They are related as follows.

1. For every noun $N$, it holds that $I_{\alpha_\sigma}(N) = I_{\epsilon_\sigma}(N)$.
2. For every adjective $G$, it holds that $I_{\alpha_\sigma}(G, N, C) \subseteq I_{\epsilon_\sigma}(G, N, C)$.

We can now partly formalise the normativity of taste, what we here call Universality as inspired by Kant, as another constraint on strong evaluatives.

But we do not want to claim that the list of constraints is exhaustive. Here is a constraint we could include but which we leave here open as a suggestion given that we do not have a systematic way to see which strongly evaluatives fit, besides this case: If Mary is more beautiful than Ann, neither of them is ugly.

- Contrastivity: If $G$ is strongly evaluative, the following holds. If $(G\text{-er})(d, d') = \text{yes}$, then $I(\bar{G})(d) = I(\bar{G})(d') = \text{no}$.

However, contrastivity is not as generalised as it may seem at first, when one considers, e.g., good, better vs. bad, worse. (Cf., Bierwisch [1989], p. 89 et ss.)

Another constraint that is commonly thought to hold for what we call weakly evaluatives is reversal. If Alf is taller than Bea, then Bea is shorter than Alf. But if a cake is tastier than a pie, it is not the case that the pie is more disgusting than the cake.

- Contrary reversal: If $G$ is weakly evaluative, the following holds. If $I(G\text{-er}, N)(d, d') = \text{yes}$ then $I(\bar{G}\text{-er}, N)(d', d) = \text{yes}$

However, constructions involving short seem to go against this feature. When we say Alf is as short as Bea, there is a tendency to think that Alf and Bea are short.

In the system the Universality constraint comes to capture part, but not the totality of the Kantian insight on the matter. Two aspects of the Kantian insight are left aside. On the one hand, the Universality constraint is weaker than the Kantian one because in the Kantian case, we get expectations that reach the whole community. My unrestricted judgement of taste lays down the expectation that others agree with me, with my appraisal, but also that others endorse my expectations as such, so that they lay down on further people the expectations I lay down on them. The community created by the Universality constraint as defined above is tied by weaker bonds because it concerns the responses one expects others should have, but it does not require that, beyond such responses, these others share our normative expectations projecting them onto further people. The reason for this limitation is mostly technical in nature because dealing with this would require a means to represent different epistemic attitudes, and we prefer to
6.2.13. Definition. [Universality]
If \( G \) is strongly evaluative and \( I_{\alpha}(G, N, N)(d) \) is defined, then for all \( x \in A \),
\[
T_{\epsilon}(G, N, x)(d) = I_{\alpha}(G, N, N)(d).
\]
Similarly, if \( G \) is strongly evaluative and \( I_{\alpha}(G{-}er, N)(d, d') \) is defined, then for all \( x \in A \),
\[
T_{\epsilon}(G{-}er, N, x)(d, d') = I_{\alpha}(G{-}er, N)(d, d').
\]

The Universality constraint appears at first to be specific for strong evaluatives. If you judge that a painting is beautiful you will expect me to find it beautiful, that is what the above principle enforces. If you judge that a suitcase is heavy, you need not expect me to find it heavy.

Note that this constraint only enforces that if you judge something tasty in the broadest possible way (i.e., when the comparison class coincides with the comparison base), you will expect others to find it tasty. As things stand now, you do not have such expectations when the comparison class is restricted, i.e., smaller than the maximal comparison base. So, if you think that a particular wine is tasty, you will expect other people to find it tasty as well. But if you think that a particular wine is tasty for a supermarket wine, you have no such normative expectations about what other people should find. We could have stipulated that the Universality constraint applies to all comparison classes, not just to comparison bases. That we did not do so is a consequence of our idea that the outcome of a test is not contextually determined. One can taste a wine and find it delicious, or tasty, or not tasty, or be indifferent to it. Then one’s judgment could be that for a supermarket it is tasty, but there is no such thing as finding it tasty-for-supermarket-wine, let alone to expect others to find it tasty-for-a-supermarket wine.

A specific constraint for weakly and strongly evaluatives is set in the following definition. The basic idea behind minimal states is to represent a situation in which we have as yet made no evaluations.

6.2.14. Definition. [Minimal state]
Fix a domain \( D \), and an interpretation \( I \) for the nouns \( N \). The minimal state \( \mu \) based on \( A, D \), and \( I \) is a basic state \( \langle \alpha_\mu, \epsilon_\mu \rangle \), in which the following holds.

1. for all nouns \( I_{\alpha_\mu} = I_{\epsilon_\mu} = I(N) \);
2. for all adjectives \( G \), nouns \( N \in c(G) \), and \( x \in A \),
\[
dom I_{\alpha_\mu}(G{-}er, N) = dom I_{\epsilon_\mu}(G{-}er, N) = dom T_{\alpha_\mu}(G{-}er, N, x) = dom T_{\epsilon_\mu}(G{-}er, N, x) = \emptyset.
\]

keep the model simple at the moment. On the other hand, the Universality constraint is limited because it does not yield the strong reading of reflective judgement we supported in chapter 4. There, the claim was that all judgement is possible by virtue of merely reflective judgement. In the terms of this chapter, the question is: in what sense are weakly evaluative judgements possible by virtue of strongly evaluative ones? We are leaving this question unanswered here.

That is, our affective reactions are rather primitive, as we argued in chapter 5. Of course, context plays a role, but here context relates to situatedness and not (directly) to how refined is our knowledge of objects in a domain.
3. **Normality:** for all adjectives $G$, nouns $N \in c(G)$, $C \subseteq I(N)$, and $x \in A$, $\text{dom} I_{\alpha}(G, N, C) = \text{dom} T_{\alpha}(G, N, C, x) = \emptyset$,

(a) for weakly evaluatives, for all $d \in D$, $I_{\alpha}(G, N, C)(d) = T_{\alpha}(G, N, C, x)(d) = \text{no}$, and $I_{\alpha}(\bar{G}, N, C)(d) = \text{no}$;

(b) for strongly evaluatives, $I_{\alpha}(G, N, C) = T_{\alpha}(G, N, C, x) = \emptyset$.

A useful abstraction, this stage shows how we would proceed if we had to start from scratch. We start out expecting things to be normal, neither $G$ nor $\bar{G}$.

