

Definite Descriptions are Directly Referential

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Abstract

Amongst those who have analysed definite descriptions as referential, most have considered them to be indirectly referential. In contrast, I will argue that definite descriptions are directly referential, in the sense of Kaplan (1980). In other words, the informational contents of utterances of definite descriptions are identical to their referents. In this thesis, I will first present a semantic framework inspired primarily by Kaplan (1980) with additions from Russell (2008) and Salmon (1986). I will then present a semantic analysis of definite descriptions whereby they are directly referential expressions. This analysis will also concur with Lewis' (1979) suggestion that the referents of definite description utterances are determined by comparative salience. I will argue that this analysis provides the most theoretically virtuous explanation of the various semantic properties of definite descriptions. I will also examine a series of problem cases for this analysis and argue that they can be resolved through independently justified means. Firstly, I will discuss Frege's Puzzle, as presented by Salmon (1986), as it relates to the directly referential analysis of definite descriptions, as well as the related problem of *de dicto* indirect speech and propositional attitude reports. I will suggest that Salmon's approach to these problems in the case of proper names will also apply in the case of directly referential definite descriptions. Secondly, I will argue that Kripke's (1977) analysis of the phenomena discussed by Donnellan (1966) is compatible with the directly referential analysis of definite descriptions. Thirdly, I will provide an ambiguous analysis of modal operators to account for *de dicto* modal claims. I will conclude by discussing possible links between this analysis and analyses of other singular terms.¹

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Introduction

The main focus of this thesis is *informational content*.² The informational content of an utterance of a sentence can loosely be understood as what that utterance says, or the claim that it makes. The informational content of an utterance of a subsentential expression can then be understood as what that utterance contributes to the informational content expressed by the utterance of a sentence it is part of. The notion of informational content is very important philosophically for a number of reasons. In particular, informational content plays a central role in analyses of indirect speech reports, propositional attitude reports and modal claims.

In this thesis, I will be particularly concerned with the informational content of utterances of *definite descriptions*. I will claim that the informational contents of utterances of such expressions are identical to their referents. To use Kaplan's (1980, p. 493) terminology, I will claim that definite descriptions are *directly referential expressions*. While there has been much debate over whether definite descriptions are referential or quantificational expressions, most of those who have held that definite descriptions are referential have gone on to claim, usually without much argument, that definite descriptions are indirectly referential.³ One major exception to this is Donnellan (1966), who claimed that some, but not all, utterances of definite descriptions were directly referential. Contrary to all these figures, I will make the original claim that all utterances of definite descriptions are directly referential.

I will present this claim, that definite descriptions are directly referential, in the form of a *semantic analysis* of definite descriptions: a theory which assigns each definite description a meaning.⁴ These meanings will, relative to the context of an utterance of a definite description, determine the informational content (and referent) of that utterance. The reason I present this claim in the form of a semantic analysis, rather than any direct assignment of informational contents, is that (as I discuss in Chapter 2) different utterances of the same definite description may have different informational contents (and referents), while all utterances of the same definite description will have the same meaning. Such an analysis will also answer the question: in virtue of what do utterances of definite descriptions have the informational contents they do?

This thesis has two parts. In the first part, I will present a general semantic framework within which I will discuss and evaluate my analysis and rival analyses of definite descriptions. This framework will be based primarily on Kaplan's (1980) Logic of Demonstratives with extensions and revisions from Russell (2008), Salmon (1986) and myself. In the second part I will present my salience directly referential analysis of definite descriptions and argue that it is the correct analysis of definite descriptions.

²Cf. Salmon (1986, p. 1): "The topic of this book is the nature of the cognitive information content of declarative sentences". Unlike Salmon, I will not describe informational content as 'cognitive', as (to my ears) 'cognitive content' sounds like narrow mental content and (as I discuss in Chapter 2) the informational contents Salmon and I intend to discuss are wide mental contents. I will use the terms 'informational content', 'information' and 'content' roughly synonymously throughout this thesis (as I elaborate in Chapter 2).

³For example: Frege (1892), Kaplan (1980), Salmon (1986), Russell (2008). Salmon (1986, p. 20-21) does provide an argument for this conclusion, which I will examine in Chapter 7.

⁴More specifically, this semantic analysis will assign each definite description a constitution (a kind of meaning I will introduce in Chapter 1). In Chapter 3, I discuss why such a theory should be called a semantic analysis.

Part I will have three chapters. In Chapter 1, I will briefly sketch my General Framework and then elaborate on some of the notions that I will use to define it, such as ‘expression’, ‘use of an expression’ and ‘denotation’. In Chapter 2, I will examine the notions of informational content and (briefly) base. In Chapter 3, I will examine the other notions of meaning I will discuss, namely constitutions and characters. Part II will have four chapters. In Chapter 4, I will argue that definite descriptions are referential expressions, using existing arguments which I find persuasive. In Chapter 5, I will provide an answer to the question of what utterances of definite descriptions refer to, based on Lewis’ (1979) notion of salience. In Chapter 6, I will present several rival semantic analyses of definite descriptions, including my own salience directly referential analysis. In Chapter 7, I will argue that the salience directly referential analysis of definite descriptions best explains the evidence provided by native speaker intuitions. I will also look at some problems my analysis might seem to suffer, and examine how they might be addressed. Finally, I will present a formal system of contents and of constitutions in the appendix.

Part I

The General Framework

⁵In this thesis I shall provide a semantic analysis of definite descriptions. Before doing so I will need to present a *framework* within which I can frame this analysis. By a ‘framework’ I mean a system of terms, concepts and their relations which provide all the notions and distinctions necessary to frame and compare certain kinds of theory. The framework I will present in this chapter will be based primarily on Kaplan’s (1978, 1980) *Logic of Demonstratives*. It will also incorporate revisions and extensions to Kaplan’s framework as argued for by Russell (2008, 2010) and Salmon (1986, 1989), as well as a few details of my own devising. I will call this framework the *General Framework*. This framework is ‘general’ in the sense that it can be used to frame multiple, possibly incompatible analyses.⁶ This is important as I will argue for the truth of my analysis on the basis that it provides the best explanation of the relevant linguistic phenomena, but such an argument is only possible if all the rival analyses are comparable. By framing all these analyses in the same framework, the terms and distinctions of the framework provide the tools that allow such comparisons to be drawn.

In this part, I will present and explain the notions and distinctions of the General Framework. I will also show why all the distinctions the framework contains are necessary in order to capture important facts about the meanings of natural language expressions. This part will have three chapters. In Chapter 1, I will present a brief sketch of the General Framework and how the notions within it are related to each other, before elaborating on some of the notions that I will use to define the framework, such as ‘expression’, ‘use of an expression’ and ‘denotation’. In Chapter 2, I will focus on the notions of content and base, while in Chapter 3, I will focus on the notions of constitution and character.

1 The Four Kinds of Meaning

1.1 The Roles of Meaning

Semantic analysis is the task of developing systematic theories which attribute meanings to natural language expressions. This task is complicated by what Russell (2008, p. 43) calls “*the language myth*”. Russell (2008, p. 43) holds that there is a “pervasive pre-theoretic picture of the way language works—a mistaken picture.”: “The core of the folk picture . . . can be summarised in the following three theses:

- (1) To understand an expression is to know what it means.
- (2) The meaning of an expression in a sentence contributes to what the sentence as a whole says.
- (3) Which object(s) an expression applies to is determined by what it means.

⁵Throughout this thesis I will use sans serif to mention (and not use) expressions. Furthermore, within direct quotes I will replace whatever device was originally used to mark mentioned expressions with the use of sans serif.

⁶This is in contrast with a framework, tailor-made for a single theory, which cannot meaningfully be used to frame any other theories. Such frameworks have their uses, but would not be appropriate in this case.

... What is distinctive about the language myth—and what is mistaken about it—is the assumption that theses (1)-(3) are always satisfied by a single thing” (Russell 2008, p. 44).

If Russell’s (2008, p. 43) claims about the language myth are correct, all semantic theorists must therefore use very clear terminology to discuss meaning to avoid presenting a theory which “conflates three different kinds of meaning.” As I will discuss, I believe Russell is entirely correct here. The framework I present therefore differentiates the different kinds of meaning that play these different roles. Russell (2010, p. 187) elaborates on these three roles as follows:⁷

“(1) they are what speakers have to know about an expression in order to count as understanding it. For example, my brother counts as understanding **alacrity** if he knows *what it means*. (2) an expression’s meaning determines—in conjunction with the way the world is—the extension of that expression, such as its referent in the case of a singular term, or the set of objects which satisfies it in the case of a monadic predicate. (3) the meaning of an expression is what the expression contributes to *what is said* by a sentence containing it. The English sentence **muscle fibres are elastic** says that ... muscle fibres are elastic, but if the word **elastic** had had the meaning that the word **rigid** has, the sentence would have something different, namely, that muscle fibres are rigid.”

Kaplan (1980) also recognised these three roles for meanings, however he thought that the same kind of meaning played both role (1) and role (2). Both Kaplan and Russell call the kinds of meanings which play role (3) *contents*: “The *content* of an expression is what it contributes to the proposition expressed by a sentence containing it. This is the notion of content familiar from Kaplan” (Russell 2010, p. 193).⁸ However, Kaplan (1980, p. 505) used the term ‘character’ to refer to entities that fulfilled both role (1) and role (2): “The character of an expression ... determines the content of the expression⁹ ... It is natural to think of it as meaning in the sense of what is known by the competent language user.” In contrast, Russell (2010, p. 193) uses *character* to refer to only those things which fulfil role (1), while “the *reference determiner* of an expression is what determines the function from the way the world is to the extension of the expression ... The new picture allows for content, character and reference determiner to come apart”.¹⁰ We can then say that Kaplan conflates the notions of reference determiner and character within his notion of ‘character’. To discuss the things that fulfil role (2) I will use a slightly different notion to that of a reference determiner, which I will call a *constitution*. I will discuss the difference between these two notions, how it is that they

⁷There is a fourth role Russell (implicitly) identifies for meanings in theories of language: that of determining the analyticity of sentences. “Analytic sentences, on the other hand, are those for which the meaning alone—independently of the input of the world—is sufficient to make them true” (Russell 2010, p. 186). I will discuss this role of meaning briefly in Chapter 3.

⁸See Kaplan (1980, p. 500-501).

⁹It isn’t clear that determining the content of an expression is the same as determining its referent. This incongruence will be explained later.

¹⁰It should be noted that, although the framework allows these notions to come apart, it does not *require* it. Thus, although this division may not be needed for all semantic theories, it cannot do any harm.

can both be said to play the same role, and why I will use the notion of a constitution, in Chapter 3.

There is a further conflation in Kaplan's framework, pointed out by Salmon (1989, p. 370-378), that Russell does not discuss. Kaplan (1980, p. 504) considers contents to be *time-neutral*. However, Salmon (1986, p. 39-40) points out that there are in fact two notions of informational content within natural language: a time-neutral one and an *eternal* one. Salmon (1986) calls informational content in the eternal sense "*information content*" (p. 13) and informational content in the time-neutral sense "*information-content base*" (p. 27). Thus Salmon (1989, p. 373) argues that "Kaplan's notion of what he calls the 'content' of an expression is in fact a confused amalgamation of the information content and the information-content base." I will abbreviate Salmon's notion of (eternal) information content as 'content' and his notion of (time-neutral) information-content base as 'base'.¹¹

As I discuss in this part, there are cases where the same thing cannot serve as the content, base, constitution and character for a given use of language. I will therefore have to present my semantic analysis within a framework that allows these four notions to come apart. Thus, the General Framework will contain the notions of content, base, constitution and character. For simplicity I will not go into detail about either bases or characters in this thesis. However, it is important to note that they exist, so that the roles they play can be differentiated from the roles that contents and constitutions play.

1.2 Contents, Bases and Constitutions

Having made this distinction between contents, bases, constitutions and characters, two questions become apparent: in virtue of what do uses of language have the contents, bases, constitutions and characters they do, and what is the relation between these notions? As it stands, the General Framework will also provide an answer to some of these questions, and indeed the answers provided to these questions will themselves be closely related. Putting aside characters for now, the General Framework can be best understood as a *three-dimensional logical system*.¹² In each case the meaning at one level, together with relevant contextual factors, determines the meaning at the level below. These three dimensions are (in order) contents, bases and constitutions. The constitution of a use of language will then, relative to certain contextual factors, deter-

¹¹My terminology simplifies Salmon's in an additional way. Salmon (1986, p. 14) uses the term '(information) value' for what I call 'content': "Let us call the information component semantically correlated with an expression the *information value* of the expression." Salmon (1986, p. 14) reserves the term '(information) content' for the 'value' of a sentence-use: "As a limiting case, the information value of a declarative sentence is the piece of information it encodes, its information content." I will simplify Salmon's terminology by referring to both notions as contents. Note that this also brings my terminology into accord with that of Kaplan and Russell. Similarly, Salmon (1986, p. 27) uses the term '(information) value base' for what I call 'base', and reserves the term '(information) content base' for the 'value base' of a sentence-use: "Let us call the proposition matrix that a sentence ... takes on with respect to a particular context *c* the information-content base ... of the sentence with respect to *c*. More generally, we may speak of the information-value base ... with respect to a context, of a singular term, a predicate ... etc." I will simplify Salmon's terminology by referring to both notions as bases.

¹²Or as two two-dimensional systems stacked on top of each other, with the bottom dimension of one identified with the top dimension of the other.

mine its base, while its base will then, relative to certain contextual factors, determine content. Incidentally, its content will then, relative to certain contextual factors, determine its denotation. Characters occupy a somewhat tangential relationship to this three-dimensional system, which is why I have put them aside for now.

In specifying this determination relation between these kinds of meaning, the General Framework also specifies a *metasemantic theory* of contents and bases (i.e. an account of in virtue of what expression-uses have their contents and bases). What is left open is a metasemantic theory of constitutions and of characters and an account of the relation between characters and constitutions. I will leave these questions open, in the interests of generality, as I can remain neutral on these questions given my greater project of understanding informational content.

In this section I will briefly sketch this three-dimensional system, so that the relationship between these notions, the various relevant contextual factors, and other relevant linguistic notions is clear. I will then elaborate on these notions of meaning and why they are all required for the General Framework in Chapters 2 and 3. Some of the terms I will use to present this part of the General Framework, namely expressions, expression-uses, sentences, denotations and denotata, I have not yet introduced. I will explain these notions later in this chapter.¹³ At the end of this section there are several diagrams and a table which should clarify the General Framework.

1.2.1 Contents

Contents are the kind of meaning that plays the ‘what it says’ role. The content of a *statement* (i.e. the use of a declarative sentence) is a *proposition*.¹⁴ I will hold that propositions are *structured abstract objects* which contain and relate entities, properties and operators.¹⁵ The contents of uses of subsentential expressions are what those expression-uses contribute to the propositions expressed by the statements those expression-uses are a part of (and thus, in the limiting case, the content of a statement is the proposition it expresses).¹⁶ Contents determine *intensions*: functions from *worlds of evaluation* to denotata.¹⁷ As such, contents determine the denotation of an expression-use (when it has a denotation), relative to the world of evaluation of that

¹³I introduce these terms out of order as their relevance and roles will not be clear without at least some sense of the General Framework in the background.

¹⁴Kaplan (1980, p. 500): “The content of a sentence in a given context is what has traditionally been called a proposition.” Salmon (1989, p. 337): a “sentence . . . with respect to a particular possible context, has as its cognitive content in that context a piece of information, called a *proposition*.”

¹⁵See Salmon (1986, p. 13). This is not the only possible definition of a proposition. To give one example, for Stalnaker (1978, p. 315) “a proposition is a function from possible worlds into truth values” (i.e. what I will call a propositional intension). Nothing I say here will necessarily apply to ‘propositions’ more generally (indeed most of it will not).

¹⁶Furthermore, I will hold that the propositions expressed by statements will not have any constituents that are not contributed by a subsentential expression-use that is part of that sentence. The reason for this is that any such constituents would not be explicable. This means that the content of an expression-use must be a constituent of the content of any super-expression-use that expression-use is part of. To see why, suppose this wasn’t the case and that there was an expression-use X which was part of an expression-use $X Y$ which was part of a statement $X Y Z$ such that the content of X , which we can call X , was not a constituent of $X Y$. X must be a constituent of $X Y Z$, so it must be contributed by either $X Y$ or Z , however X is neither a constituent of $X Y$ or Z , so such a case is impossible.

¹⁷See Salmon (1986, p. 14).

use. Worlds of evaluation are possible worlds.¹⁸ Worlds of evaluation are necessary as the denotation of an expression-use is not always determined relative to the world that expression is used in. The intensions of contents are represented by the \downarrow *function*, in the sense that the intension determined by a content X is $\downarrow(X)$. Given that contents completely determine intensions, intensions are “subordinate semantic values” (Salmon 1986, p. 31).

Only *uses* of expressions (and not expressions themselves) have contents, as different uses of the same expression may have different contents. As Kaplan (1978, p. 83) notes: “The content of an expression is always taken with respect to a given context of use.” Some intensions are *partial functions*, and as such some expression-uses lack a denotation. Expressions which have uses which lack denotations can be called *partial expressions*. Different kinds of content denote different types of denotatum. Propositions, for instance, denote truth-values (when they denote anything). Thus propositions determine *propositional intensions*: intensions that return truth-values (when they return anything). Different syntactic classes of expression are associated with different classes of content. As discussed above, sentences are associated with propositions. Hence statements have propositions as contents (when they have contents) and truth-values as denotations (when they have denotations).

1.2.2 Bases

Bases also play the ‘what it says’ role, albeit in a *time-neutral* sense. In Chapter 2, I will discuss why the General Framework must contain both contents and bases. The base of the use of a sentence is a *propositional matrix*.¹⁹ The bases of uses of subsentential expressions are what those expression-uses contribute to the propositional matrices expressed by the statements those expression-uses are a part of (and thus, in the limiting case, the base of a statement is the propositional matrix it expresses). Bases determine *schedules*: functions from *times of evaluation* to contents.²⁰ As such, bases determine the content of an expression-use, relative to the time of evaluation of that use. Times of evaluation are particular points of time not fixed to any particular possible world.²¹ Times of evaluation are necessary as the denotation of an expression-use is not always determined relative to the time at which that expression is used.²² Given that bases completely determine schedules, schedules are subordinate semantic values.

Only *uses* of expressions (and not expressions themselves) have bases, as different uses of the same expression may have different bases. All schedules are total functions,

¹⁸Kaplan (1980) says that “*contents* . . . are evaluated in circumstances of evaluation” (p. 501) where “a circumstance will . . . include a possible state . . . of the world [and] a time” (p. 502). However, given my separation of (eternal) contents and (time-neutral) bases, I will also need to separate the modal and temporal aspects of the circumstance of evaluation. Furthermore, I will hold that each world of evaluation will at each point in time provide an ordering of the entities in that world at that time. For a given world w and time t , I will call this order \geq_w^t . I will explain the role of these orders in Chapters 2 and 6 and in the appendix.

¹⁹See Salmon (1986, p. 27).

²⁰See Salmon (1986, p. 28).

²¹For simplicity, I am here supposing that the same point in time can be identified across all possible worlds.

²²Salmon (1986, p. 26) notes: “Similarly, in some cases it may be necessary to incorporate a location as well as a time in order to obtain a genuine proposition, e.g. It is raining or It is noon.” For simplicity I will ignore these particular cases.

and as such any expression-use which has a base has a content (but not necessarily the same content). Different kinds of base determine different types of content. Propositional matrices, for instance, determine propositions as content. Thus propositional matrices determine schedules that return propositions. Different syntactic classes of expression are associated with different classes of base. As discussed above, sentences are associated with propositional matrices. Hence, statements have propositional matrices as bases (when they have bases), propositions as contents (when they have contents) and truth-values as denotations (when they have denotations).