Because of this principle, a sentence of the form $a$ is $G$ will express something one would not expect, something salient, something surprising, and therefore worth mentioning. In the rules defined below, we build in that we keep expecting things to be normal until we learn otherwise.

### 6.2.2 Updating with unrestricted judgements

We are ready now to discuss the update conditions for atomic sentences, the core of the model as preannounced in definition [6.2.1](#). Consider first a sentence of the form $G(a)$ with $G$ weakly evaluative. For this sentence to be interpretable, it has to be clear to the addressee what the relevant comparison base $N$ and comparison class $C$ are. Then updating the state $\sigma$ in the context $\langle N, C \rangle$ starts with setting the value of $I_{\alpha}(G, N, C)(I(a))$ to yes. Of course, if the addressee cannot do so without getting in conflict with the constraints set on the use of $G$, the statement should not be accepted. Suppose, for example, that $I_{\alpha}(G, N, C)(I(b)) = \text{no}$ and $I(G\text{-er}, N)(b, a) = \text{yes}$. Then setting $I_{\alpha}(G, N, C)(I(a))$ to yes conflicts with Monotonicity. Suppose you have accepted Alf is tall, and Bea is taller than Alf. You are then bound to call Bea tall, and if someone says the opposite you will not accept her judgement. Now, suppose that no such conflicts arise. Then in many cases accepting $G(a)$ will lead to more changes. The new state will have to satisfy the constraints. Again, think of Monotonicity. If you extend $I(G, N, C)$ with the pair $\langle I(a), \text{yes} \rangle$, and $I(G\text{-er}, N)(c, a) = \text{yes}$, you will have to add the pair $\langle I(c), \text{yes} \rangle$ to $I(G, N, C)$ as well (assuming it is not already there).

Spelling this out formally is rather cumbersome. Before we do so, we note the following.

### 6.2.15. Propostition. Let $\mathcal{I}$ be some set of interpretations such that each $I \in \mathcal{I}$ satisfies the basic constraints on interpretations. Consider $I'$ defined by

$I'(G, N, C)(d) = \text{yes}$ iff for every $I \in \mathcal{I}$, $I(G, N, C)(d) = \text{yes}$

$I'(G, N, C)(d) = \text{no}$ iff for every $I \in \mathcal{I}$, $I(G, N, C)(d) = \text{no}$

Then $I'$ satisfies the constraints on interpretations.

---

41This echoes the assumption that nature is intelligible for our cognitive faculties, something that as we saw in chapter 3 (esp. section 3.3), both Kant and Wittgenstein assume.
Proof: The proof is straightforward.

If there is an extension of \( I(G) \) with the pair \( \langle I(a), \text{yes} \rangle \) satisfying the constraints, then there is a smallest extension with these properties. Hence, we can be sure that if the interpretation function can be adapted to the constraints, there is a unique minimal way to do so. Given this, the following is a proper definition.

6.2.16. Definition. [Update rules for weakly evaluatives]
Let \( \sigma = \langle \alpha, \epsilon \rangle \) be a basic state.

1. \( \sigma[G(a), N, C] = \emptyset \) if there is no extension \( J \) of \( I_{\alpha} \) such that \( J(G, N, C)(I(a)) = \text{yes} \) and the basic constraints are satisfied.

Otherwise, \( \sigma[G(a), N, C] = \sigma' \) where \( \sigma' \) is determined as follows.

   (a) \( I_{\alpha'} \) is the smallest extension \( J \) of \( I_{\alpha} \) such that \( J(G, N, C)(I(a)) = \text{yes} \) and the basic constraints are satisfied.

   (b) \( T_{\alpha'} = T_{\alpha} \).

   (c) \( I_{\epsilon'} \) is the smallest extension \( J \) of \( I_{\alpha} \) such that:

      i. \( J(G, N, C')(d) = \text{yes/no} \) for all \( d \) and \( C' \) such that \( I_{\alpha'}(G, N, C')(d) \) is undefined and \( I_{\epsilon'}(G, N, C')(d) = \text{yes/no} \);

      ii. \( J(G\text{-er}, N)(d, d') = \text{yes/no} \) for all \( d, d' \) such that \( I_{\alpha'}(G\text{-er}, N)(d, d') \) is undefined and \( I_{\epsilon'}(G\text{-er}, N)(d, d') = \text{yes/no} \);

      iii. the constraints are satisfied.

   (d) \( T_{\epsilon'} = T_{\epsilon} \).

2. \( \sigma[G\text{-er}(a, b), N] = \emptyset \) if there is no extension \( J \) of \( I \) such that \( J(G\text{-er}, N)(I(a), I(b)) = \text{yes} \) and the constraints are satisfied.

Otherwise \( \sigma[G\text{-er}(a, b), N] = \sigma' \) where \( \sigma' \) is determined as follows.

   (a) \( I_{\alpha'} \) is the smallest extension \( J \) of \( I_{\alpha} \) such that \( J(G\text{-er}, N)(I(a), I(b)) = \text{yes} \) and the constraints are satisfied.

   (b) \( T_{\alpha'} = T_{\alpha} \).

   (c) \( I_{\epsilon'} \) is the smallest extension \( J \) of \( I_{\alpha} \) such that:

      i. \( J(G, N, C')(d) = \text{yes/no} \) for all \( d \) and \( C' \) such that \( I_{\alpha'}(G, N, C')(d) \) is undefined and \( I_{\epsilon'}(G, N, C')(d) = \text{yes/no} \);

      ii. \( J(G\text{-er}, N)(d, d') = \text{yes/no} \) for all \( d, d' \) such that \( I_{\alpha'}(G\text{-er}, N)(d, d') \) is undefined and \( I_{\epsilon'}(G\text{-er}, N)(d, d') = \text{yes/no} \);

      iii. the constraints are satisfied.

   (d) \( T_{\epsilon'} = T_{\epsilon} \).
6.2. Sketch of a model

We did not prepare the reader for the two (c) clauses in the definition above. They are there to make sure that the agents keep expecting things to be normal if what they learn does not force them to think otherwise. When you have come to accept that Alf is tall, you will have to give up the expectation that he was neither tall nor short, but you may perhaps still go on expecting Bert is neither tall nor short. But notice that by Comparativity this means you will now expect Alf to be taller than Bert. And so, if by any chance the next thing you learn is that Bert is taller than Alf, you will have to give up this new expectation right away. The (c) clauses take care of this and similar situations. Expectations supplement our evaluations.

Notice that this definition is independent of there already being a line drawn between the people we call tall and those we call not tall. There might be a line already drawn, but it need not be. This is an open challenge to the widespread assumption that to model gradable adjectives, it is necessary to isolate a standard of comparison.

For unrestricted judgements featuring strongly evaluative adjectives, it will be a presupposition for \( G(a) \) to be accepted that you have tested \( a \) for yourself (and for the case that \( C = I(N) \) it is a necessary condition that this test had a positive outcome). This way the Experience constraint will be satisfied. To satisfy the Universality constraint, the expectations in \( T_{\alpha} \) have to be updated. In other respects, the conditions are the same as for weak evaluatives.

6.2.17. Definition. [Update rules for strongly evaluatives]

Let \( \sigma = \langle \alpha, \epsilon \rangle \) be a basic state.

1. \( \sigma[G(a), N, C] \) exists only if \( I(a) \in \text{dom} T(G, N, \text{addressee}) \). If so, the following holds.

   \( \sigma[G(a), N, C] = \emptyset \) in each of the following cases.

   (a) \( C = I(N) \) and \( T_{\alpha}(G, N, \text{addressee})(I(a)) = \text{no} \), or

   (b) there is no extension \( J \) of \( I_{\alpha} \) such that \( J(G, N, C)(I(a)) = \text{yes} \) and the basic constraints are satisfied, or

   (c) \( C = I(N) \) and there is no extension \( T \) of \( T_{\alpha} \) such that for all \( x \in A, T(G, N, x)(I(a)) = \text{yes} \).

Otherwise, \( \sigma[G(a), N, C] = \sigma' \) where \( \sigma' \) is determined as follows:

   (a) \( I_{\alpha'} \) is the smallest extension \( J \) of \( I_{\alpha} \) such that \( J(G, N, C)(I(a)) = \text{yes} \) and the constraints are satisfied.

   (b) \( T_{\alpha'} = T_{\alpha} \).

\(^{42}\)Here, we assume that agents start out from the minimal state, and that the only changes are changes resulting from the updates we are defining here.
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(c) \( I_{\epsilon_a} \) is the smallest extension \( J \) of \( I_{\alpha_a} \) such that:

i. \( J(G, N, C')(d) = \text{yes}/\text{no} \) for all \( d \) and \( C' \) such that
   \( I_{\alpha_a}(G, N, C')(d) \) is undefined and \( I_{\epsilon_a}(G, N, C')(d) = \text{yes}/\text{no} \);

ii. \( J(G'er, N)(d, d') = \text{yes}/\text{no} \) for all \( d, d' \) such that
    \( I_{\alpha_a}(G'er, N)(d, d') \) is undefined and \( I_{\epsilon_a}(G'er, N)(d, d') = \text{yes}/\text{no} \);

iii. the constraints are satisfied.

(d) If \( C = I(N) \), then \( T_{\epsilon_a} \) is the smallest extension \( T \) of \( T_{\epsilon_a} \) such that for all \( x \in A \), \( T(G, N, x)(I(a)) = \text{yes} \). Otherwise, \( T_{\epsilon_a} = T_{\epsilon_a}^e \).

2. \( \sigma[G'er(a, b), N] \) exists only if \( (I(a), I(b)) \in \text{dom}T(G'er, N, \text{addressee}) \). If so, the following holds.

\[ \sigma[G'er(a, b), N] = \emptyset \]

in each of the following cases.

(a) \( T_{\alpha_a}(G'er, N, \text{addressee})(I(a), I(b)) = \text{no} \); or

(b) there is no extension \( J \) of \( I_{\alpha_a} \) such that \( J(G'er, N)(I(a), I(b)) = \text{yes} \) and the constraints are satisfied; or

(c) there is no extension \( T \) of \( T_{\epsilon_a} \) such that for all \( x \in A \), \( T(G'er, N, x)(I(a), I(b)) = \text{yes} \).

Otherwise \( \sigma[G'er(a, b), N] = \sigma' \) where \( \sigma' \) is determined as follows:

(a) \( I_{\alpha_a} \) is the smallest extension \( J \) of \( I_{\alpha_a} \) such that \( J(G'er, N)(I(a), I(b)) = \text{yes} \) and the constraints are satisfied.

(b) \( T_{\alpha_a} = T_{\alpha_a} \)

(c) \( I_{\epsilon_a} \) is the smallest extension \( J \) of \( I_{\alpha_a} \) such that:

i. \( J(G, N, C')(d) = \text{yes}/\text{no} \) for all \( d \) and \( C' \) such that
   \( I_{\alpha_a}(G, N, C')(d) \) is undefined and \( I_{\epsilon_a}(G, N, C')(d) = \text{yes}/\text{no} \);

ii. \( J(G'er, N)(d, d') = \text{yes}/\text{no} \) for all \( d, d' \) such that \( I_{\alpha_a}(G'er, N) \) is undefined and \( I_{\epsilon_a}(G'er, N) = \text{yes}/\text{no} \);

iii. the constraints are satisfied.

(d) \( T_{\epsilon_a} \) is the smallest extension \( T \) of \( T_{\epsilon_a} \) such that for all \( x \in A \),
    \( T(G, N, x)(I(a), I(b)) = \text{yes} \).

We highlight two features of these rules which will be important in the analysis of faultless disagreements we will give after we introduce negation in subsection 6.2.4 below. First, accepting such unrestricted judgements presupposes having a response, either \text{yes} or \text{no}, to the test associated with the adjective. Updating one’s state with \textit{This cake is tasty} is otherwise not really different from updating our state with \textit{This cake is heavy} or with \textit{Alf is tall}. Second, a successful update requires that we expect of other interlocutors that they have a response to the
test matching ours. This will be important to see why there are taste disputes and other disagreements which are hard to resolve.