1.2.3 Constitutions

Constitutions play the ‘what determines denotations’ role. The constitution of a sentence is a *propositional constitution*: a structured abstract object which contains and relates entities, properties and operators. The constitutions of subsentential expressions are what those expressions contribute to the propositional constitutions encoded by the sentences those expressions are a part of (and thus, in the limiting case, the constitution of a sentence is the propositional constitution it encodes). Constitutions determine *programs*: functions from *contexts of use* to bases.²³ Thus constitutions determine the base of an expression-use (when it has a base), relative to the context of use of that expression-use. Contexts of use are *indices* (i.e. tuples containing a possible world and various parameters defined in that world).²⁴ Contexts of use contain all the relevant contextual factors that determine what bases (and hence what contents) different uses of a given expression express. Given that constitutions completely determine programs, programs are subordinate semantic values.

Every use of a given expression has the same constitution. As such, as well as holding that expression-uses have constitutions, we can say that expressions themselves have constitutions. Some programs are partial functions, and as such (relative to certain contexts) expressions lack a base (and therefore a content). An expression which has a *partial program* can be said to have an *incomplete constitution*. Such an expression can be called an *incomplete expression*. Different syntactic classes of expression are associated with different classes of constitution. As discussed above, sentences are associated with propositional constitutions. Hence, statements have propositional constitutions as constitutions, propositional matrices as bases (when they have bases), propositions as contents (when they have contents) and truth-values as denotations (when they have denotations).

Programs, schedules and intensions can be used to define two other subordinate semantic values, both of which will be more important than programs or schedules to this thesis. The first kind of function is called a ‘character’ by Salmon (1986, p. 14), but his terminology is not useful for me, as I am using the term ‘character’ to refer to something else. Thus, to risk coining a term, I will call it a *colour*.²⁵ Colours are functions from contexts of use to contents. Given a context c as argument, the colour

²³See Salmon (1986, p. 28). Note that throughout this thesis, by ‘context’, I will mean ‘context of use’. Furthermore, by ‘for any c ’ I will mean ‘for any context of use c ’.

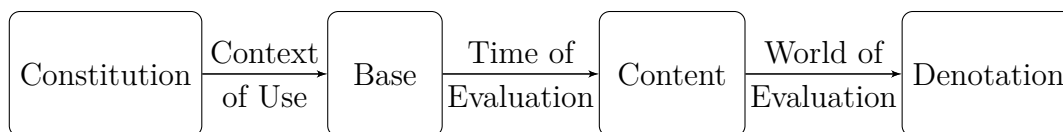
²⁴I will hold that one of those parameters is an ordering of the entities in the world parameter of the context at the time parameter of the context. For a given context c , I will call this order \geq^c . I will explain the role of these orders in Chapters 3 and 6 and in the appendix.

²⁵I mean ‘colour’ here in the sense of a distinctive quality.

of an expression will return the content a use of that expression has in the context c and at the time of evaluation c_t (where c_t is the time parameter of c). The colours of constitutions are represented by the \Downarrow function, in the sense that the colour determined by a constitution X is $\Downarrow(X)$. Colours can be derived from programs and schedules as follows: Given a context c , the program of an expression determines the base of the expression with respect to c . The base then determines the schedule of the expression with respect to c . Applying this schedule to the time of c (i.e. c_t) yields the content of the expression with respect to c (and c_t). Given that some programs are partial functions, some colours will also be partial functions.

The other subordinate semantic value that can be defined in terms of programs, schedules and intensions is what Salmon (1986, p. 15) calls a *contour*: “the function ... that determines for any possible context of utterance c the [denotation] ... that expression takes on with respect to c ” (and c_t and the world parameter of c , namely c_w). Contours can be derived from colours and intensions as follows: “Given any context c , the [colour] of an expression determines the [content] of the expression with respect to c . This, in turn, determines the intension of the expression with respect to c . Applying this intension to the possible world of the context c yields the [denotation] of the expression with respect to c ” (Salmon 1986, p. 15). The contour of a sentence will return TRUE for every context in which that sentence is true. Thus, we can identify the contour of a sentence with its *truth conditions*. Given that some colours and some intensions are partial functions, some contours will also be partial functions. There are therefore *truth-value gaps*: particular sentences and contexts such that the sentence has no truth-value in the context.

This part of the General Framework may be better understood using a diagram like the following:



A more detailed diagram, including subordinate semantic values, is given in Figure 1.²⁶ The table below should make clearer the relations between the terminology used by myself, Kaplan, Russell and Salmon.

²⁶Boxes with dashed lines indicate subordinate semantic values, and as such arrows with double lines indicate relations of complete determination (i.e. not relative to any contextual factor).

Me	Kaplan	Russell	Salmon
Character	Character	Character	<i>N/A</i>
Constitution		Reference Determiner	<i>N/A</i>
Program (Colour, Contour)		<i>N/A</i>	Program (Character, Contour)
Base (Propositional Matrix)	Content	Content	Information Value Base (Information Content Base, Propositional Matrix)
Schedule			Schedule
Content (Proposition)			Information Value (Information Content, Proposition)
Intension	Intension	<i>N/A</i>	Intension
Denotation (Extension, Referent)	Extension (Referent)	Extension (Referent)	Extension (Referent)

1.3 Expressions and their Uses

In the last section, I presented (part of) the General Framework in terms of expressions and uses of expressions. I will now elaborate on what I mean by those terms. By *expression* I mean a *sign* together with a constitution. By sign I mean a grammatically complete unit, formed from a series of (spoken or written) graphemes or phonemes. A sign without a constitution is meaningless, and requires an interpretation before it can become associated with a constitution (and therefore become an expression).²⁷ An expression with a propositional constitution as its constitution is a *sentence*. Expressions are the meaningful units of a *language*, and as such are associated with constitutions as constitutions are the only kind of meaning which remains constant across a language (as I will establish later). Given that I plan to present a semantic analysis of a class of English expressions, definite descriptions, I will therefore be concerned with English expressions. Furthermore, my greater project of understanding the informational content of these expressions also dictates an interest in constitutions (and therefore expressions). Given that constitutions (together with contexts) determine contents, a theory of constitutions provides a metasemantic theory of contents, which forms a necessary aspect of a full understanding of informational content. Note that my greater project of understanding informational content does not require a metasemantic theory of constitutions, as my interest in constitutions is only in the role they play in explaining contents.

By *use of an expression* I mean an expression together with a given *context of use*. A use of a sentence is a statement. Expressions and expression-uses have a type-token relationship. My use of the term ‘use’ is inspired by that of Strawson. Strawson (1950, p. 325) differentiates between “(B1) an expression, (B2) a use of an expression, (B3) an utterance of an expression.” He illustrates the notion of a use of an expression though an example:

²⁷I will discuss the relationship between interpretations and constitutions later.

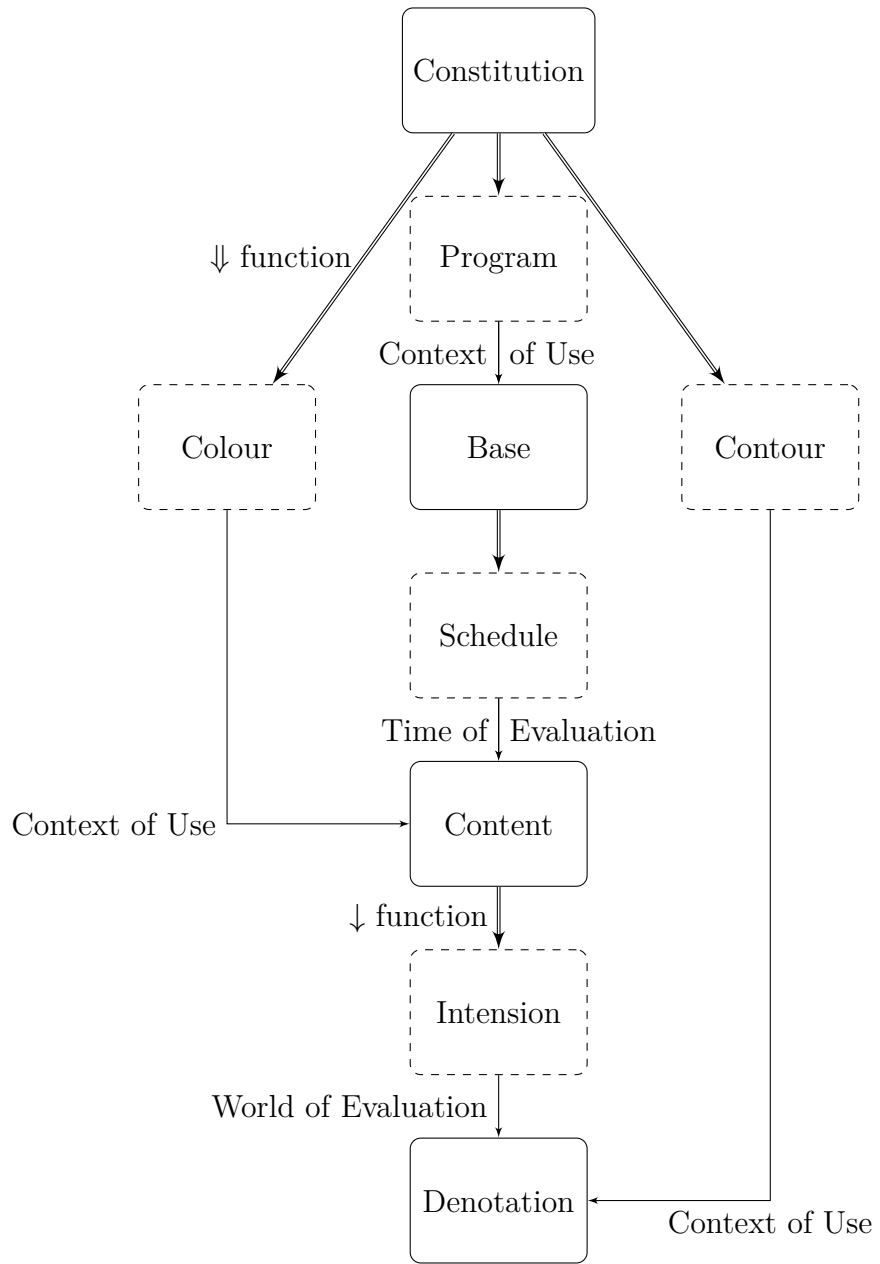


Figure 1: (Part of the) General Framework

“if one man uttered it [The King of France is wise] in the reign of Louis XIV and another man uttered it in the reign of Louis XV, it would be natural to say ... that they were respectively talking about different people; and it might be held that the first man, in using the sentence, made a true assertion, while the second man, in using the same sentence, made a false assertion. If on the other hand two different men simultaneously uttered the sentence (*e.g.* if one wrote it and the other spoke it) during the reign of Louis XIV, it would be natural to say ... that they were both talking about the same person, and, in that case, in using the sentence, they *must* either both have made a true assertion or both have made a false assertion. And this illustrates what I mean by a *use* of a sentence” (Strawson 1950, p. 325).²⁸

Expression-uses, then, must be differentiated both from expressions (which I defined above) and from *utterances* of expressions. An utterance of an expression (or, more precisely, of a *sign*) is the vocal production of a token series of sounds which are of the type of the sign. Signs and utterances of signs therefore also have a type-token relationship. For Strawson, an expression-use seems to be a theoretical construct formed by abstracting everything away from an utterance of a sign (and the circumstances in which it occurred) that is irrelevant to determining the content it expresses. As he puts it: “Consider another case of an expression which has a uniquely referring use, *viz.* the expression I; and consider the sentence, I am hot. Countless people may use this same sentence; but it is logically impossible, for two different people to make the same use of this sentence: or, if this is preferred, to use it to express the same proposition” (Strawson 1950, p. 327).²⁹ For example, given an utterance of **The King of France is wise**, all that is relevant for determining the proposition that utterance expresses (as I will argue in Part II) is the (current) identity of the King of France and the time of utterance (as a King of France needn’t be wise or foolish throughout his reign). Thus the two men who simultaneously utter **The King of France is wise** in the reign of Louis XIV make the same use of the sentence. Given that everything that is relevant to determining the content of a use remains part of that use, and contents together with worlds of evaluation determine denotations, two utterances (in the actual world) that make the same use of an expression cannot have different denotations (and hence the men in Strawson’s example must both be making a true assertion or both be making a false one).³⁰

My use of the term ‘use’ will be somewhat different from that of Strawson. Firstly, Strawson neglects to note that the same utterance may be interpreted in multiple different ways, and thus be associated with different constitutions. This is why he discusses utterances of *expressions*, rather than of *signs*. This is also why he thinks that uses and utterances of expressions have a type-token relationship: “the two men who simultaneously uttered the sentence in the reign of Louis XIV made two different

²⁸As Strawson (1950, p. 326fn) notes: “This usage of ‘use’ is, of course, different from (a) the current usage in which ‘use’ (of a particular word, phrase, sentence) = (roughly) ‘rules for using’ = (roughly) ‘meaning’; and from (b) my own usage in the phrase “uniquely referring use of expressions” in which ‘use’ = (roughly) ‘way of using’”

²⁹Remember that a proposition is the content of a statement.

³⁰That isn’t entirely correct, as assertions can lack truth-values. However, it will do as an approximation.

utterances of the same sentence, though they made the same use of the sentence” (Strawson 1950, p. 326). In contrast, I will not hold that uses and utterances have a type-token relationship, as one utterance can embody multiple uses. For instance, to use Davidson’s (1968, p. 135) example, an utterance of the English word **leaped** will sound the same as an utterance of the German word **liebt**. Thus a single utterance of the sound /li:pt/ (i.e. the sound of the words **leaped** and **liebt**) may embody different uses to different interpreters (if, for instance, one of those interpreters was mistaken as to which language the speaker was speaking). Secondly, to allow for a systematic approach, I will only abstract away from utterances (and their circumstances) what is irrelevant to determining the content of *any* utterance. For instance, the identity of the speaker will not be abstracted away from any use, as it is needed for determining the content of utterances of I (amongst other things), as Strawson suggests. Thus the two men in Strawson’s example could not be making the same use (in my sense), as the speaker of an utterance will form an aspect of the use(s) that utterance embodies.

The things an expression has that are relevant to determining the content of a use of it are its sign and its constitution. Furthermore, taking the circumstance of an expression-use, and abstracting away everything irrelevant to determining the expression-use’s content, leaves us with a *context of use*. An expression-use therefore has: a sign, a constitution and a context. Expression-uses will then be represented formally in the General Framework as *expressions-in-a-context*: pairs of an expression (i.e. a sign and a constitution) and a context. This is an adaptation of Kaplan’s (1980, p. 522) notion of an “*occurrence*” or “*sentence-in-a-context*”. Kaplan (1980, p. 522) wants to “contrast an *occurrence* of a well-formed expression (my *technical* term for the combination of an expression and a context) with an *utterance* of an expression . . . The former notion is from the theory of speech acts, the latter from semantics.” We can derive the base, content and denotation of an expression-use by setting the time and world of evaluation to be the time and world of the context of use.

In this thesis, I will discuss expression-uses rather than utterances of signs. By discussing expression-uses I can put aside questions that are irrelevant to my semantic interests, including: Whose interpretation of an utterance should we be interested in? Is it the speaker’s or the listener’s (and then which listener)? Is it an interpretation given by some conventionally agreed-upon standard (and then how is this convention established)? Given (as I will suggest later) interpretations can be affected by contextual factors, what are these contextual factors? Even after answering these questions, there is the further question: what is the context of use of the utterance? This question is important particularly with written ‘utterances’, given that there are many different contexts of use: the (one) context of writing and the (many) contexts of reading. These are all interesting questions, but they are questions which, as Kaplan suggests above, are better left to the theory of speech acts, or *pragmatics*.

My point here can be made clearer by explaining exactly what I consider the *semantics/pragmatics divide* to be. Amongst other things, a language is a *code*: a system of signs arbitrarily related to what they encode. To understand language it is necessary (but not sufficient) to understand this code. Coming up with a systematic account of this code is the role of *semantics*. As it happens, in natural language we cannot fully determine what a given use of a sign encodes without taking into account *certain*

contextual factors related to that use.³¹ Thus, the semantics of natural language must take into account the role of contextual factors (as the General Framework allows semantic theories to do). Given that constitutions are the only kind of meaning which remains constant across a language, determining this code will consist of determining which constitution that code allocates to each expression (in other words, developing a semantic analysis).

However, there is more to language than this code. If we want to understand what a given speaker intends to communicate with a given speech act, what a given listener takes from a given speech act, or how a given speech act fits into the social practice of language use, we must take into account further contextual factors (like the answers to the questions I presented above). For instance, it is irrelevant to the ‘code’ of English whether a given expression-use is spoken or written. However, as I discussed above, determining the context of use of an ‘utterance’ is a very different task given a spoken utterance (which is produced and received almost simultaneously) versus a written ‘utterance’ (which may be read centuries after it was written). Gaining a greater understanding of these issues is the role of *pragmatics*. The point I want to make clear is that we can answer semantic questions while putting aside pragmatic issues (although, as I discuss later, we can’t do the reverse). Thus, by putting aside pragmatics, I am not claiming that pragmatics is unimportant, merely that I needn’t be concerned with it here.³² Thus my study of expression-uses is one way of putting aside pragmatic issues. I will have more to say about the semantics/pragmatics divide later.

All this being said, I will sometimes discuss the meanings of utterances, by which I will mean (unless I state otherwise) utterances as interpreted by their speakers. An utterance of a sign, together with its speaker, determine an expression-use, as the speaker of an utterance (presumably) has an interpretation of their own utterances. That being said, an utterance of sign and someone listening to that utterance also likely determine an expression-use (so long as the utterance is meaningful to the listener).

1.4 A Note on Denoting

1.4.1 A Type System for Denotata

Next, I want to discuss what I mean by the *denotation* of an expression-use. I will treat the notions of *reference* and *extension* as types of denotation (as I elaborate later). Although the notion of denotation can be traced back to the intuitive, pre-theoretical idea of entities ‘falling under’ expressions, its use in modern formal semantics can be traced back to Frege. Of central relevance here is Frege’s (1892, p. 63) argument that “we are therefore driven into accepting the *truth value* of a sentence as constituting

³¹This is not necessarily true of languages or of codes more generally. For instance, the semantics of some formal languages are not context-dependent in the same way. This is not to say that the semantics of natural language just happened to be context-dependent by caprice, or that we could just choose to speak a language without such a context-dependent semantics.

³²Which is to say that I won’t be *primarily* interested in pragmatics in this thesis. Pragmatic concerns will be relevant when it comes to interpreting the evidence for semantic theories (namely acceptability intuitions) and determining the divide between semantically encoded and pragmatically imparted information. I will elaborate on these notions later.

its reference [*Bedeutung*].”³³ Frege’s other major insight with regards to denotations is that the denotation of a statement is determined by the denotations of the subsentential expression-uses that make up that statement. Frege (1892, p. 64) says “If our supposition that the reference [*Bedeutung*] of a sentence is its truth value is correct, the latter must remain unchanged when a part of the sentence is replaced by an expression having the same reference [*Bedeutung*]. And this is in fact the case.” This fact would only be the case if the denotation of a statement was a function of the denotations of the expression-uses that make up that statement. Denotations are in this sense determined *compositionally*. The denotation of a given subsentential expression-use can be seen as what that expression-use contributes to the determination of the truth-value of the statement that expression-use is contained within. As a limiting case, the denotation of a statement is its truth-value.