Before we move on, let us briefly discuss the notion of evaluativity that is sketched in the system, and how it compares with the ones mentioned in chapter 2 section 2.2. For us, evaluativity is mainly related to a change in our expectations, expectations about things and about others. Suppose I am told that Alf is a fast runner, and that he completes a marathon in less than 3h. If I do not know what the median time for marathon runners is nowadays, I will not be quite impressed, I do not know what is normal. Now you tell me that nowadays median time for runners is about 4h 28min. So Alf’s finishing time is salient, then I say Oh, Alf is a fast runner! This does not lead to any specific updates in my findings (actually, if I see Alf running on the street, I may not be that impressed because all I have seen so far are sprint runners), nor in my expectations about other people’s findings. For strongly evaluatives like tasty or beautiful, expectations play a crucial role, but one which is different to noticing that something is salient in the sense that it is not normal. Expectations here play a normative role because they concern what we expect of our interlocutors. When I am told This dessert is tasty, I need to test it for myself, to test it. If my test is positive, then I can say Oh yes, this dessert is tasty! But then I expect that other people’s tests will match my own, regardless of whether I know that, in fact, they do not. Strongly evaluatives mark salience because they signal that something, in this case a dessert, poses certain demands on all of us that bind us together, that is there for us all.

Think now of evaluativity as given by the dimensional/evaluative typology. Where Bierwisch saw a division between dimensional and evaluative interpretations of adjectives like heavy, a division that then led many to claim that some RGAs are polysemous, we claim that there is only one update function working on input coming from the tests $T$ we pass, and at the same time on information which hinges on logical constraints affecting the $I$'s. The claim we can distill from this is that for us, no unrestricted judgement featuring weakly evaluatives is “merely dimensional” or “merely evaluative, as Bierwisch would have it.

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43 We could have formulated the following constraint for weak evaluatives, similar but not identical to definition 6.2.13:

- **Weak Universality**
  
  If $G$ is weakly evaluative and $I(G, N, N)(d)$ is defined, then for all $x \in A$, if $T(G, N, x)(d)$ is defined, $T_x(G, N, x)(d) = T(G, N, x)(d)$, and if $T(G, x)(d)$ is not defined, $T_x(G, N, x)(d) = I(G, N, N)(d)$.

What is a normative expectation in the case of strongly evaluatives would be a default expectation in the case of weak evaluatives. For a weakly evaluative adjective, if you accept Alf is fast and you have no evidence to the contrary, you will expect every agent (including yourself) to find Alf fast. Universality is weaker in this case because for a strongly evaluative adjective, expectations hold even after you have learnt that other’s findings are not in tune with your own.
When you think of evaluativity as metalinguistic usage, you should see that in our system evaluativity is not sketched as the power to induce metalinguistic negotiations, or to have interpretational uses, for this is something that just about any judgement may lead to in the update setting.

Last but not least, consider evaluativity as valence in attitude. Tests are vital for our own take on evaluativity, but the positive or negative outcome of the test should not be seen as a positive or negative emotional valence. Furthermore, for us the speaker’s tests matter but only to some extent because when it comes to interpreting an unrestricted judgement like *This is tasty*, tests that mainly matter are the addressee’s.

### 6.2.3 Updating with restricted judgements

Now we consider restricted judgements, i.e., sentences of the form *x finds y G*, like *I find this cake tasty*, *You find this suitcase heavy*, or *She finds this exercise difficult*. The rules work the same for weakly and strongly evaluative adjectives.

The language given in definition 6.2.4 supplies translations for sentences of the form *x finds y G*, but not for *x finds y not G*, or for *x finds y G and H*. Of course, a fully fledged theory should supply a means to do so. We could and would do so by introducing complex predicates, but it would lead us too far away from our main goals to so here. What is important here, though, is that we would not do it by turning *Find* into a relation between an agent and a proposition.

In our system sentences of the form *Find(G, x)(a)* carry the presupposition that the agent *I(x)* has tested the *G*-ness of *I(a)* for him/herself. To find the pie tasty, you must have tasted it; to find the exercise difficult, you must have tried it, to find the song terrible, you must have listened to it. If there has been such a test, then the sentence is acceptable if this test had a positive outcome, and not acceptable if this test had a negative outcome. As we explained when we introduced the test functions, the only contextual factor that is important here is the comparison *base*. The comparison classes do not come in.

#### 6.2.18. Definition. [Update rule for restricted judgements]

Let *σ = (α, ε)* be a basic state.

1. σ*Find(G, x)(a), N* is determined as follows.

   (a) Suppose *x ∈ {i, (s)he}*.

   Then if *T(G, N, I(x))(I(a)) = no*, σ*Find(G, x)(a), N* = ∅.

   Otherwise, σ*Find(G, x)(a), N* = σ′ where σ′ is determined as follows.

   i. *Iασ′ = Iασ*  

---

[44]Actually, on our account *x does not find a G* means the same as *x finds a not G*. ¬*Find(G, x)(a)* carries the presupposition that a test has been taken (just like *Find(G, x)(a)* of course), and states that the outcome was not positive. See subsection 6.2.4 for details.
ii. $T_{\alpha,\sigma}$ is the smallest extension $T$ of $T_{\alpha,\sigma}$ such that
$T(G, N, I(x))(I(a)) = \text{yes}$

iii. $I_{\epsilon,\sigma} = I_{\epsilon}$
iv. $T_{\epsilon,\sigma} = T_{\epsilon}$

(b) Suppose $x = \text{you}$.

If $\langle I(a) \rangle \not\in \text{dom}(T(G, N, \text{addresssee}))$, $\sigma[\text{Find}(G, \text{you})(a), N]$ is not defined.

If $T(G, N, \text{addresssee})(I(a)) = \text{yes}$,
$\sigma[\text{Find}(G, \text{you})(a), N, C] = \sigma$.
And if $T(G, N, \text{addresssee})(I(a)) = \text{no}$,
$\sigma[\text{Find}(G, \text{you})(a), N] = \emptyset$.

2. $\sigma[\text{Find}(G-\text{er}, x)(a, b), N]$ is determined as follows.

(a) Suppose $x \in \{i, (s)he\}$.

Then if $T(G-\text{er}, N, I(x))(I(a), I(b)) = \text{no}$,
$\sigma[\text{Find}(G-\text{er}, x)(a, b), N] = \emptyset$.
Otherwise, $\sigma[\text{Find}(G-\text{er}, x)(a, b), N] = \sigma'$ where $\sigma'$ is determined as follows.

i. $I_{\alpha,\sigma} = I_{\alpha}$
ii. $T_{\alpha,\sigma}$ is the smallest extension $T$ of $T_{\alpha,\sigma}$ such that
$T(G-\text{er}, N, I(x))(I(a)) = \text{yes}$
iii. $I_{\epsilon,\sigma} = I_{\epsilon}$
iv. $T_{\epsilon,\sigma} = T_{\epsilon}$

(b) Suppose $x = \text{you}$.

Then, if $\langle I(a), I(b) \rangle \not\in \text{dom}(T(G-\text{er}, N, \text{addresssee}))$,
$\sigma[\text{Find}(G-\text{er}, \text{you})(a, b), N]$ is not defined.
Otherwise, if $T(G-\text{er}, N, \text{addresssee})(I(a)) = \text{yes}$,
$\sigma[\text{Find}(G-\text{er}, \text{you})(a, b), N] = \sigma$.
And if $T(G-\text{er}, N, \text{addresssee})(I(a)) = \text{no}$,
$\sigma[\text{Find}(G-\text{er}, \text{you})(a, b), N] = \emptyset$.

The general idea behind these rules is that accepting a restricted judgement does not thereby lead us to call a $G$ simpliciter. The (b) rules shows that when it comes to second-person judgements, it seems all we can do is trust the addressee because it seems she has the last word concerning her responses. We say that it seems because the (a) rules shows that it is not true that agents have the last word concerning their responses, since we interpret first- and third-person restricted judgement on the basis of what our states record about their tests. If we have reasons to think that the speaker’s or the third person’s responses to $a$ do
not match their judgements, we should protest and reject the update. Of course, we are not the ultimate authorities concerning the responses of others, but nor are they about their own. This may be infrequent among respectful adults, but surely more frequent outside the circles of adult and polite talk, for instance between parents and children, or among youngsters. One is bound by trust because not every experience has a definite and determinate set of visible manifestations, but people’s speech and action have a clear impact on what claims concerning their experience we are ready to accept ourselves. We have left out of consideration $\sigma[F\text{ind}(G, you)(a), N, C]$ undefined if $I(a) \not\in \text{dom}(T(G, N, C, \text{addressee}))$, because, as we said above, we think that finding something of an object presupposes that you have had at least one experience with the object under assessment.

These rules may suggest that $\text{Find}$ only licenses matters of taste and not matters of fact. However, our picture is a bit more complex than this because even though we distinguish $I$’s from $T$’s, we see as well that these components of our update rules are related, entrenched. Our conception supports as well the position according to which the criterion fixing what can be embedded under $\text{Find}$ is semantic, rather than syntactic. You need the $T$’s.

### 6.2.4 Adding negation

Agents can accept a statement, reject a statement, or be indifferent to it. Accepting $\text{not } \varphi$ means rejecting $\varphi$, rather than not accepting $\varphi$. In such a partial set up, one cannot define what an update with $\text{not } \varphi$ amounts to starting from the update with $\varphi$, because from the latter one can only infer what it is to not accept $\varphi$, but not what it means to reject $\varphi$. We will have to complicate matters a bit. So far, we have been dealing only with positive updates, updates that result in accepting a certain statement. Let’s write $\sigma[\varphi]^+$ rather than $\sigma[\varphi]$ for these. Parallel to these, we will also define negative updates, updates that result in rejecting a statement, and write $\sigma[\varphi]^-$ for these. Once these are available, we can define a positive update with $\neg \varphi$ as a negative update with $\varphi$ and vice versa, like so:

$$
\sigma[\neg \varphi]^+ = \sigma[\varphi]^-$
$$
$$
\sigma[\neg \varphi]^-= \sigma[\varphi]^+$
$$

It is pretty straightforward to specify the negative correlates of definitions 6.2.16, 6.2.17, and 6.2.18. Just replace the occurrences of $\text{yes}$ in these definitions by an occurrence of $\text{no}$, and vice versa.

In many systems dealing with vague adjectives, a sentence like “John is tall” can be true, false, or undefined, where the latter means ‘neither tall, nor not tall, but something in between’. Given the definitions above, that is not how things

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45This stands against the idea that agents have privileged or infallible access to their experiences, an idea that many of the existing accounts for PPTs endorse.

46Defended by Collins [2013], against Sæbø [2009].
work out here. It could be that you do not know anything about John’s height. In that case your state will support neither John is tall, nor John is not tall. Or if in such a situation I tell you John is tall, you may be unwilling to accept my statement just because you do not trust me. But that does not necessarily mean that you reject my statement. (You would do that if you thought that John is not tall.) In this system, when you think that John is ‘something in-between’, this does not mean that you think that John is something in between tall and not tall, but something in between tall and short. You reject both John is tall and John is short, and you accept that John is neither tall nor short.

So what does our system say about faultless disagreement? Does it accommodate the fact that for weakly evaluatives in comparative form, disputes can be settled more easily than for strong evaluatives in comparative form? A disagreement is a sequence in which a speaker asserts an unrestricted judgement and the addressee denies it. This, according to the rules provided above, is always an inconsistent discourse in the sense that definition 6.2.1-(5) specified. In that basic sense, faultless disagreements are like any good old disagreement. For strongly evaluatives, the addressee does well in reacting with an outright denial. With a taste judgement, the speaker lays down expectations concerning the addressee’s responses to her tests. If the addressee’s current state does not match these expectations, it is only reasonable that she signals it. For weakly evaluatives, a disagreement concerning comparative unrestricted judgements can be settled in a straightforward manner because responses to tests have no bearing on the updates, neither the speaker’s nor the addressee’s. It is difficult to get out from a taste dispute because when \( G \) is strongly evaluative as in the case of tasty, the addressee accepts or rejects the speaker’s claim on the basis of her prior commitments, and on the basis of her \( T \)’s. How can we change someone else’s \( T \)’s? It is not just a matter of changing someone’s mind, but also of changing someone’s taste. Given the constraints, we cannot offer proofs to persuade someone to adopt a given judgement if her own response to the \( T \)’s does not accord with what the update rules require. If our interlocutor does not agree with our \( T \)-responses, there is not much we can do to persuade her of the opposite.

It is important to keep in mind that in this system the state that is being updated is the state of the addressee, and that the pronoun ‘I’ does not refer to this agent, but to the speaker. This is relevant now that we want to check that there is no state supporting both This is tasty and I don’t find this tasty, because strictly speaking that only holds in a reflective situation where the speaker and the addressee are the same. Given definition 6.2.17 a necessary condition for a positive update with Tasty(a) is that \( T_{a_\alpha}(Tasty, addressee)(I(a)) = \text{yes} \), whereas according to definition 6.2.18 \( ¬Find(Tasty)(i, a) \) can only be accepted if \( T_{a_\alpha}(Tasty, speaker)(I(a)) = \text{no} \).