The things that expression-uses denote *in standard cases* are *denotata*. I will discuss the non-standard cases later. I will present the denotata I will use in my analysis recursively, using the following *simple type system*: **e** is the type of entities, **t** is the type of truth-values (i.e. TRUE and FALSE) and if τ and σ are types then $(\tau \rightarrow \sigma)$ is the type of *functions* from arguments of type τ to values of type σ . If τ is a type in this system then τ is a type of denotatum. I will call an expression whose (standard) uses only have denotations of a given type τ an *expression of type τ* . Note that certain uses of an expression of type τ may have no denotation, but in all those cases where they do have a denotation they will have a denotation of type τ (but not necessarily the same denotation, just a denotation of the same type). Following Frege, I will hold that sentences are expressions of type **t**. The denotation of a statement is therefore that statement’s truth-value (if it has a truth-value, otherwise the statement has no denotation). With one major exception (which I will discuss later), every expression has a type.

Given that denotations are determined compositionally, we need an account of how the denotations of the expression-uses a complex expression-use is composed of together determine the denotation of that complex expression-use. I will suggest that this occurs through *functional application*. Consider a use of the sentence **Diana is brave** in a possible world w at a time t . This complex expression-use is composed of the expression-uses **Diana** (in w and t) and **is brave** (in w and t). The denotation of **Diana is brave** (in w and t) must then be determined, via functional application, by the denotations of the expression-uses **Diana** and **is brave** (in w and t). I will hold that uses of proper nouns, such as **Diana**, will denote certain entities.³⁴ Proper names are therefore expressions of type **e**. In less technical terms, the denotation of a proper noun-use can be thought of as the thing that is named by that noun. In this particular case, a use of **Diana** will (in every world and at every time) denote **DIANA**.³⁵ I will hold that uses of verb phrases, such as **is brave**, will denote *predicates* (i.e. functions from entities to truth-values).

³³For ‘sentence’ here we should read ‘sentence-token’ (i.e. statement) and not ‘sentence-type’.

³⁴I will discuss proper nouns further in Chapter 3.

³⁵I will be representing denotata using small caps. The idea here is that I am not presenting words and sentences that express these denotata, but rather I am presenting the denotata themselves. Of course, this is not what I am *actually* doing, but it is the best I can do on paper. The small caps representation of denotata is better than that of standard English, as the small caps representations have been designed to have a one-to-one correspondence with the actual denotata. For this reason the small caps representations get us closer to the actual denotata than English by itself.

Verb phrases are therefore expressions of type $(\mathbf{e} \rightarrow \mathbf{t})$. Supposing that a use of an $(\mathbf{e} \rightarrow \mathbf{t})$ type expression denotes a predicate P , the set of entities which return TRUE after P has been applied to them will be the *extension* of that expression-use.³⁶ In less technical terms, the extension of a verb phrase-use (at a given world and time) is the set of things which that verb phrase correctly describes (at that world and time). In this particular case, a use of **is brave** (in w at t) will denote the function BRAVE_w^t , which will return TRUE for any person who is brave in w at t and return FALSE otherwise.³⁷ The only way these two denotata could determine a denotatum via functional application is through applying BRAVE_w^t to DIANA. This will either result in TRUE, if $\text{BRAVE}_w^t(\text{DIANA}) = \text{TRUE}$, or FALSE, if $\text{BRAVE}_w^t(\text{DIANA}) = \text{FALSE}$. In this case, not only has a denotation for the complex expression-use been determined compositionally, but furthermore the determined denotation seems to be the correct one. The denotation of the statement **Diana is brave** must be a truth-value, which accords with the claim above that sentences are of type \mathbf{t} . Furthermore, the statement will be true if and only if Diana is brave (in w at t), which accords with the intuitive truth conditions for this sentence.

The fact that the denotations of complex expression-uses are determined compositionally via functional application, along with the fact that the type system determines which denotata can be applied to which other denotata, together mean that the type system will place certain constraints on which expressions can be joined grammatically (in standard cases). In particular, two expressions can be joined only if one is of some type τ and the other is of some type $(\tau \rightarrow \sigma)$. Thus we can see that **Diana** and **is brave** may be joined grammatically, as **Diana** is type \mathbf{e} and **is brave** is type $(\mathbf{e} \rightarrow \mathbf{t})$. Conversely, **is brave** cannot be joined with **is brave**. This accords with and (partially) explains our intuition that **Diana is brave** is grammatical and **Is brave is brave** is not grammatical. Note that the type system does not (fully) determine the grammar, as not every complex expression licensed by the type system will necessarily be grammatical, nor does the type system outline the order in which these expressions must be joined (e.g. the type system does not explain why **Is brave Diana** is ungrammatical). Furthermore, the type system determines the type of a complex expression relative to the types of its components (supposing all its components have types). The result of joining an expression of type τ and type $(\tau \rightarrow \sigma)$ will be an expression of type σ . Thus we can see that the type of **Diana is brave** must be \mathbf{t} , given that the type of **Diana** is \mathbf{e} and the type of **is brave** is $(\mathbf{e} \rightarrow \mathbf{t})$. Finally, the type system determines which denotation must be applied to which to determine the denotation of a complex expression-use (in standard cases). Suppose we have a complex expression $\mathbf{X Y}$ made up of the expressions \mathbf{X} and \mathbf{Y} , where \mathbf{X} is of some type $(\tau \rightarrow \sigma)$ and \mathbf{Y} is of some type τ (and therefore $\mathbf{X Y}$ is of type σ). For any given use of this expression, its denotation will be given by applying the denotation of the use of \mathbf{X} to the denotation of the use of \mathbf{Y} (and not the reverse, which would be impossible by the type system). Thus, for any use of **Diana is brave**, the denotation of the use of **is brave** must be applied to the use of **Diana** to derive the denotation of the use of **Diana is brave**.

³⁶Formally, the extension of an expression-use which denotes the predicate P is $\{x \in \mathbb{E} : P(x)\}$ where \mathbb{E} is the set of all possible entities. Given a property \mathcal{P} , I will refer to the extension of \mathcal{P} at a time t and world w (i.e. the extension of the predicate denoted by \mathcal{P} at t in w) as $[\mathcal{P}]_w^t$. I will discuss this notion further in the appendix.

³⁷The predicate BRAVE_w^t here is sub- and superscripted by t and w to indicate that predicates are time- and world-fixed. I will discuss this further in the appendix.

I will say that an expression-use *refers* to an entity when that entity is that use’s denotation. A use of **Diana** will then refer to DIANA. Thus *reference* is just denotation of type **e**. I will then call expressions of type **e** *referential expressions*. Proper nouns like **Diana** are therefore referential expressions. Note that reference is different from, albeit related to, a separate notion I will employ, that of direct reference. Expressions of the type $(\mathbf{e} \rightarrow \mathbf{t})$, such as verb phrases like **is brave**, I will call *predicative expressions*. I will hold that *quantificational expressions* denote *generalised quantifiers*: functions from predicates to truth values (i.e. functions of the type $((\mathbf{e} \rightarrow \mathbf{t}) \rightarrow \mathbf{t})$).³⁸ Quantificational expressions are therefore expressions of the type $((\mathbf{e} \rightarrow \mathbf{t}) \rightarrow \mathbf{t})$.

1.4.2 Denotation Gaps and Presupposition

Some uses of expressions do not have denotations. This raises two questions: Firstly, what exactly does it *mean* for an expression-use to lack a denotation? This is an important question, but its answer will depend on what meanings that expression-use has (or, more importantly, lacks). I will return to this question in Chapters 2 and 3. Secondly, there is the question of what denotations complex expression-uses containing those non-denoting expression-uses have. I will suggest that such complex expression-uses also have no denotations. I think that this is the most natural interpretation of this possibility. If you apply a function to nothing, you should expect to get nothing in return. This claim will have important repercussions when it comes to statements. Let us suppose that (as I argue in Chapter 5) a use of the expression **the King of France** in a world w and at a time t will have a denotation only if there exists some entity x such that x is the King of France in w at t , or more formally, such that $\text{FRENCH-KING}_w^t(x) = \text{TRUE}$. As such, a use of the sentence **The King of France is bald** in a world w and at a time t will have a truth-value only if there exists some entity x such that $\text{FRENCH-KING}_w^t(x) = \text{TRUE}$. As I discussed in Section 1.2, there are therefore truth-value gaps (i.e. statements without truth-values).

The existence of truth-value gaps is related to the notion of (*semantic*) *presupposition*. Strawson (1952, p. 175) defines presupposition as a relation between statements: “A statement S presupposes a statement S' in the sense that the truth of S' is a precondition of the truth-or-falsity of S .” Thus we can say that the statement **The King of France is bald** (in a context c) *presupposes* the statement **There exists a King of France** (in c). To say that presupposition is a relation between statements is, however, problematic. Note that the statement **The King of France is bald** (in a context c) also presupposes the statements **France has a king** (in c) and **Some king rules France** (in c). If presupposition is seen as a relation between statements, then all of these particular presupposition relations will be considered separately, despite the fact that they all seem to embody the same presupposition, as they are all different ways of saying the same thing. Thus I will hold that presupposition is a relation between statements and *propositions*. This is because statements presuppose that *things are a certain way* and propositions embody

³⁸This view originated with Frege (Klement 2010, sec. 2) and was popularised by Barwise and Cooper (1981). Barwise and Cooper (1981, p. 163) define generalised quantifiers as functions from sets of entities to truth-values: “It is clear that a quantifier may be seen as dividing up or partitioning the family of sets provided by the model. When combined with some sets it will produce the value “true” and when combined with others it will produce the value “false.” This is equivalent to my definition if we replace sets with their characteristic functions.

a *certain way things could be*. Thus I will hold that a statement S in a context c will presuppose a proposition p if and only if S having a truth-value depends on p being true in c .

Of course, we can't determine what the having of a truth-value by a statement *depends* on without looking at how else that statement could have been. If a given sentence S is such that uses of it only have truth-values in contexts where some proposition p is true, then we can say that S *triggers the presupposition* p . Any use of S therefore presupposes p . Consider a more complex case: Suppose that there was a sentence S and propositional constitution \mathbf{p} such that a use of S in a context c had a truth-value if and only if \mathbf{p} was true in c (and c_t and c_w). In this case we can say that S *triggers a presupposition of the form* ' \mathbf{p} '. For instance, the sentence **The King of France is bald** triggers a presupposition of the form ' $\exists x(\text{FRENCH-KING}(x))$ ', or more colloquially, triggers a presupposition of the form 'there exists a King of France'.

We can extend the notion of presupposition triggering to subsentential expressions. If a given expression X is such that all sentences containing it only have truth-values in contexts where some proposition p is true, then we can say that X triggers the presupposition p . If a given expression X is such that all sentences containing it only have truth-values in contexts where some propositional constitution \mathbf{p} is true, then we can say that X triggers a presupposition of the form ' \mathbf{p} '. For instance, the expression **the King of France** triggers a presupposition of the form ' $\exists x(\text{FRENCH-KING}(x))$ ', or more colloquially, triggers a presupposition of the form 'there exists a King of France'. If an expression X is such that it triggers the presupposition p (or one of the form ' \mathbf{p} '), then any sentence (and indeed any superexpression) that contains it will also trigger the presupposition p (or one of the form ' \mathbf{p} '). This phenomenon, whereby a superexpression inherits the presuppositions of its subexpressions, is called *presupposition projection*.

Note that I have defined the conditions under which a subsentential expression can be said to trigger a presupposition quite narrowly, in the sense that it is a requirement that *all* sentences containing a given expression need to trigger that presupposition before the expression can be said to trigger it. However, we need to consider this requirement in line with the position I took above: namely, that complex expression-uses containing non-denoting subexpression-uses are themselves non-denoting. Thus suppose an expression X is such that it only has a denotation in contexts where some proposition p (or propositional constitution \mathbf{p}) is true. Then any sentence S containing X will be such that it only has a denotation in contexts where p (or \mathbf{p}) is true. Any such sentence S therefore triggers the presupposition p (or triggers a presupposition of the form ' \mathbf{p} '). As such, X then triggers the presupposition p (or triggers a presupposition of the form ' \mathbf{p} '). All it requires then, for an expression X to trigger the presupposition p , is for the truth of p to be a precondition of the use of X having a denotation. The fact that presupposition triggering requires all sentences containing an expression to behave in a certain way essentially comes for free, given complex expression-uses containing non-denoting subexpression-uses are themselves non-denoting. In other words, I will hold that all presuppositions project.

"The hypothesis that presuppositions always project is known as the *cumulative hypothesis* ('the presuppositions of the whole equal the sum of the presuppositions of the parts')" (Krahmer 1998, p. 107). Not everyone subscribes to the cumulative hypothesis, and there are many putative counterexamples to it. Certain sentential contexts (called *plugs*) do not seem to allow presuppositions to project, while other sentential contexts

(called *filters*) only seem to only allow some presuppositions to project.³⁹ One direct way of handling these cases within the framework I have set up would be to suggest that, in at least some cases, complex expression-uses containing non-denoting subexpression-uses *do* have denotations. I will not take this course, however. Although I will not consider every putative counterexample to the cumulative hypothesis, I will suggest that some of them are not in fact counterexamples, and are instead cases of confusion between semantically encoded and pragmatically imparted information. I will elaborate on this in the conclusion.

1.4.3 Non-Extensional Operators and Non-Standard Denotations

There is an important complication to the claims I have made here in the form of *non-extensional operators* and *non-standard denotations*. I will define the *standard denotation* of a (subsential) expression-use as the denotation determined by the analysis for that expression-use *independent of the statement it is a part of*. As I have presented things thus far, it seems as though you can determine the truth-value of a statement by first determining the standard denotations of every expression-use that makes up that statement and then combining them through functional application. Put another way, suppose a true statement *S* contains a subsential expression-use *X*. Given what I have said above, it seems as though *X* could be replaced by any expression-use with the same standard denotation and the resulting statement would remain true. In other words, the use of *X* can be replaced with an expression-use with the same standard denotation *salva veritate*.

Not all statements and expression-uses are like this. Consider *indirect speech reports*. An indirect speech report is a statement of the form **N says that S** where the use of **N** refers to a speaking agent and **S** is a sentence, which is called the “content-sentence” (Davidson 1968, p. 133). A current use of the indirect speech report Galileo said that the Earth revolves around the Sun⁴⁰ is true, but a current use of the indirect speech report Galileo said that Sydney is the largest city in Australia is false. Yet current uses of The Earth revolves around the Sun and Sydney is the largest city in Australia have the same standard denotation (TRUE). As such, it seems like the difference in truth-value between these indirect speech reports cannot be explained.

Frege (1892, p. 58-59) raises the possibility that certain expression-uses do not have their usual denotations, but instead denote their *Sinn*:

“If words are used in the ordinary way, what one intends to speak of is their reference [*Bedeutung*]. It can also happen, however, that one wishes to talk about ... their sense [*Sinn*] ... It is quite clear that in this way of speaking words do not have their customary reference [*Bedeutung*] but designate what is usually their sense [*Sinn*]. In order to have a short expression we shall say: In reported speech, words are used *indirectly* or have their *indirect* reference [*Bedeutung*]. We distinguish accordingly the *customary* from the *indirect* reference [*Bedeutung*] of a word ... The indirect reference [*Bedeutung*] of a word is accordingly its customary sense [*Sinn*].”

³⁹Sential contexts which seem to always allow presuppositions to project are called *holes*.

⁴⁰This example is inspired by Davidson (1968, p. 139).

If we suppose that expression-uses sometimes do not denote their standard denotations, but instead something else, we have the possibility of explaining the difference in truth-value of the indirect speech reports discussed above. Frege (1892, p. 66) holds that the content-sentence-uses of indirect speech reports denote their *Sinn*, rather than their standard denotations:

“The case of an abstract noun clause, introduced by **that**, includes the case of indirect quotation, in which we have seen the words to have their indirect reference [*Bedeutung*] coinciding with what is customarily their sense [*Sinn*] . . . This happens after **say, hear, be of the opinion, be convinced, conclude,** and other similar words.”

I will suggest a similar approach to indirect speech reports. Instead of Frege’s notion of *Sinn*, I will suggest that the content-sentence-uses of indirect speech reports denote their *contents*. In Chapter 2, I will argue that this is the best analysis of indirect speech reports, as well as suggesting similar analyses for propositional attitude reports and modal claims. In summary, I will hold that some expression-uses have *non-standard denotations*. Note that this is not in fact an exception to the definition of denotation I provided above, as in cases of non-standard denotation what these expressions are contributing to the determination of the truth-value of the statement they are contained within *is* their non-standard denotation (i.e. what they are contributing is their content).

Alongside standard and non-standard denotations, another notion I want to introduce is that of an *operator*. An expression is an operator when the denotation of uses of that expression are applied to the denotation of the expression-use or expression-uses that expression is combined with. Thus **is brave** and **Galileo said that** are operators. The expressions an operator combines with are its *operands*. An operator *X* *operates on* (a semantic value)⁴¹ *M* when any use of *X Y* and any use of *X Z* have the same denotation if the uses of *Y* and *Z* have the same *M*.⁴² As such, to say that *X* operates on contents is to say that a use of *X Y* and a use of *X Z* will have the same truth value if the uses of *Y* and *Z* have the same content, and so on. An operator that operates on denotations is an *extensional operator* and one that operates on contents is an *intensional operator*. The notions of non-extensional operators and non-standard denotations are closely linked. Where *X* operates on *M*, the operands of *X* denote values of the kind *M*. For instance, the operands of intensional operators denote their contents. Thus the operands of non-extensional operators have non-standard denotations. As such, non-extensional operators must denote functions whose domains include contents and/or bases. Non-extensional operators therefore do not denote denotata that are within the type system presented above, and as such do not have a type. The type system therefore gives no guidance as to what these expressions can grammatically be combined with, and what will result.⁴³ Any expression which isn’t a non-extensional operator (i.e. any *extensional expression*) will then have a type.

⁴¹By ‘semantic value’ I mean either a kind of meaning or a *standard* denotation.

⁴²Note that operators needn’t appear before their operands (take for instance **is brave**), but for simplicity I’ll present this as if they must.

⁴³We can *give* these expressions the type of functions from the type of their operands to the type of the expressions which result from the combination of them with their operands. This would fit the grammatical restrictions that the type system provides in standard cases. However, this type would not match the functions the operator actually denotes, nor could it provide any explanation as to *why* the operator could only be grammatically combined with expressions of the operator’s type.

Non-extensional operators require important revisions to the picture of denotation I have painted so far. Up until this point I have been speaking as if there are two ways to derive the truth-value of a statement: either one could first determine the proposition expressed by the statement in terms of the contents of the subexpression-uses that make up the statement and then determine the truth-value of the statement relative to the world of evaluation of the statement, or one could first determine the denotations of the subexpression-uses that make up the statement (relative to the world of evaluation of the statement) and combine them to determine the truth-value of the statement. Although both methods will work, and give the same result, for statements containing only extensional operators, only the first method will work for statements containing non-extensional operators.

Relatedly, I have been describing statements as made up of the uses of their subexpressions. In itself this is correct, but it might lead us to think that we can consider uses of subexpressions independently from the statements they occur within. This is not the case. Considered by itself, an expression-use is evaluated at the world and time of its context of use. However, when considered as the operand of a non-extensional operator, an expression-use may be evaluated at different worlds and/or times from that of its context. Indeed, for some operators, expression-uses may not be evaluated at any (single) world or time. As such, we must always take note of the sentential context of any expression-use.

1.4.4 Truth versus Acceptability

The final thing to note about denotation is that I use ‘truth-value’ as a technical term. By this I mean that those statements I will hold denote TRUE are not necessarily those that a native speaker would call *true* (although there is a great amount of overlap). Here I want to draw a distinction between my technical notion of *truth* and the intuitive notion of *acceptability*. A sentence *S* is acceptable for a native speaker in a context of use *c* if and only if that speaker would consider *S* to be a generally appropriate thing to say given *c*.⁴⁴ English speakers have a grasp of the *acceptability conditions* of English sentences as part of their implicit understanding of English. This implicit understanding is then the major evidence for developing semantic theories.

This raises several problems. Firstly, there is a mismatch between what the evidence is of (i.e. acceptability) and what it is being used for (i.e. truth). Secondly, we might wonder why truth is a concern at all here, given that it would seem more important to explain the concrete phenomena of acceptability. What needs to be understood is that acceptability is a mixture of many different factors: not only the truth-values of semantically encoded propositions, but also the truth of pragmatically imparted propositions as well as other factors like appropriateness and politeness.⁴⁵ While native speakers are sometimes able to distinguish some of these factors, e.g. politeness, they are not always able to do so. A full explanation of acceptability will, I believe, require *separate* theories of these factors, as well as an explanation of how they relate to each other. Thus, while an explanation of truth is not an explanation of acceptability, it is

⁴⁴Note that a context of use includes the *speaker* of the expression-use. Thus something might be judged acceptable for one person to say in a given situation and not acceptable for another.

⁴⁵I will discuss the notions of semantically encoded and pragmatically imparted propositions in Chapter 2.

an essential part of such an explanation.

One thing to make clear is that ‘truth’ here should not be read as ‘literal’ or ‘technical’ truth. The intuitive notion of literal truth, on my view, would amount to disregarding some, but not all, of the acceptability-determining factors which exist in addition to truth. I will hold that native speakers cannot ever disregard *all* such factors. In other words, native speakers never have direct access to the truth conditions of their sentences. As such, there is no direct evidence for truth conditions, although there is indirect evidence, as I discuss below. Furthermore, acceptability should not be seen as a casual approximation of truth. Certain acceptability factors are as precise and fundamental to natural language communication as truth. I will discuss these ideas, and why there is this division, in more detail in Chapter 2, when I discuss the division between semantically encoded and pragmatically imparted information.

Given all of this, we can see how native speakers’ intuitions about acceptability conditions provide *indirect* evidence for semantic analysis. Part of our implicit understanding of natural language is our implicit understanding of the semantic code that natural languages embody. However, this implicit understanding of the code is not manifested directly, but only indirectly through native speakers’ intuitions about acceptability conditions. By isolating the other factors that affect acceptability, we can reconstruct the truth conditions of the sentences in the language, and from there develop a semantic theory. It is important to note that, when I speak of ‘isolating the other factors that affect acceptability’, I am not suggesting that we can do this *before* developing a semantic theory. Instead, we are looking to provide the simplest and best explanation of acceptability conditions, where that explanation will contain a semantic analysis as well as a theory of appropriateness, and of pragmatically imparted information, and so on. What exactly is covered by this semantic analysis will depend on how that analysis fits into the best overall explanation, and as such it is not until we finalise such an explanation that we can ‘isolate the other factors’. I will not deliver such a complete explanation here, but I will sketch parts of it as a first approximation. In particular I will point to some acceptability judgements that are driven by pragmatically imparted, rather than semantically encoded, propositions.⁴⁶

2 Propositions and Content

“Let us call this first kind of meaning—what is said—*content*” (Kaplan 1980, p. 500). Both Kaplan and, following him, Russell (2008) describe the content of a statement as ‘what is said’ by that statement. Unfortunately, neither of them precisely define what they mean by this. As I discussed in the introduction, the notion of informational content will be central to this thesis. I will therefore make the notion of content clearer

⁴⁶“The best evidence in semantics comes from the settled intuitions of competent speakers. Any semantic theory ought to try to capture as many of these as possible; and no semantic theory can be correct if it leads to widespread conflict with such intuitions. However, these intuitions are not infallible; competent speakers can be wrong about some of the semantic features of their language . . . semantic facts about English are not always fully accessible to simple introspection by competent speakers. Thus to discover these facts we need to construct the best theory of language we can . . . Although such a theory may conflict with some of our intuitions, it will, I believe, prove to be truer to the whole range of basic semantic evidence and intuitions than any alternative account” (Soames 1989, p. 418-419).

here. As I outlined earlier, the role that contents of uses of subsentential expressions play is to determine what proposition is expressed by the statements those expression-uses are a part of. Thus the purpose of contents in general is derivative to that of propositions. I will therefore discuss the explanatory role of propositions specifically in this chapter, and the explanatory roles of other contents will then be understandable in terms of the role of propositions. In the appendix, I will discuss the specific kinds of contents that exist and their explanatory roles (relative to the role of propositions). In Section 2.5, I will also (briefly) discuss the notion of bases.

2.1 What are Propositions?

As I discussed in Chapter 1, the content of a use of a declarative sentence (if it has content) is a proposition. I will take propositions to be *fine-grained*, in that two different propositions can be true (and false) in all the same worlds of evaluation. Furthermore, I will take propositions to be *structured*, in the sense that I will hold that they can ‘contain’ or can be ‘constructed from’ other things (such as entities and properties). I will not elaborate on what this ‘containment’ relation is. It could be seen as set-theoretic containment (where propositions would be seen as sets of a certain kind), but I will not commit to such a reading. I will hold that propositions are *abstract objects*, in that they do not necessarily correspond to any concrete object. Beyond that, I will also not discuss what propositions actually *are*, or in what sense they can be said to *exist*, as these are metaphysical questions I am not concerned with.

In addition, I will take propositions to contain (amongst other things) *actual physical entities*. A proposition which contains an actual entity as a constituent is a *Russellian proposition*. Thus I will hold that Russellian propositions exist. A Russellian proposition which has a given entity *x* as a constituent is a *singular proposition* about *x* (i.e. a proposition about *that very entity x*).⁴⁷ Kaplan (1980, p. 493) “use[d] ‘*directly referential*’ for an expression whose referent ... is taken as *being* the propositional component.” In other words, an expression-use *directly refers* to an entity when that expression-use’s content (and referent) is that very entity. As such, any statement which contains an expression-use which directly refers to some entity *x* must express a Russellian proposition containing *x* (which is therefore also a singular proposition about *x*). Following Kaplan (1980, p. 492), I will hold that uses of indexicals, such as *I*, *here* and *now*, are directly referential.

The contents of operator expression-uses and of operand expression-uses are themselves in an operator-operand relationship. However, unlike in the case of denotata, this does not mean that the operator is applied to the operand. Contents are not functions, and as such combining contents is not an operation of functional application. In functional application, a function is applied to an argument to return a value which needn’t contain either the function or the argument. In contrast, when contents are combined,

⁴⁷It might not be clear what the difference is between singular and Russellian propositions. A singular proposition about *x* is a proposition that is about *x* but not in virtue of the nature of *x*. The fact that these propositions are Russellian is supposed to explain *how* such propositions could be about *x* (i.e. other than in virtue of the nature of *x*). Thus the identity between singular and Russellian propositions is a *theoretical identity*, like that between light and photons. This distinction is important as the notion of a singular proposition has existed for centuries, while the notion of a Russellian proposition only dates back to B Russell.

the complex content that results must contain the original contents as constituents, and nothing else besides.⁴⁸ Suppose we have a complex expression-use $X Y$ where X is the operator and Y is the operand. Furthermore, suppose that the use of X has the content X and the use of Y has the content Y . I will represent the content of the expression-use $X Y$ as $X\langle Y \rangle$. The use of angle brackets here is to indicate that complex content construction is not a process of functional application. Note that some expressions have contents in standard cases, but do not have contents *by themselves* within certain complex expression-uses (although the complex expression-uses have contents). I will call these expressions *decomplexifying expressions* and I will discuss them further in the appendix.

In addition to entities, two other kinds of content will be important for this thesis. Firstly, there are eternal iota terms $\iota\langle \mathcal{P}^t \rangle$ which contain the iota operator ι and an eternalised property \mathcal{P}^t . In any world of evaluation w , the denotation of $\iota\langle \mathcal{P}^t \rangle$ is the one and only \mathcal{P}^t -entity in w , if there is such an entity, and nothing otherwise. Secondly, there are eternalised epsilon terms $\varepsilon^t\langle \mathcal{P}^t \rangle$ which contain an eternalised epsilon operator ε^t and an eternalised property \mathcal{P}^t . In any world of evaluation w , the denotation of $\varepsilon^t\langle \mathcal{P}^t \rangle$ is the uniquely \geq_w^t -maximal \mathcal{P}^t -entity in w , if there is such an entity, and nothing otherwise.⁴⁹ I will call the property constituent of each of these contents a *restrictor content*, by analogy with the restrictors of definite descriptions. I will discuss all of these contents in greater detail in the appendix.

I will be representing certain contents, such as entities and (eternal) properties, using small caps. Like with denotata, the idea here is not that I am presenting words and sentences that express these contents, but rather I am presenting the contents themselves. Of course, this is not what I am actually doing, but it is the best I can do on paper. The small caps representations are better than those of standard English as they have a one-to-one correspondence with the actual contents, as well as presenting directly the structure of complex contents. For these reasons the small caps representations get us closer to the actual contents than English by itself. The fact that I am using small caps to represent both contents and denotata will not be problematic, as it will either be the case that the same things are both contents and denotata (e.g. entities), or further notation will make clear whether the things are contents or denotata (e.g. predicates versus eternal properties).

2.2 Samesaying and Indirect Speech

I think that the intuitive notion of what a statement ‘says’ is relatively clear (as intuitions go), although still obviously falling short of a technical understanding. We often say that a statement ‘says something’ or that different statements (i.e. statements of different sentences and/or in different contexts) ‘say the same thing’. My discussion of this notion can be made clearer by introducing (an adaptation of) Davidson’s (1968,

⁴⁸To say that a complex content does not contain anything besides the subcontents it was constructed from is not to say that the complex content is merely the set of its constituents. Rather, it is to say that such complex contents do not contain any elements other than those they were constructed from. “The latter clause is needed in order to distinguish *Bill loves Mary* from *Mary loves Bill*, where the sequential order of composition is crucial” (Salmon 1986, p. 155en). $\text{LOVE}^t\langle \text{BILL}, \text{MARY} \rangle$ is a very different proposition from $\text{LOVE}^t\langle \text{MARY}, \text{BILL} \rangle$.

⁴⁹Where \geq_w^t is the ordering of the entities in w at t I discussed in Chapter 1.

p. 140) “*samesaying*” relation. Two statements which say the same thing I will call samesayers.⁵⁰ The samesaying relation is an *equivalence relation*: it is *reflexive* (all statements say the same thing as themselves), *symmetric* (if statement *S* says the same thing as statement *S'*, then *S'* must say the same thing as *S*) and *transitive* (if statement *S* says the same thing as statement *S'* and *S'* says the same thing as statement *S''* then *S* must say the same thing as *S''*). As such, the samesaying relation creates a *partition* of the set of all statements.⁵¹

There is a role for meanings in explaining this samesaying relation. Such an explanation would be as follows: two statements are samesayers if and only if they have the same meaning. The kind of meaning that plays this role is, I will claim, *content*. Thus the explanation above, along with a theory of content (i.e. a theory which attributes content to every possible expression-use, and thus every possible statement) will provide a complete account of the samesaying relation.

This notion of samesaying is somewhat nebulous, so I will suggest that it can be made more explicit in terms of *indirect speech reports*. As I discussed earlier, an indirect speech report is a statement of the form **N says that S** where the use of **N** refers to a speaking agent and **S** is a sentence (the content-sentence). There is a clear link between indirect speech reports and samesaying: a use of **N says that S** is true if and only if (the agent referred to by the use of) **N** makes statements which are samesayers with *this* use of **S**. Note that **S** here is being *used*, not *mentioned*.⁵²

Given this relation between samesaying and indirect speech reports, we can see that meanings (and more particularly contents) play a role in the truth conditions of indirect speech reports. Put formally, the link is the following: **N says that S** is true in a context *c* if and only if the referent of **N** in *c* makes statements in *c* which have the same (propositional) content as **S** does in *c*. Note that, under this analysis, expressions of the form **N says that** are operators on contents, and therefore their operand sentences denote their contents, rather than their standard denotations. Contents then play two (related) roles: explaining samesaying and explaining indirect speech reports.

Two examples of such analyses are given by Kaplan and Davidson. Kaplan (1980, p. 553) presents this analysis: “when *x* says **I have been wounded** and *y* wishes to report in indirect discourse exactly what *x* said . . . It will not do for *y* to say ***x* said that I have been wounded** . . . it should be correct for you to report *x*’s content using a [constitution]

⁵⁰My notion of samesaying is an adaptation of Davidson’s, as Davidson’s relation holds between speakers, not statements. “The idea that underlies our awkward paraphrase is that of samesaying: when I say that Galileo said that the earth moves, I represent Galileo and myself as samesayers” (Davidson 1968, p. 140). The two notions of samesaying are interdefinable: Two statements are samesayers if and only if the utterers of these statements would be samesayers in virtue of uttering those statements. Furthermore, two speakers are samesayers where they have each uttered a statement which is a samesayer of a statement of the other speaker. As such, not too much hangs on these different ways of presenting the notion.

⁵¹Cartwright (1962, p. 90) discusses a similar relation: “Let *R* be the relation which obtains between two individual events of assertive utterance just in case what is asserted [i.e. said] in each is the same . . . Evidently, *R* . . . [is an] equivalence-relation”.

⁵²This is in contrast with *direct speech reports*. A direct speech report is a statement of the form **N says “S”**. A use of **N says “S”** is true if and only if (the agent referred to by the use of) **N** utters the *sentence-sign* **S**. To use Davidson’s (1968, p. 130) example, the indirect speech report “Galileo said that the earth moves” is true, as Galileo uttered statements that were samesayers with the statement The earth moves. However, the direct speech report Galileo said “The earth moves” is false as Galileo never uttered any English sentence, let alone The earth moves.

appropriate to the context of the report.”⁵³ Davidson (1968, p. 139) says the following: “Galileo said that the earth moves comes to mean something like Galileo spoke a sentence that in his mouth meant what ‘The earth moves’ now means in mine.”⁵⁴

Given this relation between samesaying and indirect speech reports, we can see how native speaker intuitions about acceptability conditions provide evidence (indeed, the only firm evidence) as to which statements are samesayers. Consider the following example:

Situation **S1**: Fred says I am tired. George then says to Sally I didn’t hear what Fred said, to which Sally responds Fred said that he is tired.

Intuitively, Sally’s assertion is acceptable. Supposing no factor other than truth of semantically encoded content is relevant to determining these acceptability judgements, and that we have already established that in this context Sally’s use of **Fred** refers to **FRED**, these judgements show that Fred’s statement I am tired and Sally’s use of **He was tired** are samesayers. Note that we can’t use acceptability intuitions to prove claims about samesaying *directly*, as we need to dismiss any other possible explanation of those judgements which would lead to a better overall theory.

2.3 What Can and Can’t Play the Role

I will hold that the things which play the content role for statements are *propositions*, where a proposition is a structured abstract object, as I discussed above. To show that this is the case, I will first examine why none of the other candidates could play this role, as none of them make all and only the distinctions that either indirect speech reports or the samesaying relation make. I will then discuss what it is about propositions that make them apt to play this role.

The first possibility I will consider is to explain indirect speech reports and the samesaying relation in terms of sentences. As Davidson (1968, p. 133) puts it: “One proposal at this point is to view the words that succeed the **said that** as operating within

⁵³Given that Kaplan notes this relation between content and indirect speech reports, I should make clear the sense in which Kaplan fails to define precisely what contents are. Although Kaplan says that contents are the kind of meaning that plays the ‘explaining indirect speech’ role, he does not *define* contents as the things that play that role. There are many roles that contents play that Kaplan identifies, and he does nothing to pick out this role as particularly special. On a charitable reading, what Kaplan (1980, p. 500) means when he says that content is “what is said” is that contents play the ‘explaining indirect speech’ role. I think this reading is correct and I only want to make it more explicit. Thus my presentation of contents here should not be seen as a radical departure from Kaplan’s views, merely a clearer version of them.

⁵⁴It is worth noting that Davidson (1968, p. 136) rejects the idea that propositions play a role in explaining indirect speech reports: “It might be thought, and perhaps often is, that if we are willing to welcome intensional entities without stint—properties, propositions, individual concepts, and whatever else—then no further difficulties stand in the way of giving an account of the logical form of sentences in *oratio obliqua*. This is not so.” However, I believe that there is a gap in Davidson’s approach, and that this gap could only be filled by propositions. Davidson’s (1968, p. 140) approach requires a notion of synonymy (which corresponds to what I have called samesaying): “we are indeed asked to make sense of a judgment of synonymy between utterances, but not as the foundation of a theory of language, merely as an unanalyzed part of the content of the familiar idiom of indirect discourse.” I cannot see how we can make sense of this notion of synonymy (or samesaying) without propositions (as I detail in the next section) and for that reason I believe Davidson’s approach requires propositions.

concealed quotation marks, their sole function being to help refer to a sentence, and their semantic inertness explained by the usual account of quotation.” However, it is clear that sentences cannot be used to explain the samesaying relation, as sentences both make distinctions that the samesaying relation doesn’t and fail to make distinctions that the samesaying relation does. Examples of the first case are uses of different sentences which are samesayers and examples of the second case are uses of the same sentence which are not samesayers. Clear examples of the first case (in English) are given by non-English speakers. For example, my use of **The unexamined life is not worth living for a human being** and Socrates’ use of **Ο δὲ ἀνεξέταστος βίος οὐ βιωτὸς ἀνθρώπῳ** are samesayers, despite being uses of different sentences (and indeed sentences in different languages). The indirect speech report **Socrates said that the unexamined life is not worth living for a human being** is true even though Socrates never uttered the sentence-sign **The unexamined life is not worth living for a human being** (or indeed any English sentence-sign).⁵⁵ To see an example of the second case, consider Kaplan’s (1980, p. 503) example sentence **I am writing**. My use of this sentence and Kaplan’s use of this sentence are not samesayers, even though they are uses of the same sentence, as my statement is about me and Kaplan’s is about Kaplan. The indirect speech report **Kaplan says that I am writing**, as uttered by me, is therefore false, as Kaplan has never said anything about me. As Cartwright (1962, p. 88) puts this point: “It is *not* the case that . . . what one utters is that which he asserts [i.e. says] . . . The *statement*, or *assertion*, one makes is not be confused with the *sentence* one utters in making it.”

If sentence *types* fail to explain the samesaying relation, then we might think that sentence *tokens*, i.e. utterances of sentences, succeed. However, utterances cannot be used to explain the samesaying relation, as utterances (like sentences) both make distinctions that the samesaying relation doesn’t and fail to make distinctions that the samesaying relation does. In the first case, it is clear that different utterances of the same sentence at different times can be samesayers. Every utterance of **One plus one equals two** is a samesayer of every other utterance of **One plus one equals two**. In the second case, the same utterance may not be a samesayer with itself, if it is interpreted in two different ways. Take Davidson’s (1968, p. 135) example: “the sounds **Empedokles liebt** do fairly well as a German or an English sentence, in one case saying that Empedokles loved and in the other telling us what he did from the top of Etna.” What Davidson is saying here is that an utterance of the sentence-sign **Empedokles liebt** (or **Empedocles leapt**, which sounds more or less the same) need not even samesay itself, if it is interpreted variously as a German or an English sentence. Of course, we should note here that this is not a case of an utterance of a *sentence* not samesaying with itself, but rather an instance of an utterance of a *sentence-sign* not samesaying with itself, as the two interpretations deliver two different sentences (in different languages) that merely sound the same. As such every utterance of a sentence, strictly speaking, will samesay with itself. But as there are still instances of different utterances of sentences which are samesayers, then utterances cannot explain the samesaying relation. As Cartwright (1962, p. 84-85) puts this point: “What is asserted [i.e. said] by someone on some given occasion is not to be identified with his asserting it on that occasion.”