So in our system (a) below is incoherent. But for third-person restricted judgements, or when \( G \) is weakly evaluative there are no problems.
Chapter 6. Testing and tasting: a sketch of a model

(2)  
a. (!) This is tasty but I don’t find it tasty.  
b. This is tasty but she doesn’t find it tasty.  
c. This is tasty but people don’t find it tasty.  
d. This is heavy but I don’t find it heavy.  
e. [Looking at fig. 2.1 in chapter 2] I find the segment in the image above longer than the one in the image below.

When G is weakly evaluative, as in (d)-(e), what we get after we update a discourse with the discourse is a disharmonious state in the sense given in definition 6.2.11 not the absurd state.

Why is it that in some cases, when speaker and addressee are not peers, it seems that there is no contradiction in cases like (a)? Putative counterexamples are scenarios where there is an asymmetry in expertise, as when a teacher addressing her students: This is difficult but I don’t find it difficult. But in such cases the state that really counts is the addressee’s. Still, the discourse is consistent, but not coherent.

### 6.2.5 Gradability recast

What picture of gradability comes out of the model we have sketched here? The most salient difference between our approach and most available ones is that we provide update rules instead of adopting a truth-conditional approach. But this is not a difference that cannot be made up for technically, for it is not hard to define a truth-conditional model that is equivalent to a dynamic one. Philosophical reasons why we prefer this modeling strategy were given in section 6.1 above. There are, beyond this first observation, a few of differences and coincidences we would like to underscore.

Our analysis most obviously differs from degree-based semantics, first and foremost because in our model we do not rely on degrees or scales in order to account for the meaning of RGAs. Perhaps a more stunning piece of minimalism our approach leads to is not to rely on standards of comparison, also known as cut-off points. Given how widely accepted this idea is nowadays, our move might seem surprising, for to some it may sound impossible to define the interpretation of gradable adjectives without the aid of a standard of comparison. But our system shows how it is possible to model the interpretation of gradable adjectives without supposing that a line must have been drawn somewhere in advance in order to say whether an adjective applies to an object. This not only for strongly evaluatives like tasty or beautiful with respect to which drawing a line is hardly reasonable, but also for weakly evaluatives like heavy or long. We sometimes draw lines but we do not need to do so in order to interpret these adjectives.

47Note as well that in order to be felicitous there needs to be some contrastive stress on ‘I’, which may be interpreted as a switch in focus.
Like delineation-based approaches, we take gradability to be due to context-sensitivity rather than to the existence and binding of degree variables. For us, this context sensitivity reflects not just the conceptual capabilities of an agent who can discriminate kinds of objects. This sensitivity also reflects the role that experience has on how we are able to structure a domain of objects. Moreover, the way partiality and precisification relate in delineation-based approaches is an ideal picture that, for being so ideal, we do not consider as basic. The ideal picture in which the end result of the evaluation process would be a partition of $C$ in a number of equivalence classes, each consisting of objects that are equally $G$ is a possibility in our system, but not a cardinal rule. Experience changes and evolves in a less ideal way than what such a rule would predict. Another example of lighter cognitive constraints is that for us the positive form does not require that we are able to find a comparable object such that it is not $G$. Interpretations are also less determining in that they may work by filling in a comparison base which is more general, less informative than a comparison class.

A final point is a general one. For delineation-based approaches, the positive form is basic and the comparative is derived. For degree-based views, the comparative is basic and the positive is derived. In our view, there is no primacy of either the positive or the comparative form. It is partly for this reason that we are in a more comfortable position to handle the differences in how subjectivity enters into PPTs vs. other RGAs.

### 6.3 There is something here for everybody

We want to set a tone of optimism with respect to the debate concerning the semantics of PPTs. We hope there is something in our story for everybody — contextualists, relativists, absolutists, and expressivists —, while we also believe that some of the problems discussed in chapter 3 are precluded in our view. We saw in that chapter that theories aligned in these four poles make important contributions to our understanding of PPTs and their subjectivity. We want to mention here a few observations we are able to accommodate in our view, and highlight the main differences that set our approach apart. Obviously, the main difference between our view and the existing ones is that the model is not given as a truth-conditional semantics, but as an update semantics. But the differences we are concerned with here are more interesting than this, again, given that it is not a technical prowess to turn an update system like this one into a truth-conditional one, if one has the time and the interest.

Contextualists highlight the importance of the context of utterance in the interpretation of evaluative judgements. Update semantics incorporates context of utterance in its backbone because of the requirement of coherence: an agent is required to utter only sentences which he accepts herself. When our speaker says that something is tasty or expensive, her own state should support these claims.
So our system ties up context of utterance and context of assessment in the
consideration of what speaker and addressee undergo in communication, but this
is not to make any of these decisive. Both poles are present in the conditions and
the outcome of updating with any utterance. The metalinguistic strategy presses
the idea that gradable adjectives lead to a change in the common ground but
that they can also affect the prevailing interpretation of the adjective to the effect
that the acceptable discourses after a claim is made. In a way, our view agrees
with the core of this view, for whenever an evaluative judgement is accepted,
the set of extensions of a state changes. However, update semantics takes the
metalinguistic or interpretational use to be just what any meaningful utterance
does, since meaning is conceptualised precisely as context change potential.

Relativists highlight the importance of context of assessment in the interpre-
tation of evaluative judgements. By setting up our model as an update system,
the rules focus on what goes on when an addressee is confronted with an eval-
uative judgement, so context of assessment is incorporated into the very core of
the meaning of gradable adjectives. Indeed, a judgement might be acceptable for
only some agents, while others might not accept it or even reject it, which re-
fl ects the instability of such claims when compared to non-evaluative judgements.
However, the (non) acceptability of a judgement depends on the agent’s previous
judgements, on the outcome of her tests, and on the constraints that structure in-
tentional states. As mentioned before, when speaker and addressee are obviously
non-peers, what matters is really the addressee’s position. This way of handling
this phenomenon puts it closer to similar instances of consistent but incoherent
discourse.48 We also saw in chapter 3 that retraction, that is, rejecting one’s past
judgements, is argued to be a decisive success of relativists over contextualists.
Note that we do not incorporate tense to the system we sketch, so a full account
of the issue is not directly available. Still, for us, if one would have to reject
one’s own evaluative judgement like This cake is tasty or I find this cake tasty,
one’s tests must have changed. But a change in one’s responses is not a mistake,
at least not in the sense that a proof could be offered to one’s past self. A test
constrains the further judgements we can make, but judgements by themselves
cannot change the outcome of our tests.