As I will establish later, there is a many-to-one relation both between sentences and their constitutions and between sentences and their truth conditions. As such, any

⁵⁵Another illustration of this case is Davidson’s (1968, p. 141) Galileo example.

distinction that sentences fail to make, constitutions and truth conditions will also fail to make. Given that sentences fail to make distinctions that the samesaying relation does, constitutions and truth conditions will also fail to make these distinctions and as such neither constitutions nor truth conditions can explain the samesaying relation. Any example of a sentence failing to make a distinction necessary to explain samesaying will also be an example of a constitution and a truth condition failing to make that necessary distinction. As such, Kaplan's example sentence **I am writing** provides an example of a distinction samesaying makes that constitutions and truth conditions do not. Both my use and Kaplan's use of **I am writing** have the same constitution and truth conditions but, as established before, they are not samesayers. In fact, things are even worse for truth conditions than they are for sentences, as they (in some cases) make even fewer distinctions than sentences do. The clearest examples of this are necessarily true sentences. Take the two different sentences **All triangles are trilaterals** and **One plus one equals two**. No uses of these sentences are samesayers, yet they both have the same truth conditions.

Characters also cannot explain the samesaying relation. Consider the following argument from Salmon (1986) which was "extracted from Putnam's twin earth thought experiment" (p. 66):⁵⁶

"Suppose . . . there is a planet on which there is a perfect duplicate of a particular earthly woman. Each lives a life on her own planet qualitatively identical to the other's. Even their mental streams of consciousness are qualitatively identical. Moreover, each has a husband named **Hubert**, and the two Huberts are dead ringers for one another except that the earthly Hubert weighs exactly 165 pounds whereas his alien counterpart weighs exactly 165.000000001 pounds. Now, suppose that both wives simultaneously utter, assertively and sincerely, the string of symbols **Hubert weighs exactly 165 pounds** in conversation, each talking about her own husband. The speakers are in exactly the same (purely psychological) state of consciousness . . . But the information encoded by the sentence uttered, as used on these two occasions, is different. This is evident because the information asserted by the earthly woman concerns her husband and is true whereas the information asserted by the alien woman concerns her husband and is strictly false . . . The purely conceptual content is the same but the information value is different" (Salmon 1986, p. 66-67).

Both the earthly woman and the alien woman must associate the same character with **Hubert weighs exactly 165 pounds**, as they are in the exact same psychological state. Yet their utterances are not samesayers, as the earthly woman's utterance is about her earthly husband and the alien woman's utterance is about her alien husband (and, more importantly, the earthly woman's statement is true and the alien woman's is false, and two people can't be saying the same thing if one is speaking a truth and the other a falsehood). Thus characters cannot play the 'explaining samesaying' role.

Perhaps the best candidates for playing the 'explaining samesaying' role are propositional intensions. At first it may not seem like propositional intensions can play a role rival to propositions, given that I have held that the propositional intension of a statement is determined in terms of its proposition. However, we can see how propositional

⁵⁶Salmon cites Putnam (1973, p. 700-704).

intensions could be determined independently of propositions: First, we determine what aspects of language are evaluated at the level of context of use (e.g. directly referential expressions) and which are evaluated at the level of world of evaluation (e.g. property possession). Then, holding fixed the context of use factors, we determine in which worlds of evaluation a statement is true or false. We then represent this as a function, which will be a propositional intension.⁵⁷

That being said, propositional intensions cannot play the ‘explaining samesaying’ role, as propositional intensions fail to make distinctions that samesaying does. We can see this most clearly with necessarily true sentences. Every use of **All triangles are trilaterals** and **One plus one equals two** has the same propositional intension, namely the one that returns TRUE for every world of evaluation.⁵⁸ Indeed, the *reason* why contents are needed in addition to intensions is that contents are more fine-grained than intensions, and it is this fine grain that allows propositions to play the ‘explaining samesaying’ role.⁵⁹

As none of the other kinds of meaning can explain the samesaying relation, we can see that a different kind of meaning is necessary: content. Given the theory of content I will provide, we can see that two statements will be samesayers if and only if they express the same content (i.e. the same proposition). However, I have not yet explained *why* content plays this role. For all I have said so far, the parallel between same content and samesaying could be considered to just be a (big) coincidence. As such, although this analysis will be descriptively adequate (i.e. it will save the phenomena), it will not serve as an explanation of *why* indirect speech reports have this analysis (i.e. one that depends on content) rather than some other analysis. I will therefore address this point now.

For indirect speech reports to be explicable, there must be some aspect in virtue of which different statements are samesayers. Otherwise the truth of indirect speech reports would be random and therefore inexplicable. Suppose that two statements are samesayers. There must then be some aspect of those statements which is identical. This aspect must then be shared by all and only those statements which are samesayers of the first two statements. The questions that remain are: what is this aspect, why does it explain samesaying, and what is its relation to content (such that content can play a role in the analysis of indirect speech reports). I will suggest that this shared aspect is the *informational structure* of the statements. What do I mean by informational structure? Consider that statements are about things (e.g. entities and properties) and

⁵⁷Note that this procedure corresponds to what Salmon (1986, p. 32) calls a “*superintension*”.

⁵⁸Another option to consider here is that propositional intensions might be redefined so that, instead of having a domain of just complete, consistent possible worlds, they instead have a domain which includes some incomplete situations and/or impossible worlds. Impossible worlds in which $1+1 = 2$ was false, for instance, would allow us to deal with the problem I raised here with propositional intensions. However, Soames (1989) demonstrates that propositional intensions cannot capture the samesaying relation no matter how fine-grained their arguments are. Soames (1989, p. 395) puts his point in terms of “*the truth-conditional content of a sentence S with respect to a context C*”, which are “the set of all circumstances *E* such that *S* is true with respect to *C* and *E*”, but what I call ‘propositional intensions’ are just the characteristic functions of these sets.

⁵⁹The question raised then is: why do we need intensions in addition to contents? In a sense we don’t *need* them, as contents are such that they will have denotations relative to worlds of evaluation. However, the idea is that, once this denotation relation exists, we get intensions for free, and that intensions then serve as a useful way of representing this denotation relation. The addition of intensions to contents is not supposed to be a significant additional theoretical commitment.

they relate these things (e.g. state that a given entity has a given property, or that two entities are related by a given relation). These things and their relations form the informational structure of the statement. I will hold then that two statements are samesayers if and only if they have the same informational structure.

How does informational structure explain samesaying? What a statement ‘says’, the claim it makes about the world, is that a certain entity, or certain entities, have certain properties, or are related in certain ways. Two statements with the same informational structure must therefore ‘say the same thing’. In other words, they must be samesayers. Finally, note that the proposition a statement expresses reflects the things it is about and how it relates those things and *does nothing else*. Propositions therefore encapsulate the structure of statements. Thus the one-to-one relation between propositions and the partitions created by the samesaying relation reflects the fact that the proposition associated with each partition represents the common structure possessed by every statement in that partition.

2.4 *de re* versus *de dicto*

I have thus far presented native speaker acceptability intuitions towards indirect speech reports as unequivocal. However, an average native speaker can have conflicting intuitions towards the acceptability of an indirect speech report. Consider this example:

Situation **S2A**: In 2015, Ida says The president of the US is a democrat. Dennis then says to Lisa I didn’t hear what Ida said, to which Lisa responds Ida said that Obama is a democrat.

On the one hand, I will suggest, native speakers can find Lisa’s response acceptable, as Ida was talking about Barack Obama. On the other hand, I will also suggest that native speakers can find Lisa’s response unacceptable, as Ida was not talking about Obama by name, but was instead talking about the president of the US (who happens to be Obama). The first kind of intuition I will call a *de re acceptability judgement* and the second kind I will call a *de dicto acceptability judgement*.

Note that this division is not the same as the division between direct and indirect speech reports. Consider this example:

Situation **S2B**: Gottlob says Aristoteles war aus Stagira gebürtig.⁶⁰ Graham then says to Elsa and Roger I didn’t hear what Gottlob said. Elsa responds Gottlob said that the teacher of Alexander the Great was born in Stagira. Roger then responds No, he said that *Aristotle* was born in Stagira.

Elsa’s statement is *de re*, but not *de dicto*, acceptable, as Gottlob was talking about the teacher of Alexander the Great, but not under that description. Roger’s statement, in contrast, is both *de re* and *de dicto* acceptable. Importantly, though, neither Elsa’s nor Roger’s statements are true direct speech reports, as Gottlob uttered a German sentence, while Elsa and Roger both reported his statement using English sentences. Thus both *de re* and *de dicto* are categories of judgements towards indirect speech reports.

⁶⁰This example sentence is from Frege (1892, p. 58fn).

The existence of these conflicting judgements towards indirect speech reports creates problems for the analysis of indirect speech reports I have presented. One way this problem could be resolved is by positing that there are two different notions of samesaying, *de re* and *de dicto* samesaying, and therefore two senses of **says that**, the *de re* sense and the *de dicto* sense. Only one of these notions of samesaying could be explained by contents as I have presented them, and as such my analysis of indirect speech reports could cover only one of the senses of **says that**. The other would have to be explained by some other sort of meaning, perhaps constitution or character. As Kaplan (1980, p. 553) puts it: “the situation regarding the usual epistemic verbs—believes, hopes, knows, desires, fears, etc.—is, I believe, essentially similar to that of **says**. Each has . . . a direct discourse sense in which the character which stands for the cognitive significance of the thought is given . . . as well as an indirect discourse sense in which only the content need be given.”⁶¹

I will hold that there is only one sense of **says that**, which corresponds to what has been called the *de re* sense.⁶² Apparent cases of *de dicto* indirect speech reports are, I will argue, cases where acceptability judgements are being driven by certain pragmatically imparted propositions. I will discuss examples of such cases in further detail in Chapter 7. Given that my analysis will not require **says that** to have two separate senses, it will be (*ceteris paribus*) simpler than any analysis that recognises the *de re/de dicto* distinction.⁶³ I will discuss this point in greater detail in Chapter 7.

2.5 Propositions are Eternal but Bases are not

Kaplan (1980, p. 503) holds that propositions are time-neutral, and therefore may be time-sensitive. However, if propositions are to play the ‘what it says’ role, they must all be eternal.⁶⁴ Suppose the following example sentence is true (in the current context):

⁶¹It is not entirely clear whether Kaplan is referring here to the *de re/de dicto* or the direct/indirect speech distinction. Kaplan (1980, p. 553fn) says that his “notion of ‘indirect discourse’ forms of language is linked to Frege’s notion of an ‘ungerade’ (often translated ‘oblique’) context.” This comment is unhelpful however, as speech reports, be they direct or indirect, *de re* or *de dicto*, all involve oblique contexts. That being said, I think that we can identify the distinction Kaplan is concerned with here as the *de re/de dicto* distinction. Kaplan says that his notion of ‘direct discourse’ depends on characters not sentences. If one were to report another’s speech using a different sentence with the same character (and content), then one would have made a *de dicto* acceptable indirect speech report but a false direct speech report. Given Kaplan presents his notion of ‘direct discourse’ in terms of characters, not sentences, I think that he had the *de re/de dicto* distinction in mind.

⁶²In doing so, I am following the approach of Salmon (1986). Salmon does not discuss indirect speech reports in detail, but he does say that they are a kind of propositional attitude report. For example, he discusses “a certain class of attitude verbs, including think, believe, know, say, and many more” (Salmon 1986, p. 5). As I discuss in Subsection 2.6.1, Salmon only considers propositional attitude reports to have one sense, the *de re* sense. Presumably this would then extend to indirect speech reports too.

⁶³This *ceteris paribus* clause is important as the simplicity of theories can only be judged holistically. My analysis may not be simpler overall than a theory which recognises the *de re/de dicto* distinction if my explanation of the *appearance* of such a distinction is more complicated than just recognising the distinction itself.

⁶⁴Something is *eternal* if it is the same at all times and *time-sensitive* if it is different at different times. Something is *time-fixed* if it has *within itself* a specified time of evaluation, otherwise it is *time-neutral*. Everything time-fixed is eternal, thus neutrality to time is necessary (but not sufficient) for sensitivity to time.

In 1971 Mary said that Nixon was president, and she still says that.⁶⁵ If propositions were time-neutral then ‘the thing that Mary said’, the content of her statement, would not contain any specified time of evaluation. Thus, ‘the thing she still says’ must not carry any specified time either. ‘What Mary says’ must be evaluated at the current time, but this can’t be the case, otherwise this statement would imply the truth of the following (in the current context): **Today, Mary says that Nixon is president.** Intuitively, however, the first statement can be true while the second is false. If we hold instead that propositions are eternal, then ‘the thing Mary says’ must contain a specified time of evaluation.⁶⁶ Given, in the original statement, the indirect speech report was within the sentential context of the temporal operator in 1971, we can take the specified time to be the year 1971. Thus the first statement would imply the truth of the following (in the current context): **Today, Mary says that Nixon was president in 1971.** Intuitively this statement must be true if the first one is. Thus, propositions must be eternal. In the appendix I will show how propositions contain specified times so as to be eternal.

The idea that propositions are eternal stretches back to at least Frege. Frege, “using ‘thought’ [*Gedanke*] for content of a sentence” (Kaplan 1980, p. 501), says this about *Gedanken*:

“Now is the thought [*Gedanke*] changeable or is it timeless? The thought [*Gedanke*] we express by the Pythagorean theorem is surely timeless, eternal, unchangeable. But are there not thoughts [*Gedanken*] which are true today but false in six months time? . . . No, for it is not the same thought [*Gedanke*] at all. . . . Without the time-indication this gives we have no complete thought [*Gedanke*], *i.e.* no thought [*Gedanke*] at all” (Frege 1919, p. 309).

Following Salmon (1986, p. 27), I have introduced a further notion of informational content, namely bases. Unlike contents, bases are not eternal. Thus, bases cannot play the role of explaining samesaying. Bases are needed for a different role: explaining *temporal claims*. A temporal claim is a statement with a *temporal operator*, e.g. **Sometimes**. Temporal operators change the time (or times) a statement is evaluated at. Intuitively, **Sometimes S** is true, in a context *c*, if there exist times where ‘what is said’ by **S** in *c* is true. This is the sense in which, whatever kind of meaning temporal operators operate on, it must be playing the ‘what it says’ role. However, despite the fact that contents play the ‘what it says’ role, contents cannot be used to explain the truth conditions of temporal claims. Whatever temporal operators operate on, they must operate on things which are time-sensitive, if they are to have any effect at all. Things which are fixed in time will have the same denotation no matter the time of evaluation, and as such shifting the time of evaluation will have no effect. As Kaplan (1980, p. 503) puts it “if we built the time of evaluation into the contents (thus removing time from the circumstances . . . and making content specific to time), it would make no sense to have temporal operators.” Salmon (1989, p. 372) agrees with this point: “It is true that a

⁶⁵This example is adapted from an example in Richard (1981). Richard’s original example pertained to belief reports, but a parallel point applies to indirect speech. I discuss Richard’s original example below.

⁶⁶‘The thing Mary says’ must be time-fixed to be eternal because someone can be president at some times and not at others. A claim can be eternal without being time-fixed where it ascribes some timeless property, like the claim **One is odd**.

temporal operator, if it is not to be vacuous, must operate on some aspect of its operand sentence that yields different truth-values with respect to different times—something that is time-neutral or noneternal.” Thus, to explain temporal claims, we need some kind of meaning which plays the ‘what it says’ role (like contents) but is time-sensitive (unlike contents): namely, bases. Temporal operators will then be operators on bases. As Salmon (1989, p. 373) suggests: “Kaplan’s notion of what he calls the ‘content’ of an expression is in fact a confused amalgamation of the information content and the information-content base.”

Given that temporal operators operate on bases, their operands must denote bases (and thus have non-standard denotations). Another question to ask is: what is the content of such operands? Suppose that such operands had their standard contents, namely propositions. As such, like all propositions, they would carry a specified time of evaluation (and therefore be eternal). But consider the following example:

Situation **S3A**: In 1971, Sally says Sometimes the US has a Democratic President. In 2015, Fran says Sometimes the US has a Democratic President.

Intuitively these two utterances, by Sally and Fran, seem to be samesayers. We can compare these utterances to the following:

Situation **S3B**: In 1971, Sally says The US has a Democratic President. In 2015, Fran says The US has a Democratic President.

In contrast, these utterances are not samesayers. Indeed, Sally’s utterance is false while Fran’s is true, as Sally’s utterance regards 1971 while Fran’s regards 2015. If the operand propositions in **S3A** contained a specified time of evaluation, like the propositions in **S3B**, then the utterances in **S3A** could not be samesayers. The contents of these operands must then be the same as their bases (and therefore their bases, contents and denotations must be the same). This approach follows that of Salmon (1986, p. 39-40): “A sentence of the form ‘Sometimes S ’ may be regarded as encoding, with respect to a given context c , information concerning the ... base of the operand sentence S with respect to c ... Just as it is the information content of its operand that a modal operator says something about ... so it is the information content base of its operand that a temporal operator says something about.”

This fact does not require a redefinition of what a content is, as in these cases what the uses of the operand expressions are contributing to the proposition expressed by the statement they are part of *is* their base. However, we will need to make some revisions. First, in addition to non-standard denotations, we must introduce *non-standard contents*. An expression-use with non-standard content will have its base, rather than its standard content, as its content. The operands of temporal operators will have non-standard contents. Secondly, when I said that expression-uses could, in addition to their standard denotations, also denote their contents, I was only telling part of the story, as the denoted contents could themselves be non-standard. To put the point as clearly as possible, expression-uses can, in addition to their standard denotations, also denote their standard contents and their bases.

As bases are time-sensitive, and bases can be contents, it therefore follows that some contents are not eternal. We might then be concerned that this contradicts the claim that all propositions are eternal. However, that is not the case. Note firstly that a

use of a sentence which expresses a non-standard content (i.e. one within the scope of a temporal operator) will express a time-neutral content, but this content will be a propositional *matrix*, and not a proposition. Thus, the only statements that we need to be concerned about are those that a) express a proposition and b) those that contain an expression-use with its base as its content. The only statements like that are temporal claims. However, we can see how the propositions expressed by temporal claims must too be eternal. Although these propositions will contain time-neutral propositional matrices, the role of temporal operator is to provide a time, or times, for these matrices to be evaluated at, in the process eternalising them. As such, any propositional matrix which occurs within a proposition will have been eternalised by a temporal operator. Thus, I can still hold that all propositions are eternal.

Having discussed them here, I will for the most part put aside bases in the rest of this thesis. I can do this by focusing on only those examples which are in present tense and do not contain any temporal operators. By not introducing any temporal operators, I don't need to worry about expression-uses which contribute their bases to the propositions expressed by the statements they are part of. By focusing only on examples in present tense, I need only worry about statements and expression-uses which have the time parameter of the context of use as their time of evaluation. Thus I can derive contents directly from constitutions using colours, and therefore can bypass bases. In making this move, I don't want to suggest that bases do not play an important role in my overall project of understanding informational content. I make this simplifying move merely because I do not have space to do this topic full justice.

2.6 The Other Roles Propositions Play

2.6.1 Propositional Attitudes

Although Kaplan defined propositions in terms of the 'what it says' role, there are other important related roles that propositions play. One such role is in explaining the meaning and truth conditions of *propositional attitude reports*. *Propositional attitudes* include *belief*, *desire*, *fear*, and so on. A propositional attitude report is a statement of the form N R that S, where N refers to an (believing, desiring, etc.) agent, R refers to a propositional attitude and S is a sentence.

One way of understanding propositional attitudes is in terms of *propositional attitude relations*: relations which hold between agents and propositions. Each propositional attitude will then be explained in terms of a propositional attitude relation. We can then offer the following analysis of propositional attitude reports: a use of N R that S is true if and only if the agent referred to by the use of N bears the propositional attitude relation associated with the propositional attitude referred to by the use of R to the proposition expressed by the use of S. Put another way: N R that S is true in a context *c* if and only if the referent of N in *c* bears the relation denoted by R in *c* to the proposition expressed by S in *c*.⁶⁷ We can call this analysis the *relational analysis*

⁶⁷Compare Soames (1989, p. 396): "Propositional attitude sentences report relations to the semantic contents of their complements. An individual *i* satisfies 'x v's that S' (with respect to *C* and *f*) iff *i* bears *R* to the semantic content of *S* (with respect to *C* and *f*)." Kaplan (1980) suggests such an analysis when he says that the "*Objects of thought ... = Contents*" (p. 530) and that "we may hold a propositional attitude towards a given content" (p. 532). Salmon (1986, p. 5-6) provides a similar analysis of propositional attitude reports.

of propositional attitude reports.⁶⁸

If we consider indirect speech to be (sort of) a propositional attitude, this analysis is in line with the analysis of indirect speech reports provided above. In addition, expressions of the form **N R that** would be operators on contents, and their operand sentences would denote their contents, rather than their standard denotations. Furthermore, like in the case of indirect speech, we might think that there are *de re* and *de dicto* senses of propositional attitude reports, and as such this analysis would only apply to *de re* propositional attitude reports. I will discuss this possibility below.

With this analysis we can see the role propositions play in explaining the truth conditions of propositional attitude reports. We can even link this role with the explanation given above of *how it is* that propositions play a role in explaining the truth conditions of indirect speech reports. Propositional attitudes, like statements, are about things (e.g. entities and properties) and they relate these things. Thus propositional attitudes, like statements, may be said to have an informational structure. A sentence-use will accurately report a propositional attitude, then, when the informational structure of the attitude matches the informational structure of the sentence-use. This analysis is therefore not merely descriptively adequate but truly explanatory.

As I discussed earlier, I will hold that some propositions are singular. I will further hold that some of these singular propositions stand in propositional attitude relations to agents. This further claim has been objected to: “It is sometimes argued, and more often taken for granted, that the theory of singular propositions is, from the point of view of cognitive psychology, wholly inadequate and wildly implausible as a theory of the content of thought” (Salmon 1986, p. 2). Beliefs and desires feature in causal explanations of behaviour, but it is hard to see how singular propositions could play any role in such explanations. How could an entity, located light-years away from a person, affect their behaviour? To resolve this problem, I will suggest that there are (at least) two notions of ‘belief’ and ‘desire’. The first is the epistemic, normative notion I have been discussing so far, while the second is a psychological, causal notion which can explain behaviour. I will call the first notion *wide belief/desire*, as it is a relation agents have to *wide mental content*, and the second notion *narrow belief/desire*, as it is a relation agents have to *narrow mental content*. The two notions need not line up. Certainly, singular propositions cannot feature in a causal explanation of behaviour, but that is not their explanatory role. Propositions are there to explain attitude reports.

We might then think, if there are two notions of ‘belief’, that there are two senses of **believes**, one of which is explained by propositions (the sense I discussed above) and one of which is explained by the narrow content that features in causal explanations of behaviour. This divide might then correspond to the *de re/de dicto* divide I discussed above. In particular, whatever characters are, they too must be narrow mental content. As such, we might suppose that the narrow sense of **believes** lines up with the *de dicto* sense of **believes**, both of which are explained by character. The wide, *de re* sense would then be explained by content, as in the analysis I have given here. Certainly Kaplan (1980, p. 553) suggests such an approach, as I discussed above.

I do not think that there are two senses of **believes**. As in the case of indirect speech, I will hold that there is only one sense of **believes**, and of other propositional

⁶⁸“Propositional attitudes have a relational semantics” (Soames 1989, p. 405).

attitude verbs, that which has been called *de re*.⁶⁹ I don't believe that claims about narrow mental contents are ever made directly in natural language in the form of propositional attitude reports. Natural language has not evolved with causal explanations of behaviour in mind. In so far as claims about such narrow contents are expressed by propositional attitude reports, they are expressed through pragmatically imparted propositions. In claiming this, my theory will be (*ceteris paribus*) simpler than any theory which recognises this division.

Propositional attitudes, like indirect speech, must be explained by something which is eternal. "As Richard points out, if what is asserted and believed were something temporally neutral or noneternal, then from the conjunction In 1971 Mary believed . . . that Nixon was president, and she still believes that it would be legitimate to infer Today, Mary believes that Nixon is president. Such an inference is an insult not only to Mary but also to the logic of English, as it is ordinarily spoken. Rather what we may infer is Today, Mary believes that Nixon was president in 1971. The reason for this is that what Mary is said by the first sentence to have believed in 1971 is not the noneternal proposition matrix Nixon being president but the eternal proposition that Nixon is president (at such-and-such time) in 1971" (Salmon 1986, p. 26-27).⁷⁰

2.6.2 Modality

Another role that propositions play is in an explanation of *modality*. I will adopt the following analysis of *necessity claims*: A use of **Necessarily S** (where S is any sentence) will be true in a context *c* if and only if the proposition expressed by S in *c* is true in every world of evaluation. This analysis will agree with the truth conditions Kaplan (1980, p. 545) provides for such claims. Kaplan (1980, p. 508-510) provides the following argument that truth conditions cannot explain necessity claims: the sentence **I am here now** is true in every context, as in any context the speaker of the utterance will be at the location of the utterance at the time of the utterance. However, any statement **Necessarily I am here now** will be false, as the speaker *could* have been somewhere else at that time. In contrast, propositions *can* explain necessity claims. As I discussed above, I will follow Kaplan in holding that the indexicals **I**, **here** and **now** are directly referential. A use of **I am here now** by David Kaplan on 26th of March 1977 in Portland will therefore express the proposition $AT^{26/3/1977}\langle KAPLAN, PORTLAND \rangle$. This proposition is not true in every possible world, as at that time Kaplan may have been at a different location. As such, a use of **Necessarily I am here now** by Kaplan at that time in that location would be false.

As in the case of indirect speech reports and the case of propositional attitude reports, native speakers have both *de re* and *de dicto* appropriateness intuitions towards modal claims. Unlike in those two cases, I will hold that in this case the difference is explained by the fact that there are two senses of **necessarily**, and furthermore my analysis only covers the *de re* sense. I will explain why this case is different from the other two cases, and explain what analysis I will provide for *de dicto* modal claims, in

⁶⁹I am following the approach of Salmon (1986) here. Salmon (1986, p. 6) says that "singular propositions are the contents of . . . beliefs, . . . we have propositional attitudes toward singular propositions." As I suggested above, singular propositions cannot be narrow mental contents. Salmon is therefore saying that the wide, *de re* analysis of belief reports is correct.

⁷⁰Salmon (1986, p. 157en) cites Richard (1981, p. 1-13).

2.6.3 Information

The final role that propositions play is in an explanation of *information*. “The fundamental semantic role of a declarative sentence is to encode information . . . A declarative sentence will be said to *contain* the information it encodes, and that piece of information will be described as the *information content* of the sentence” (Salmon 1986, p. 13). The proposition expressed by a statement is the piece of information that statement encodes. “(Declarative) sentences encode pieces of information, called *propositions*. The proposition encoded by a sentence, with respect to a given context, is its information content with respect to that context” (Salmon 1986, p. 17).

Information plays many important roles. Information explains propositional attitudes: “Natural languages contain propositional attitude constructions. Thus, conclusions about the nature of semantic information needed to account for these constructions are important for developing adequate semantic theories for these languages” (Soames 1989, p. 393-394). Furthermore, information plays the ‘what is said’ role: “Sentences are vehicles for encoding information relative to contexts of use. In standard cases, someone who assertively utters a sentence asserts, perhaps amongst other things, the information encoded by the sentence in the context. Similarly, someone who is prepared to accept a sentence in a context believes that which the sentence encodes in the context” (Soames 1989, p. 394). Basically put, information plays all the roles propositions do.

The links between information and propositions go deeper than that. Pieces of information are also structured, abstract objects: “Pieces of information are, like the sentences that encode them, abstract entities . . . it is evident that pieces of information are not ontologically simple, but complex” (Salmon 1986, p. 13). Pieces of information, like propositions, are also eternal: “The eternalness of information is central and fundamental to the very idea of a piece of information, and is part and parcel of a philosophically entrenched conception of information content” (Salmon 1989, p. 342). Put simply: information is content and content information. This is why Salmon can speak of ‘information content’ and why I use the terms ‘informational content’, ‘information’ and ‘content’ synonymously.

One distinction that will be very important in this thesis is the distinction between *semantically encoded* and *pragmatically imparted* information. “It is extremely important . . . to distinguish the notion of the *information content* of a sentence on a particular occasion of use from the notion of the *information imparted* by the particular utterance of the sentence. The first is a semantic notion, the second a pragmatic notion” (Salmon 1986, p. 58). Given the close link between information and propositions, I will also discuss this division in terms of semantically encoded and pragmatically imparted *propositions*.

The proposition semantically encoded by a given statement is the proposition that statement expresses. Any proposition that a listener takes away from an utterance, be it semantically encoded or otherwise, is a pragmatically imparted proposition. “In addition to (sometimes instead of) the information semantically encoded by a sentence, an utterance of the sentence may impart further information concerning the speaker’s beliefs, intentions, and attitudes, information concerning the very form of words chosen,

or other extraneous information” (Salmon 1986, p. 59). A speaker may not intend to convey certain pragmatically imparted propositions with their words, and indeed may want to convey contradictory propositions (such as in cases of dramatic irony). However, when a speaker does intend to convey such propositions, pragmatically imparted information becomes a powerful communicative tool. “Pragmatically, we use declarative sentences to communicate or convey information to others (generally, not just the information encoded by the sentence)” (Salmon 1986, p. 13).

There are two kinds of pragmatically imparted proposition that should be considered. The first kind does not require any particular linguistic understanding on the part of the listener. “For example . . . you don’t speak a word of French but you have it on good authority that Jean-Paul’s next inscription will be of a true French sentence, and you observe Jean-Paul then write the words *Cicéron est identique à Cicéron* . . . By way of its inscription, you are given a great deal of nontrivial information; you are thereby given that a certain sequence of marks is a meaningful and grammatical expression of French, that it is in fact a French sentence, and that it is a true sentence” (Salmon 1986, p. 58). Note that you can receive this information while still having no idea what proposition the French statement *Cicéron est identique à Cicéron* semantically encodes.

The second kind of pragmatically imparted proposition requires the listener to understand what proposition the utterance semantically encodes. Take, for instance, *scalar implicature*.⁷¹ My utterance of *I liked some of the movie* will pragmatically impart the proposition that I did not like all of the movie. Note, however, that this utterance will not impart such information to anyone who doesn’t understand what proposition the utterance semantically encodes. In this sense a full explanation of pragmatically imparted information requires a theory of semantically encoded information (i.e. a semantic analysis). “Many of their [declarative sentences] other semantic and pragmatic functions follow from or depend upon their fundamental semantic role of encoding information” (Salmon 1986, p. 13). This is why I suggested above that we cannot put aside semantic issues while answering pragmatic questions (or, at least, not in general).

One thing that I want to note is that pragmatically imparted information is not lesser or more casual than semantically encoded information. Communicating via pragmatically imparted information is equally as legitimate as communicating via semantically encoded information, even in technical contexts. As I discussed in Chapter 1, both semantically encoded and pragmatically imparted information affect native speakers’ acceptability intuitions. Importantly, native speakers cannot differentiate between the effects of semantically encoded and pragmatically imparted information. Semantically encoded information is not therefore the same as literal meaning. This is similar to the way in which truth (as different from acceptability) is not the same as the common-sense notion of literal truth.

The fact that semantically encoded and pragmatically imparted information are equally legitimate raises the question of why we even have these two separate notions. Why not just consider all information semantic, or consider all information pragmatic? Where should we draw this divide, and indeed why should we draw it at all? To explain this, I first must draw a distinction between our *general knowledge and reasoning abilities* and our *specific linguistic knowledge*. Our general knowledge and reasoning abilities are common to everyone (although obviously some people have more knowledge and are

⁷¹See Grice (1975).

better reasoners than others) while specific linguistic knowledge is language-relative, so we can speak of English knowledge, German knowledge, and so on. When we receive an utterance of a sentence, we can use our general knowledge and reasoning abilities (without invoking any specific linguistic knowledge) to discover certain propositions imparted by the utterance. These propositions form the first kind of pragmatically imparted information I discussed above. Following that, we can use our specific linguistic knowledge, if we have any specific linguistic knowledge relevant to that utterance, to discover the proposition semantically encoded by the utterance. Finally, we can use this semantically encoded proposition *together with* our general knowledge and reasoning abilities to discover further propositions imparted by the utterance. These propositions form the second kind of pragmatically imparted information I discussed above.

Given this picture, we can see why the semantically encoded/pragmatically imparted divide is necessary, and where it should be drawn. To begin with, a notion of semantically encoded information is necessary because people cannot discover all of the information (semantic or pragmatic) imparted by an utterance of a sentence without some specific linguistic knowledge of the language that sentence is part of. We can see this in the fact that, for instance, you have to understand at least some French to discover all of the information imparted by an utterance of a French sentence. The reason why pragmatically imparted information is necessary is somewhat more complicated. Consider that general knowledge and reasoning abilities, as the name suggests, are not used for only linguistic purposes. Thus we can suppose that a theory of general knowledge and reasoning exists independent of and prior to any linguistic theorising. In other words, all general knowledge and reasoning abilities are independently justified, and any linguistic theory can therefore utilise them to any extent without incurring any additional theoretical or ontological commitments. As such, any theory of imparted information that utilises general knowledge and reasoning will be simpler than one that doesn't. Thus we can see not only why pragmatically imparted information is necessary, but also where the semantically encoded/pragmatically imparted divide should be drawn. The less that can be considered semantically encoded, the simpler the theory will be.

Ideally, I would here present a systematic theory of what information an utterance of a sentence will pragmatically impart (relative to the information semantically encoded by that utterance, and perhaps other contextual details). However, I do not have such a theory. Indeed, presenting such a theory would be hugely difficult, given that our general knowledge (as I'm using the term) encompasses all facets of human existence (except language). Without such a theory, however, I leave myself open to the objection that any explanation I provide which invokes pragmatically imparted information is *ad hoc*. Any time my semantic analysis disagrees with some acceptability intuition, I can just claim that this is due to some pragmatically imparted proposition. In the hopes of refuting this objection, at least to some extent, I will put this constraint on explanations which invoke pragmatically imparted information: Putting aside any other factors, native speakers will find an utterance of a sentence acceptable if and only if *all* the information (semantic and pragmatic) imparted by that utterance is true. What this means is that pragmatically imparted information cannot be used to explain why an utterance is found acceptable, if the semantic analysis allocates it a false semantically encoded proposition. As I will discuss in Chapter 7, this will stop at least one explanation I could have otherwise provided. Hence, explanations which

invoke pragmatically imparted information are at least not entirely *ad hoc*.

As I have outlined here, informational content is a very important notion. This is why I am centrally concerned with it in this thesis. In particular, I am concerned with the informational content of statements containing uses of definite descriptions. I will present my views on the informational content of these statements in Part II of this thesis.

2.7 Contents are Total

I have raised the possibility of contents which lack a denotation (in a given world of evaluation). Any expression-use with such a content may then lack a denotation. Thus far, however, I have not discussed what it *means* for an expression-use to lack a denotation in such a manner. What is the explanatory role of such denotation gaps? Note that I am here considering the possibility of expression-uses without denotations but with contents. This is a separate possibility to that of expression-uses without either contents or denotations. That possibility I will consider in Chapter 3.

The explanatory role of denotations is to determine the truth-value of propositions. Furthermore, the result of a denotation gap is for the proposition that gap resides within to have no truth-value (in the relevant world). We can then see the role of denotation gaps as creating truth-value gaps. But what, then, do such truth-value gaps *mean*? What is the explanatory role of propositions lacking truth-values (in certain worlds)?⁷²

The answer to this question is not at all clear. The role of propositions is to say that things are a certain way, and propositions denote TRUE in a world if things are that way. Thus, if a proposition p has no truth-value in a world w , then things must not be as p says they are in w . Yet, if things aren't as p says they are in w , then why wouldn't p denote FALSE in w ? There does not seem to be a way in which p and w can be related that a truth-value gap would capture.

I will avoid this problem by holding the following: all propositions are total. As such, there are no truth-value gaps that need to be explained. As I will discuss in the appendix, propositions are *conditionally partial*, which means that they are partial if and only if they have partial constituents. Thus, to hold that all propositions are total I must hold that there are no *unconditionally* partial contents which could be the constituents of propositions. The only such contents I will discuss are eternal iota terms and eternalised epsilon terms. Thus I will suggest that such terms should not feature in a theory of the content of natural language. As these are the only unconditionally partial contents, eliminating them eliminates the possibility of partial propositions. The reason I will discuss eternal iota terms and eternalised epsilon terms is that they will feature in the rival views I want to discuss. I will take it as a virtue of my view that I can avoid this problem while those views cannot.

Note again that I am only claiming here that there are no expression-uses (and statements) which have contents (and propositions) but don't have denotations (or truth-values). In Chapter 3, I will claim that there are expression-uses (and statements) which lack both contents (and propositions) and denotations (and truth-values). Thus,

⁷²Note again that the question of the explanatory role of statements without truth-values but with propositions is separate from the question of the explanatory role of statements without either propositions or truth-values. This second question I return to in Chapter 3.

I am not claiming that denotation (and truth-value) gaps don't exist in general, just that they don't exist in this form.

3 Constitutions and Characters

3.1 Constitutions

In this section, I will discuss my notion of a constitution. To begin with, I will discuss what exactly I take constitutions to be. Like propositions, I will take propositional constitutions to be structured abstract objects. Constitutions in general will then be the constituents of these propositional constitutions. I will be representing certain constitutions, such as entities and properties, using small caps. As with denotata and contents, the idea here is not that I am presenting words and sentences that express these constitutions, but rather that I am presenting the constitutions themselves. Of course, this is not what I am actually doing, but it is the best I can do on paper. The small caps representations are better than those of standard English as they have a one-to-one correspondence with the actual constitutions, as well as presenting directly the structure of complex constitutions, as I discuss later. For these reasons the small caps representations get us closer to the actual constitutions than English by itself. The fact that I am using small caps to represent constitutions, contents and denotata will not be problematic, as it will either be the case that the same things are constitutions, contents and denotata (e.g. entities), or further notation will make clear whether the things are constitutions, contents or denotata (e.g. predicates versus eternal properties versus properties). As each expression has only one constitution, there exists a function from expressions to their constitutions.⁷³ I will represent this function using $\llbracket \cdot \rrbracket$, so that (for any expression X) $\llbracket X \rrbracket$ is the constitution of X .

The constitutions of operator expressions and of operand expressions are themselves in an operator-operand relationship. However, as in the case of contents but unlike in the case of denotata, this does not mean that the operator is applied to the operand. Constitutions are not functions, and therefore combining constitutions is not an operation of functional application. When constitutions are combined, the complex constitutions that result must contain the original constitutions as constituents, and nothing else besides. Suppose we have a complex expression $X Y$ where X is the operator and Y is the operand. I will then represent the constitution of the expression $X Y$ as $\llbracket X \rrbracket \langle \llbracket Y \rrbracket \rangle$. The use of angle brackets here is to indicate that complex constitution construction is not a process of functional application.

If a given expression X is such that it contains a subexpression Y such that Y does not express any content in a given context c , then X will therefore also not express any content in c . I discuss why this is the case in the appendix. This is consistent with the claim I made in Chapter 1 that any complex expression-use that contained a non-denoting subexpression-use must itself lack a denotation. Given that the content of an expression-use in a given context is identical to (and indeed determined by) the

⁷³Note that this means that there is a many-to-one relationship between sentences and propositional constitutions, as each sentence has only one constitution, but multiple sentences may have the same propositional constitutions. Given that propositional constitutions determine truth conditions, there will also be a many-to-one relationship between truth conditions and propositional constitutions.

content of the constitution of that expression in that context, this claim must also be true of constitutions (as I discuss in the appendix). If a given constitution X is such that it contains a subconstitution Y and Y does not express any content in a given context c then X will therefore also not express any content in c .