Perhaps the most extreme view in its simple form, absolutism holds that
taste judgements are just like any other judgement, that the claims we make
about whether something is tasty or beautiful have the same assertive force as
those we make for whether a watch are digital or whether a woman is pregnant.
In our model, this insight is incorporated because evaluative judgements make
claims to the agreement of others, which partly reflects the Kantian basis of our
philosophical analysis. What is peculiar to some evaluative judgements is that

48One can treat in a similar way the case of counterfactuals where the addressee’s state is
the one that is solely at stake. Cf., fn. 8 above. In this sense, our model dispels the apparent
special status of exocentricity as a distinctive feature of PPTs.
they are not made on the basis of evidence which can resolve a disagreement. An agent who does not know Alf or Bea may accept a judgement like *Alf is tall* or *Alf is taller than Bea* because if she were to go and check Alf’s and Bea’s heights, the results she would obtain would be in principle the same as the speaker’s own results. But an agent who is told that a given cake is tasty has to check for herself, the test depends on her appraisal and the way this may affect her ulterior linguistic and non-linguistic behaviour which would render the outcome of the test visible for others. This test is not a conventional method, even if each of us has to do the same to see whether a cake is tasty, namely, try it and savour it. So an unrestricted evaluative judgement like *This cake is tasty* demands the agreement of others, but in absence of a publicly available means to agree, such a judgement relies on the agent’s own responses and on the expectations she has about the responses of others.

Of course, the nuanced forms of absolutism we discussed in chapter 3 make subtler claims, for they would say that PPTs serve to make evaluations about the opinion of people in general, based on first-person experience. This statement may sound exactly like how our model deals with strongly evaluative adjectives like PPTs, given that we also impose a requirement of experience on evaluative judgements in the constraints we give on intentional states. But the crucial difference is that our view deals with the normative dimension of unrestricted judgements because evaluations do not describe what people actually think but rather lay down expectations about what people should find. Our conviction regarding a taste judgement may be weakened when others turn out not to agree with it but the judgement is not thereby proved false, as nuanced absolutists would predict.

This model of gradable adjectives will be called by expressivist by some. We already argued in subsection 6.1.2 against the idea that update semantics, as it is, amounts to an expressivist undertaking. Unlike the regular expressivist, we do not assume that there is a cleavage between ordinary descriptive language and evaluative judgements. Our system handles within one framework judgements like *This is a cake* and like *This cake is tasty*. The choice of support preservation instead of truth preservation as the key semantic notion does not mean we think that what the actual world is like is irrelevant for our evaluative judgements, or that we think that evaluative judgements express non-cognitive states. If one still insists in calling our stance an expressivist view, one should note that our model does not suffer from the Frege-Geach problem. Despite the fact that on our account statements containing gradable adjectives do not express propositions in the ordinary sense of the word because they do not describe the world, we have seen in this chapter that there is no problem to give meaning to negation, and in appendix A the reader can find rules for conjunction and disjunction of this kind of statements. Certainly, to take this point, the reader should accept that it is wrong to think that negation, conjunction, disjunction, etc. are by definition truth functions. At best they reduce to truth functions when designing formal models.
bearing exclusively on non-evaluative judgements. But all you need to make sense of these logical connectives is an underlying Boolean Algebra (or something akin to that). And sometimes there is no such thing but as appendix A shows for languages with gradable adjectives there is no such problem. So one should see that although dynamic semantics and, in particular, update semantics can be used by the expressivist to account for what she thinks is a distinct kind of natural language expressions with a distinct kind of meaning one can also see that update semantics provides a framework in which the dispute between the truth-conditional and the expressivist semanticist does not arise.

Kosher expressivism sees the expressive-affective dimension as a pragmatic layer coming upon the semantic import of taste judgements. Semantically, a claim like *This cake is tasty* amounts to *This cake is tasty to Alf* when Alf is the speaker, or *This cake is tasty to such-and-such people* when it is used to report the outcome of a survey. Pragmatically, it affects the addressee because such a claim invites the intended audience to adopt one’s own attitude. This subject-transcendent dimension is present in our system in a stronger guise. For us, the subject-transcendent dimension is present in evaluative judgements beyond the specific case of taste, it is part of their semantics, and it is normative and not a means of persuasion.

We hope to have shown why the system we have sketched collects some of the insights of the different views on PPTs we have reviewed. It is time to conclude this chapter.

### 6.4 Conclusion and challenges ahead

One would perhaps expect to find here a general discussion on metasemantics, on what notion of meaning we get from update semantics, and why it leads to less complications than the one inherited from truth-conditional semantics when dealing with the case of PPTs among RGAs. But we trust that the core of this discussion is present already in this chapter, and we feel that we would be repeating ourselves at this point. What we want to do here is include a list of issues that our simple sketch does has left aside. This way, we can see what the next steps should be.

This list of loose ends starts with the most obvious urgent pending task. We should get to spell how the system could deal with absolute gradable adjectives and, for contrast, cases of privative adjectives, and non-gradable adjectives. The sort of partial approach we have adopted here might make it difficult to see the solution for absolute adjectives coming in delineation-based theories, i.e.,

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49 That is why you cannot have the disjunction or the negation of an imperative for example. You can have *walk or talk!* but you cannot have *walk! or talk!* You can have *don’t walk!* but you cannot have *not(walk!)*.

50 This is the strategy in, e.g., Willer [2014].
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as a comparison with respect to the whole domain. In our picture we have not made a distinction between stage- and individual-level. The relative vs. absolute typology has been accounted for exploiting this distinction. This would be a possible route for us. Perhaps a more straightforward treatment could be achieved by thinking of absolute gradable adjectives being related to rule-based classification, which could be implemented via constraints (but these would be of lexical nature). We have also left out matters concerning adjectival polarity, interadjective comparisons, and multidimensionality. The latter is quite urgent given that aesthetic adjectives have been recently argued to be multidimensional.