I will hold that actual physical entities can serve as constitutions, as well as serving as contents. I will call any expression with an entity as its constitution *strongly directly referential*. Entities as constitutions have themselves as contents in every context, and as such every strongly directly referential expression will be directly referential, however the reverse is not the case.⁷⁴ I will hold that *proper names* are strongly directly referential. For example, I will hold that $\llbracket \text{Socrates} \rrbracket = \text{SOCRATES}$. This is in accordance with Kaplan’s (1980, p. 562) analysis of proper names: “In the case of proper name words, all three kinds of meaning—referent, content, and character [i.e. constitution]—collapse . . . Because of the collapse of [constitution], content, and referent, it is not unnatural to say of proper names that they have no meaning other than their referent.” This is in accordance with Kripke’s (1970) claim that the meanings of proper names contain no descriptive element. Furthermore, following Kripke (1970), I will argue that natural kind terms are also strongly directly referential. Thus I will hold that $\llbracket \text{Water} \rrbracket = \llbracket \text{H}_2\text{O} \rrbracket = \text{H}_2\text{O}$.⁷⁵

In addition to entities, four other kinds of constitution will be important in this thesis. Firstly, there are iota terms $\iota\langle\mathcal{P}\rangle$ which contain the iota operator ι and a property \mathcal{P} . In any c , the content of $\iota\langle\mathcal{P}\rangle$ is the one and only \mathcal{P} -entity in c , if there is such an entity, and nothing otherwise. Secondly, there are epsilon terms $\varepsilon\langle\mathcal{P}\rangle$ which contain the epsilon operator ε and a property \mathcal{P} . In any c , the content of $\varepsilon\langle\mathcal{P}\rangle$ is the uniquely \geq^c -maximal \mathcal{P} -entity in c , if there is such an entity, and nothing otherwise.⁷⁶ Thirdly, there are two-dimensional iota terms $\iota^2\langle\mathcal{P}\rangle$ which contain the two-dimensional iota operator ι^2 and a property \mathcal{P} . In any c , the content of $\iota^2\langle\mathcal{P}\rangle$ is the eternal iota term $\iota\langle\mathcal{P}^{c_t}\rangle$. Fourthly, there are two-dimensional epsilon terms $\varepsilon^2\langle\mathcal{P}\rangle$ which contain the two-dimensional epsilon operator ε^2 and a property \mathcal{P} . In any c , the content of $\varepsilon^2\langle\mathcal{P}\rangle$ is the eternalised epsilon term $\varepsilon^{c_t}\langle\mathcal{P}^{c_t}\rangle$. I will call the property constituent of each of these constitutions a *restrictor constitution*, by analogy with the restrictors of definite descriptions. I will discuss all of these constitutions in greater detail in the appendix.

3.1.1 Constitutions and Reference Determiners

Russell (2010, p. 193) describes the role of reference determiners as “what determines the function from the way the world is to the extension [i.e. denotation] of the expression.” We can’t “say that the referent [i.e. denotation] is not determined by *anything*, which would be rather magical, but rather that it is determined by something else” (Russell 2010, p. 189). So what plays this role? The obvious response here might be that we *know* what determines the denotation of an expression-use: contents. That isn’t the whole story, however. Firstly, there remains the question of what then determines the *content* of an expression-use. Secondly, while a content will tell us the denotation of an expression-*use* relative to a world of evaluation, we still have the question of what

⁷⁴Below I discuss two kinds of constitution which have entities as their contents but are not themselves entities: namely, iota and epsilon terms.

⁷⁵I will discuss this further in Section 3.2.

⁷⁶Where \geq^c is the ordering parameter of c .

will determine the denotation of an *expression* relative to a context of use.

The answer that the General Framework provides to both of these questions is that *constitutions* play these roles. An expression’s constitution determines the content of a use of that expression relative to the context that expression is used in (if it has a content). Constitutions do this by determining *colours*.⁷⁷ Furthermore, an expression’s constitution determines the denotation of a use of that expression relative to the context that expression is used in (if it has a denotation). Constitutions do this by determining *contours*. Thus constitutions can be described as “what determines the function from the way the world is to the extension [denotation] of the expression” (Russell 2010, p. 193) and therefore fulfil the role Russell outlined for reference determiners.

Earlier, I identified determining the denotation of an expression-use with determining the *content* of an expression-use. I now want to explain why I did that. Certainly we can see that, by determining the content an expression has in a given context, you also determine the denotation it has in that context. However, it is possible for something to determine the denotation of uses of an expression without determining their content. We can see this as two expressions may have the same contour, but different colours (and as such the same denotation in every context but not the same content). Necessarily true sentences provide an example: **Two is even** and **Three is odd** both have the same contour (i.e. the one that returns TRUE for every context) but different colours.

However, just as the denotation of an expression (relative to some context) must be determined by something, so must the content (relative to some context). We must note that, whatever it is that will determine what contents expression-uses have, that thing will also (indirectly) determine what denotations such uses have. If a thing determines that an expression X has content X in context c , then that thing will also determine the intension of X (as contents directly determine intensions) and the intension of X , given c_w , will determine the denotation of X in c . This is how constitutions determine the contour of an expression, as I discussed in Chapter 1. Thus, anything which determines the denotation of uses of an expression without determining their content will be at best a *derivative* notion. It is then better to discuss the non-derivative notion rather than the derivative notion, and this is why I discuss this role in terms of determining contents, rather than directly determining denotations.⁷⁸

Constitutions differ from reference determiners in one important sense. Constitutions determine contents relative to only one contextual factor: the context of use. In contrast, reference determiners determine contents relative to a second contextual factor, “a different kind of context that I will call *context of introduction*” (Russell 2008, p. 53), which is “the state when the word is introduced to the language in the first place” (Russell 2008, p. 54). Russell (2010, p. 195) holds that reference determiners determine “a function from contexts of introduction and contexts of utterance [i.e. use]

⁷⁷Technically speaking, of course, constitutions only determine contents indirectly, via bases. However, as I discussed in Chapter 2, I will ignore the role of bases for simplicity.

⁷⁸Russell herself is somewhat inconsistent on whether reference determiners determine contents (relative to contexts of use). In Russell (2008, p. 46) she defines reference determiners as “a condition which an object must meet in order to be the referent of, or fall in the extension of, an expression.” Such conditions are insufficient to determine contents, as we can see in the case I gave above of two necessarily true sentences which express different contents (in any given context). However, in Russell (2010, p. 195) she holds that reference determiners determine “a function from contexts of introduction and contexts of utterance [i.e. use] to contents”. I will use the sense of ‘reference determiner’ in which they are understood to determine contents as well as denotations.

to contents”. Reference determiners and colours are related in (roughly) the following way: if we take the reference determiner of a given expression X , and apply it to the context of introduction X had in the actual world, then we get a function from contexts of use to contents, and this function is identical to the colour of X . Reference determiners and constitutions are not as closely linked, as it is possible to determine the colour of an expression without determining its constitution (as two different constitutions may have the same colour). However, determining a constitution is sufficient for determining a colour (as constitutions directly determine colours) and as such any notion which determines a colour without determining a constitution will be at best a derivative notion. Once again, it is better to discuss the non-derivative notion rather than the derivative notion. As such, in a slight abuse of the notion, I will hold that reference determiners determine functions from contexts of introduction to constitutions (and therefore indirectly determine functions from contexts of introduction to colours).⁷⁹

Two questions arise: why does Russell employ the notion of reference determiners while I employ the notion of constitutions, and how can these two different notions both fulfil the same role? To begin with, we need to consider how expressions first enter a language. For an expression to become a meaningful part of a language within a given possible world, it is necessary for a person to introduce that expression into the language. Furthermore, it is insufficient for such a person to just introduce a new sign into the language—they need to give it a meaning as well. As Russell (2010, p. 194-195) notes, some methods of introduction are such that the end result can depend on contextual features of the introducing act (i.e. can depend on the context of introduction): “What is distinctive about words such as *cat* and *Hesperus* is that their referent depends on the state of the world *when they were introduced*.”

Note, however, that there are two things in this account that we can call an ‘expression’. The first thing is a sign together with a method of introduction. I will call this an *expression*₁. The second thing is the result of this introduction, i.e. a new expression within the language in that possible world. I will call this an *expression*₂. Note that these notions come apart as an *expression*₁ can exist in multiple different contexts of introduction, while an *expression*₂ can exist in only a single context of introduction, and the *expression*₂ an *expression*₁ determines can be different in different contexts of introduction.

Russell (2010, p. 193) describes the role that reference determiners play as “what determines the function from the way the world is to the extension of the expression”, but given this distinction between the different notions of expression, we can see that there are two roles here: what determines the function from contexts of introduction and use to the denotation of the *expression*₁, and what determines the function from contexts of use to the denotation of the *expression*₂. Reference determiners fulfil the first role while constitutions fulfil the second. Thus, strictly speaking reference determiners and constitutions do not play the same role (although they do play very similar roles).

Given that (as I have construed them) reference determiners determine constitutions (relative to contexts of introduction), constitutions are therefore a derivative notion. Given what I said above about derivative notions, it seems then that I should discuss reference determiners and not constitutions. However, reference determiners are too

⁷⁹Russell has no notion of a ‘constitution’ and as such she neither holds that reference determiners determine constitutions nor that they don’t.

general for my needs. My concern in this thesis is with the informational content of *our* words. I am not concerned with the informational content of the words uttered in different possible worlds.⁸⁰ My concern is with language in the *actual* world. As it stands, every expression has only one context of introduction *in the actual world*. Thus, I can consider the constitutions that expressions₁ have in this world, and not worry about what constitutions they have in other possible worlds. Relatedly, I am only concerned with the (derivative) notion of expression₂ in this thesis, and not the notion of expression₁ (and as such every use of ‘expression’ in this thesis should be read as ‘expression₂’).

Why then is *Russell* concerned with reference determiners? Russell’s project is different from mine, as her primary concern is *analyticity*. Russell (2010, p. 195) holds that “*a sentence S is analytic just in case for all pairs of context of introduction (c_i) and context of utterance [use] . . . c_u . . . the proposition expressed by S with respect to ⟨c_i, c_u⟩ is true [at the world and time of c_u].*” Given that sentences, considered as expressions₂, only exist in one context of introduction, this definition should be understood in terms of sentences considered as expressions₁ (i.e. sentences₁). Thus two sentences₁ may have the same constitution (in the actual world) while only one of them is analytic.

Take for example the two sentences₁ *Water is H₂O* and *H₂O is H₂O*. As I discussed in the previous section, these two sentences₁ have the same constitution in the actual world, namely *H₂O=H₂O*. However, suppose “that a natural kind predicate is introduced when someone points at a sample of the kind and says *Let’s use the word N to refer to any substances that have the same underlying structure as that stuff . . .* We will assume *water* is of this kind. The extension of *water* is thus sensitive to context of introduction” (Russell 2008, p. 59-60). Consider then Putnam’s (1973, p. 700-701) *Twin Earth thought experiment*: “Suppose that somewhere there is a planet we shall call Twin Earth . . . Apart from the differences we shall specify . . . Twin Earth is exactly like Earth . . . One of the peculiarities of Twin Earth is that the liquid called *water* is not H₂O but a different liquid . . . XYZ. I shall suppose that XYZ is indistinguishable from water [i.e. H₂O] at normal temperatures and pressures. Also, I shall suppose that the oceans and lakes and seas of Twin Earth contain XYZ and not water [H₂O], that it rains XYZ on Twin Earth and not water [H₂O], etc.” In the context of introduction of Twin Earth, *water* will not refer to H₂O but to XYZ. Thus, Russell (2008, p. 65-66) holds that only *H₂O is H₂O* is analytic, as *Water is H₂O* is false in some contexts of introduction, e.g. Twin Earth. Thus Russell needs to discuss reference determiners, and not constitutions, as constitutions cannot explain analyticity. I am not concerned with analyticity in this thesis, and therefore I need not concern myself with reference determiners.

The Twin Earth example *is* important to this thesis as there is another analysis we could provide where *Water is H₂O* and *H₂O is H₂O* do *not* have the same constitution. “Two dimensionalists like Jackson and Chalmers think that natural kind terms have reference determiners which are sensitive to context of utterance [and not the context of introduction] (e.g. my twin on Twin Earth speaks English but in her context of utterance the English word *water* picks out XYZ instead of H₂O)” (Russell 2008, p. 57).⁸¹ “Those who reject the externalist view and who think that names and natural

⁸⁰Although I am interested in the informational content of claims made in this world about other worlds.

⁸¹Russell cites Jackson (1998) and Chalmers (2004).

kind terms are more like indexicals, so that, for example, the English word **water** is associated with a description such as *the actual clear potable liquid which fills streams, rivers and oceans* will think that **water** picks out XYZ when used on Twin Earth, and so might argue that we do not need contexts of introduction to account for the behaviour of that expression” (Russell 2008, p. 116). In other words, just as I in a given context directly refers to the speaker in that context, we might hold that **water** in a given context directly refers to whatever is the clear potable liquid which fills streams, rivers and oceans in that context. If uses of H₂O still strongly directly refer to H₂O then **Water** is H₂O and H₂O is H₂O would have different constitutions and there would be no need for reference determiners or contexts of introduction to explain their difference in analyticity.

There is a clear similarity between cases of indexicality and Twin Earth examples. In both cases double-indexing is necessary to determine the denotation of the relevant expressions. In other words, both are examples of *two-dimensionality* in language. This similarity in structure might lead us to think that the two phenomena *must* be explained in the same way. However, there is no overriding reason why there can’t be multiple kinds of two-dimensionality in language.⁸² More plausibly, one might argue that any theory that contains multiple kinds of two-dimensionality must be more complicated, and therefore a worse theory, than a theory which contains only one kind of two-dimensionality.

Putnam himself considers the possibility of identifying the two-dimensionality of his Twin Earth cases with the two-dimensionality of indexicals. However, he chooses to hold that the two are different phenomena: “The theory that natural-kind words like **water** are indexical [i.e. two-dimensional] leaves it open . . . whether to say that **water** in the Twin Earth dialect of English has the same *meaning* [i.e. constitution] as **water** in the Earth dialect and a different extension—which is what we normally say about I in different idiolects . . . or to say, as we have chosen to do, that difference of extension is *ipso facto* a difference in meaning of natural kind words” (Putnam 1973, p. 710).⁸³ That being said, Putnam does not provide an argument for this view.

Russell, however, does provide an argument to show why the two different kinds of two-dimensionality are necessary: “One . . . intuitive reason for keeping contexts of introduction and utterance separate in the formalism is that we can consider cases in which the two vary independently of each other” (Russell 2008, p. 115). Consider the following example:

Situation **S4**: Alan the Astronaut flies to Twin Earth in a spaceship. While there he radios back the following message to Earth: “The stuff in the rivers here isn’t actually **water**—it’s something called XYZ.”⁸⁴

⁸²Indeed, we have already seen examples of this in the separate two-dimensional structures that exist between constitutions and bases and between bases and contents.

⁸³When Putnam says that we ‘normally say’ that I has the same meaning but different extensions in different idiolects, it is unclear whether he agrees with this claim. I have interpreted him as agreeing with this claim. Alternatively, we might interpret him as saying that difference in extension implies difference in meaning in all cases. If we adopt this interpretation, then Putnam must hold that the two-dimensionality of his Twin Earth cases is identical to that of indexicals, but in neither case is the meaning the same in different contexts. This would mean that Putnam would have to hold that I has billions of different meanings, which I find an absurd result. As such I think that my interpretation is more charitable than the alternative.

⁸⁴This example sentence is from Russell (2008, p. 115).

In this example, the context of introduction for Alan’s use of the word **water** is Earth, while the context of use is Twin Earth. Intuitively Alan’s statement seems correct. However, if the denotation of **water** was determined relative to the context of use, then Alan’s use of **water** would refer to XYZ and thus his utterance would be false.⁸⁵ The only way to ensure that Alan’s utterance is true is to separate the two different kinds of two-dimensionality.⁸⁶

The notion of a constitution is closely linked to that of a *language* (for at least one of the uses of that term). I will define a language as a system of signs, each of which is associated with a constitution. In other words, a language is a collection of expressions₂. This conforms to Russell’s (2008, p. 115) definition of a language: “A *language* is an ordered pair $\langle f, c \rangle$ in which f is a function from expressions_[1] to reference determiners, and c is a possible world history (the context of introduction).” Given that a reference determiner together with a context of introduction determine a constitution, a language in Russell’s sense is sufficient to determine a language in my sense. Note that this means that the languages spoken on Earth and on Twin Earth must be different, as they have different contexts of introduction.

Why define a language in this way? A language is something which is shared by a community of people, so to understand what a language is we must understand what these people share. Certainly a language community share a system of signs (i.e. a grammar), but they must share something more than this if they are to engage meaningfully with each other. What is shared can’t be contents, as the contents of expressions vary within a language depending on the context of use. Nor can it be reference determiners, as different languages, with different contexts of introduction, can have the same reference determiners. Nor, as I will argue next, can it be characters. All that is left, then, is constitutions, and as such I define languages in terms of constitutions. Furthermore, we can see why I defined an expression (i.e. an expression₂) as a sign together with a constitution, as expressions are the pieces of a language which are shared throughout the language community.

Up to this point I have, following Russell, called contents, constitutions, reference determiners and characters all different kinds of meaning. Given the role constitutions play in defining languages, I will suggest that there is a sense in which constitutions are better described as ‘meanings’ than these other notions. This corresponds to Strawson’s (1950, p. 327) claim that “To give the meaning of an [referential] expression . . . is to give general directions for its use to refer to or mention particular objects or persons. To give the meaning of a sentence is to give general directions for its use in making true or false assertions. It is not to talk about any particular occasion of the use of the sentence or expression.” As such, I will call a theory which assigns constitutions to signs a *semantic analysis*. My project in this thesis is to provide a semantic analysis of definite descriptions. Providing a semantic analysis can then be identified with defining

⁸⁵Nor could we claim that the context of use was actually Earth, as then Alan’s use of **here** would refer to Earth and the utterance would still be false. The utterance can only be true if the contexts of introduction and use are different.

⁸⁶The two dimensionalists may deny that Alan’s statement is true, but in this case we would have a difference of intuitions, and as such I would not be sure that we are still speaking the same language. That being said, as Russell (2008, p. 115) points out, even if the two dimensionalists thought that “the natural language expression **water** does not work that way, it surely makes sense to imagine that some expression does, and even to define a new expression which does.” The two kinds of two-dimensionality would still then be necessary.

the $\llbracket \cdot \rrbracket$ function.

Above, I said that providing a semantic analysis was an essential part of my overall project of understanding information content. We might wonder why this is. To begin with, constitutions provide a *metasemantic theory for contents*: a theory that tells us *in virtue of what* expression-uses have the content they do. (However, as I detail below, this theory is of limited benefit). More importantly, a semantic analysis is necessary to account for and explain what contents expressions have relative to different contexts, as we cannot provide a theory which directly allocates informational content to each expression in a language, given the expressions in a language have different contents in different contexts. Thus we must provide a theory which allocates informational content to each expression-context pair. But to do so is to give each expression its colour. Thus a theory of colours is necessary for my overall project of understanding information content. What I haven't said here is why *constitutions* are needed in addition to colours. As in the case of contents and intensions, constitutions are necessary because a) constitutions are more fine-grained than colours, and b) colours are too coarse-grained to play a particular explanatory role. In the appendix I will show how constitutions are more fine-grained than colours and in Chapter 7 I will discuss the particular explanatory role that only constitutions are fine-grained enough to play.