Superlatives have been left out from the start, in chapter 2. The case of extreme adjectives like delicious, excruciating, huge which are closely related to the ones we have examined, and whose meaning has been thought to be superlative, require that this part of the story is effectively in place. While this may seem like something that one can simply derive once one has an account of the comparative, when we think of strongly evaluatives and the role tests play in establishing the comparative, we encounter a possible challenge. If I say This cake is the tastiest one in the shop, then I might have to compare the result of one the present test with a host of other tests. In this case (and maybe even beyond this case), an issue we raised in chapter 3: can we compare experiences beyond the immediate? On what plane can we put them? The fact that experience comes with external manifestations, i.e., with linguistic and non-linguistic expressions which are associated with them, may play a key role as an external anchor. But of course, the comparison cannot reduce to these external manifestations, for we do not need to recall and contrast our sayings and gestures when we make comparative or superlative judgements.

Even though we do not provide rules for intensifying adverbs like very, it is not hard to imagine how this would look like. Intuitively very tall means tall among the tall ones. To be very tall in comparison class $C$ is the same as to be tall in the comparison class given by the set of objects that are tall in $C$. The case of so-called evaluative adverbs like remarkably, fortunately, oddly also seems to be a nice one to think of, partly given that linguists have suggested that one should handle them in a semantic dimension different from ordinary truth-conditional content. It is easy to imagine that we could get a story about the role tests play here, as a nice mirror case of how, e.g., presumably works for epistemic states. Matters are, however, more subtle with adverbs like quite, rather and almost, slightly. Intuitively, what that rather tasty mean?

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51 In Toledo and Sassoon [2011].
52 Taking insights from McNally [2011].
53 Concretely, in McNally and Stojanovic [2014], the reason being that “aesthetic judgments are typically based on the application of a multiplicity of criteria at the same time.” (p. 11)
54 This idea is already suggested by Wheeler [1972].
55 Here we follow the claim made by Klein [1980].
56 Not many occurrences are found in a quick search in the BNC, but there are some.
something like *tasty, but not as tasty as it could be?* If this involves comparing a present experience, not with a past one, but with an ideal one, how could we handle this?

Concerning attitude verbs, one would have to carefully check crosslinguistic issues concerning how the English *find* relates to various candidate equivalent verbs in other languages. The French *trouver*\(^{57}\) is more lenient in how it allows for *that*-phrases than the English *find*. The German *finden*\(^{58}\) can embed definitional sentences (Ich finde, das ist ein Stuhl = I consider this a chair) and deontic statements (Ich finde, indirekte Steuern sollen abgeschafft werden = I think indirect taxes should be abolished). The Dutch *vinden* can easily take complete clauses as its complement and still be a way to express one’s experience, and it can be used to express an assessment concerning an agent different from the matrix subject (Hans vindt Sint, the movie, leuk voor Paul = Hans finds Sint, the movie, fun for Paul).\(^{59}\) Moreover, one would have to consider propositional attitudes like *know, believe, think*, and to properly account for the difference, or lack thereof, between saying *I know this is tasty* and *This is tasty*.\(^{60}\) A last idea here concerns the remark we made in chapter 2, fn. 93 about how *find* relates to perception verbs such as *see* or *hear* which can embed small clauses as well as that-clauses. But while *John heard Mary loose her voice* does not imply *John heard that Mary lost her voice*, nor does the latter imply the first, in the case of *find* the that-clause seems to imply the small clause.

As we announced it early on in this chapter, our domain of objects only comprised individual items, not mass nouns, which introduces complications in how to check whether the *Experience* constraint is met for strongly evaluatives. And as declared in fn. 39 when presenting *Universality*, the full Kantian claim of universality is not dealt with in the system as it stands now. For this, with *This is tasty*, the addressee is expected to find this tasty, *and* she should expect others to find this tasty, but this latter constraint is not included in the present setting to keep matters simple and focused. We have also left tense out of consideration, for simplicity, but this would have to be taken care of to see exactly how people change their minds in time, and to understand the contrast between *This was tasty, now it’s not* and *I found this tasty, now I don’t*.

Notorious absentees in our investigation are *good, better; bad, worse*. Our excuse for leaving them aside in chapter 2 — mainly to avoid entering into the complex and vast debate in metaethics — could surely be judged to be a weak one. A similar disappointment could arise when the reader finds that we left colour adjectives aside. Again, our justification was mainly related to space and time, although we did point out that in certain respects (e.g., in how they lend

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\(^{57}\)See esp. Bouchard [2012].

\(^{58}\)Here we are following Umbach [2014].

\(^{59}\)As Paenen [2011] indicates.

\(^{60}\)This relates to how there is not much difference between *I know this is a hand* and *This is hand*, something Wittgenstein examines critically in [Wittgenstein 1969].
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themselves to testimony) colour words are not to be assimilated to PPTs. We also should pay more attention to emotion (happy vs. sad) and existential adjectives (depressed, anxious) which we included among PPTs in chapter 2, but about which we did not say much. We noted at some point, in a footnote, that happy come in complex verbal constructions like happy to meet you, which so far have not been discussed in the literature on PPTs.

A more ambitious goal but that that lies beyond what a formal model of the sort we have given can provide is to bring out subtle differences among adjectives like tasty, appetising, flavourful, good-tasting, etc. More would have to be said as well about heterogeneous adjectives like skilful which cannot be easily classified as weakly vs. strongly evaluative in our account. Of course, whether and how one should seek to integrate formal semantics and lexical semantics are challenging issues going beyond our present concerns, but they are certainly related to our research and should not be ignored.

A last remark is the following. To say whether an object $d$ is in the interpretation of $G$, the judgement is relative to objects in its kind $N$. Even though we introduce comparison bases $N$ as a sort of formal articulation of the kind of transcendental order in nature that we need to assume in order for cognition and science to be possible, in the end we are saying that the interpretation of $G$ in positive form relies on a comparison. It does not rely on an explicit application of the comparative $G$-er, so it is true that in our system the positive and the comparative are independent. But still, the positive involves judging the object relative to other, similar objects. So we bring to ourselves the issue we raised for delineation based approaches at the end of subsection 3.1.3 in chapter 3: the comparability of objects presupposes that we already have a way to sort them out. How do we know which are the objects in $N$, or which are the $N \in c(G)$ before independently of knowing the meaning of $G$?

\footnote{Considerations on the differences and similarities between tasty and tastes good can be found in Pearson [2013b], ch. 5, where she suggests that individual-level PPTs and stage-level PPTs should lead to different semantics for each class.}