I have not yet provided a *metasemantic theory for constitutions*: a theory that tells us in virtue of what expressions have the constitutions they do. However, the question as put like this is trivial: it is just part of the definition of a given expression that it has the constitution it has. A more interesting metasemantic question is the following: why is it that English has the expressions (and therefore the constitutions) that it has. This question I will not attempt to answer here. As such, I cannot in a strong sense say that I have explained why expression-uses have the contents they do, as I have just pushed the question back to the level of constitutions.

Another metasemantic question is the following: in virtue of what does a given *utterance* have the constitution it has. In answer to this, I would say that utterances do not have constitutions independent of *interpretations* of those utterances. To interpret an utterance is to consider it a part of a given language, and as such is to assign it a constitution. The question of what interpretation is most correct for a given utterance in a given context is a pragmatic question with which I need not concern myself with here, given my sole focus on the English language.

3.1.2 Incomplete Constitutions

To this point, I have not discussed what it means for a constitution to lack a content (in a given context) and thus what it means for an expression with such a constitution to lack a content (in a given context). To put this point more precisely, given the explanatory role of the contents of constitutions (i.e. determining the propositions of propositional constitutions), what is the role of *content gaps*? The result of a content gap is for the propositional constitution that gap resides within to express no proposition (in the relevant context).⁸⁷ The question can then be put like this: what is the explanatory role of propositional constitutions lacking propositions?

As I have discussed earlier, the main task of statements is to express informational content in the form of propositions. As Salmon (1986, p. 13) puts it: “The fundamental

⁸⁷I discuss why this is the case in the appendix.

semantic role of a declarative sentence is to encode information.” However, statements are not perfect tools for this task. Sometimes they fail to encode any information, and therefore fail to express a proposition. This can occur even when the statement is a use of a meaningful, grammatical sentence, and therefore has a constitution. This possible outcome will then be represented in the General Framework through the propositional constitution of the statement lacking a proposition.

For this possible outcome to occur in a given language, it must be the case that the semantic code of the language does not guarantee that every grammatical sentence expresses a proposition in every context of use. I will hold that English is such a language. As I discussed in Chapter 1, in natural language we cannot always determine what content a given expression-use encodes without taking into account certain contextual factors related to that expression-use. I will now suggest that this context-dependence has the consequence that certain uses of certain expressions, namely expressions with incomplete constitutions, may fail to encode any content.

Consider the following example: the content a (non-eternal) iota term $\iota\langle\mathcal{P}\rangle$ in a context c will be the unique \mathcal{P} -thing in c , if there is such a thing, and nothing otherwise. Thus, what content $\iota\langle\text{FRENCH-KING}\rangle$ will express in a given context depends on who is King of France in that context. However, if *no-one* is King of France in that context (like in the present context) then $\iota\langle\text{FRENCH-KING}\rangle$ will have no content in that context. The context-dependence of iota terms is such that some contexts will fail to provide any entity to be the content of the term. Next, consider the propositional constitution $\text{WISE}\langle\iota\langle\text{FRENCH-KING}\rangle\rangle$. This propositional constitution will, in a given context, express a proposition that makes a claim about the entity that is King of France in that context. However, if no-one is King of France in that context, there will be no claim to make so the propositional constitution (and any statement with that propositional constitution) will not express any proposition. Thus we can see that (unconditionally and conditionally) incomplete constitutions can fail to express contents due to their context-dependence.⁸⁸ Furthermore, we can see that the content gaps of (sub-propositional) constitutions represent the failure of those constitutions to provide their contribution to the propositions expressed by the propositional constitutions they are a part of due to contextual factors, and we can see that the failure of this contribution leads to the propositional constitution not being able to express a proposition.

A propositional constitution that doesn’t express a proposition in a given context will also not have a truth-value in that context. These truth-value gaps can be explained in terms of the role of proposition gaps I provided above. A propositional constitution denotes TRUE in a context of use when the proposition that propositional constitution expresses in that context denotes TRUE in that context, denotes FALSE in a context when the proposition that propositional constitution expresses in that context denotes FALSE in that context, and fails to have a denotation when that propositional constitution fails to express any proposition in that context. A propositional constitution is true when it expresses a true claim, false when it expresses a false claim and has no truth-value when it expresses no claim at all. As Strawson (1950, p. 330) put it: “the question of whether his statement was true or false simply *didn’t arise*.” The role of denotation gaps more generally can then be understood in terms of the role of content gaps I discussed

⁸⁸I discuss the conditional and unconditional incompleteness of constitutions in the appendix.

above. Any expression will therefore trigger the presupposition that it has content.

This explanation of denotation gaps is not available in the cases where constitutions have contents but not denotations. As I discussed in Chapter 2, I hold such cases to be inexplicable. As such, the only denotation gaps I will have in my analysis will also be content gaps. I will hold this fact to be an advantage of my analysis over its rivals.

3.2 Characters

Russell (2010, p. 187) defines *characters* as “what speakers have to know about an expression in order to count as understanding it.” To begin with, this definition entails that characters are things agents can understand, and are therefore narrow mental contents. In Chapter 2, I used Salmon’s (1986, p. 66-67) Twin Earth scenario to show that characters cannot play the ‘what is said’ role. However, we might think that characters can play the ‘what determines contents/denotations’ role. Certainly, Kaplan (1980, p. 505) thinks that they can: “The character of an expression . . . determines the content of the expression . . . It is natural to think of it as meaning in the sense of what is known by the competent language user.” In contrast, following Russell (2008, p. 46-47), I will argue that characters cannot play this role.

Let’s consider Putnam’s (1973, p. 700-702) Twin Earth thought experiment once again:

“Suppose that somewhere there is a planet we shall call Twin Earth . . . Apart from the differences we shall specify . . . Twin Earth is exactly like Earth . . . One of the peculiarities of Twin Earth is that the liquid called **water** is not H₂O but a different liquid . . . XYZ . . . Now let us roll back the time to about 1750. The typical Earthian . . . did not know that water consisted of hydrogen and oxygen, and the typical Twin Earthian . . . did not know that “water” consisted of XYZ. Let Oscar₁ be such a typical Earthian English speaker, and let Oscar₂ be his counterpart on Twin Earth. You may suppose that there is no belief that Oscar₁ has about water that Oscar₂ did not have about “water.” If you like, you may even suppose that Oscar₁ and Oscar₂ were exact duplicates in appearance, feelings, thoughts, interior monologue, etc. Yet the extension of the term **water** was just as much H₂O on Earth in 1750 and in 1950; and the extension of the term **water** was just as much XYZ on Twin Earth in 1750 as in 1950. Oscar₁ and Oscar₂ understood the term **water** differently in 1750 *although they were in the same psychological state* . . . Thus the extension of the term **water** is *not* a function of the psychological state of the speaker by itself.”

Oscar₁ and Oscar₂ are in the exact same psychological state, which means that all of their narrow mental contents are the same. A consequence of this is that everything Oscar₁ knows about the expression₁ **water** Oscar₂ also knows. Given that Oscar₁ is a competent user of **water** in (Earth) English, and Oscar₂ is a competent user of **water** in Twin-English, the characters of **water** in English and Twin-English must then be the same. However, the constitutions of **water** in English and Twin-English cannot be the same. This is true even if we put aside the claim I made earlier that the constitution of **water** in English is H₂O (and therefore the constitution of **water** in Twin-English must be XYZ). Note that the constitution of an expression fully determines its contour, and

as such if two expressions have different contours they must have different constitutions. Given that **water** in English (in every context) refers to H_2O and **water** in Twin-English (in every context) refers to XYZ, **water** in English and Twin-English have different contours and therefore different constitutions. Characters therefore cannot play the ‘what determines contents/denotations’ role.

I did not include characters in the three-dimensional system I presented in Chapter 1. This is because I neither wanted nor needed to take a stance on what the exact relationship holds between characters and the other kinds of meaning. One might hold, with Kaplan (1980, p. 505), that characters determine constitutions (and therefore indirectly contents), at least in the sense that, for him, constitutions had to be identical to characters (as he did not think there were two different kinds of meaning there). Alternatively, one might follow Putnam (1973) and hold that there is no particular relation between characters and the other kinds of meaning. I will leave this question open. Note that this means that I am also not presenting a *metasemantic theory for characters*.

Above I stated that characters could not be used to define a language (in the sense in which I have used the term). I now want to look at why that is. One reason might be that different users of the same language have different characters for the same expression. Given that I have not defined the relationship between the character(s) and constitution an expression has, I have neither shown this to be the case, nor ruled it out. There is another reason, however, to hold that characters could not be used to define a language. Consider again the example of Earth and Twin Earth. Suppose that not only Oscar₁, but everyone on Earth has an exact duplicate on Twin Earth. All the speakers of English on Earth, and all the speakers of Twin English on Twin Earth, will therefore associate the same character with the same signs. However, English and Twin English are different languages. Therefore characters cannot be used to define a language.

Certainly, what a speaker must know about an expression if they are to understand it is an important and interesting question, but it is not a question that bears directly on my greater project of understanding informational content, as I am interested in the informational content that (uses of) languages have (in particular the English language), and as such I am not concerned with individual speakers and their understandings. Consider in particular the fact I established above that propositional attitudes have a wide and a narrow sense, and as such I can discuss wide propositional attitudes (and the contents that explain them) while putting aside narrow propositional attitudes (and the narrow mental contents, like characters, that explain them). As such, I will put characters aside for the rest of this thesis. I note them here only to clarify that my claims about contents and constitutions do not necessarily apply to characters.

Part II

An Analysis of Definite Descriptions

Definite descriptions are defined syntactically as expressions of the form *the X*, where *X* is a (singular) *nominal phrase*. A (singular) nominal phrase is either a (singular) *common noun*, or an expression that can replace a (singular) common noun within a grammatical sentence (e.g. a singular common noun following an adjective phrase or a singular common noun followed by a prepositional phrase).⁸⁹ Nominal phrases are predicative expressions (i.e. expressions of type $(\mathbf{e} \rightarrow \mathbf{t})$), so the constitution of a nominal phrase is a property, the (standard)⁹⁰ content of a nominal phrase (in a given context) is an eternalised property and the extension of a nominal phrase (in a given context and world of evaluation) is a set of entities. The nominal phrase component of a definite description I will call a *restrictor phrase*. I will call the constitution of definite description's restrictor phrase the *restrictor constitution* of that definite description. The content of the restrictor phrase-use of a definite description-use (in a given context) I will call the *restrictor content* of that definite description-use. The *restrictor set* of a definite description (in a given context and world of evaluation) is the extension of that definite description's restrictor constitution (in that context and world).

In this thesis, I will provide an analysis of the meaning of definite descriptions *relative to the meaning of their restrictor phrases*. In other words, I will take the meanings of restrictor phrases for granted, and present the meanings of definite descriptions in terms of the meaning of such restrictor phrases. Any attempt to present an analysis of the meaning of definite descriptions *per se* would require an analysis of the meaning of such restrictor phrases, which I will not present here. This is not to say that an analysis of such phrases is not needed for my overall project of understanding the informational content of definite descriptions, but just that such an analysis cannot be attempted in the space I have here.⁹¹ In other words, I want to discuss what the word *the* *adds* to the meaning of restrictor phrases.

In Part II of this thesis, I will present and argue for my semantic analysis of definite descriptions. In Chapter 4, I will argue that definite descriptions are referential expressions. In Chapter 5, I will argue for the salience view of the denotation of definite description-uses. In Chapter 6, I will present several rival analyses of definite descriptions, including my own salience directly referential analysis. In Chapter 7, I will argue for the salience directly referential analysis of definite descriptions. I will also look at some problems my analysis might seem to suffer, and examine how they might be addressed.

⁸⁹An example of the first would be *red dog*. An example of the second would be *father of Steven*. Note that I am not discussing *plural definite descriptions* (which contain *plural nominal phrases*) in this thesis.

⁹⁰I will discuss the non-standard contents later.

⁹¹Furthermore, I do not think that much can be said *in general* about the semantics of such expressions.

4 Definite Descriptions are Referential Expressions

4.1 Referential or Quantificational?

Definite descriptions can be seen as either *referential* or *quantificational* expressions. As established in Chapter 1, referential expressions are of the type \mathbf{e} , and uses of referential expressions denote single entities (when they denote anything at all). A *referential analysis* of definite descriptions will then hold that definite description-uses denote single entities (when they denote anything at all). In contrast, if definite descriptions are quantificational expressions then uses of sentences containing them will make claims about how many of a certain kind of entity there are (rather than making claims about some particular entity). As established in Chapter 1, quantificational expressions are of the type $((\mathbf{e} \rightarrow \mathbf{t}) \rightarrow \mathbf{t})$, and uses of them denote generalised quantifiers. A *quantificational analysis* of definite descriptions will then hold that definite description-uses denote particular generalised quantifiers.⁹² Which particular generalised quantifier they denote depends on the analysis in question, but something like the following is representative of the approach: The denotation of a use of the \mathbf{X} (supposing that the use of \mathbf{X} denotes the predicate P) in a world of evaluation w and time of evaluation t is $\lambda Q[\exists_w^t x(Px \wedge \forall_w^t y(Py \supset y = x) \wedge Qx)]$.⁹³ Note that Q here is a predicate variable (i.e. of the type $(\mathbf{e} \rightarrow \mathbf{t})$) so this function is of the type $((\mathbf{e} \rightarrow \mathbf{t}) \rightarrow \mathbf{t})$ (i.e. it is a generalised quantifier). A use of the sentence **The X is Y** will then be true (supposing the use of \mathbf{Y} denotes the predicate Q) in a world w at a time t if and only if $\exists_w^t x(Px \wedge \forall_w^t y(Py \supset y = x) \wedge Qx) = \text{TRUE}$.

We can trace the history of quantificational analyses of definite descriptions back to Russell’s (1905, p. 490) Theory of Descriptions: “If \mathbf{C} is a denoting phrase, say the term having the property \mathbf{F} , then \mathbf{C} has property ϕ means one and only one term has the property \mathbf{F} , and that one has the property ϕ .” However, claiming that Russell provided a quantificational analysis is complicated by the fact that Russell (1905, p. 479) seems to say that definite descriptions are referential expressions: “A phrase may denote one definite object; *e.g.*, the present King of England denotes a certain man.” This seeming anomaly can be easily resolved by noting that Russell’s notion of ‘denotation’ differs from the notion I presented in Chapter 1. To make this clearer, I will refer to Russell’s notion of denotation as *denotation_R*.

The only real definition Russell (1905, p. 488) provides for *denotation_R* is the following: “Thus if \mathbf{C} is a denoting phrase, it may happen that there is one entity x (there cannot be more than one) for which the proposition x is identical with \mathbf{C} is true ... We may then say that the entity x is the denotation of the phrase \mathbf{C} .” In other words, if all uses of x refer to x , and a statement x is identical with \mathbf{C} is true, then the *denotation_R* of the definite description-use \mathbf{C} is x . What is important to note is that, even if Russell held a quantificational analysis, this claim can still be true. Just because uses of \mathbf{N} is identical with \mathbf{C} (where \mathbf{N} is a proper name) will be true if and only if the *denotation*

⁹²Quantificational analyses of definite descriptions, as semantic analyses, will properly speaking present the *meaning*, as well as the *denotation*, of uses of definite descriptions. To keep this discussion general enough to cover other, rival theories of meaning, here I will only look at what such analyses say about the denotation of such expressions.

⁹³Note that \exists_w^t and \forall_w^t here are *time-and-world-fixed quantifiers*. In other words, \exists_w^t and \forall_w^t quantify over the domain of world w at time t . $\exists_w^t x\varphi$ is true (simpliciter) if and only if $\exists x\varphi$ is true in w at t , and similarly for \forall_w^t .

of the use of **N** is the same as the denotation_R of the use of **C**, that doesn't mean that the sentence-use is true *in virtue of* that fact. My use of 'denotation' comes from an understanding of denotations where they *determine* the truth-values of statements. Russell does not appear to be employing this understanding of denotation, and thus we have no reason to think that he was stating anything more than an equivalence.

Salmon (1986, p. 165) discusses this point as follows: "Even on Russell's theory, there is some semantic relation, albeit not reference . . . between a surface English expression like **Socrates**⁹⁴ . . . and the man, Socrates. This is the relation that correlates with each uniqueness-restricted existential quantifier \lceil some unique ϕ \rceil the unique object that satisfies ϕ , if there is one, and nothing otherwise. Russell misleadingly called this relation 'denotation'."

Russell did not present his analysis with anything like the lambda term given above. I will return to how Russell should be interpreted below. The first person to use a lambda term to represent the denotation of a definite description-use was Montague (1973, p. 231), although his approach was slightly different as he dealt with non-extensional operators in a different fashion. Other important examples of this approach include Barwise and Cooper (1981) and Neale (1990).

In this chapter I will argue that definite descriptions are referential expressions. There is a great amount of literature on the question of whether definite descriptions are referential or quantificational expressions and I cannot hope to cover all of it here, especially given that my primary focus is on informational content and not denotation. However, in this chapter I hope to survey some major existing arguments for quantificational analyses, and explain why I find these arguments incorrect, before presenting what I consider to be the most persuasive existing arguments for referential analyses. Note that my intention here is not to present any new arguments for referential analyses but rather to reiterate those arguments already presented. What will be new is my discussion of which referential analysis should be favoured (which will proceed through Chapters 5, 6 and 7).

4.2 Arguments for the Quantificational Analysis

Definite descriptions, along with proper names, indexicals, demonstratives and quantificational expressions, are noun phrases.⁹⁵ This suggests one reason why we might think that definite descriptions are quantificational: to give noun phrases a *unified type*. In English, noun phrases can be joined with verb phrases to form declarative sentences (i.e. according to the phrase structure rule **S** \rightarrow **NP VP**). Any compositional semantic theory for English will then need a rule to determine how the denotation of the use of such a sentence will be determined by the denotations of the uses of the noun phrase and verb phrase which make up the sentence. Given that verb phrase-uses denote predicates, if we then consider definite descriptions (which are a kind of noun phrase) to be referential expressions, the semantic rule associated with the syntactic rule **S** \rightarrow **NP**

⁹⁴Note that, under Russell's theory, proper names are disguised definite descriptions, so **Socrates** would be treated by Russell as the definite description **the ϕ** , where ϕ is some property that picks out Socrates uniquely.

⁹⁵We can see that all these kinds of expression must be of the same syntactic class given that any example of an expression of one of these kinds can be replaced within a sentence by an expression of any other of these kinds and the sentence will remain grammatical.

VP will have to be the following (in the case of definite descriptions): the denotation of **S** is given by applying the denotation of **VP** to the denotation of **NP** (i.e. $\mathbf{S} = \mathbf{VP}(\mathbf{NP})$). We can see this given that the type of sentences is **t**, the type of referential expressions is **e** and the type of verb phrases is $(\mathbf{e} \rightarrow \mathbf{t})$. This is consistent with the claims I made in Chapter 2 and 3 that indexicals and proper names (both kinds of noun phrase) are of type **e**.

However, some noun phrases are clearly quantificational expressions. One example is the expression *nothing*, as there is no *thing* which uses of *nothing* could stand for. Given that uses of quantificational expressions denote generalised quantifiers, for these expressions a different semantic rule would be necessary, whereby the denotation of **S** is given by applying the denotation of **NP** to the denotation of **VP** (i.e. $\mathbf{S} = \mathbf{NP}(\mathbf{VP})$). We can see this given that the type of sentences is **t**, the type of quantificational expressions is $((\mathbf{e} \rightarrow \mathbf{t}) \rightarrow \mathbf{t})$ and the type of verb phrases is $(\mathbf{e} \rightarrow \mathbf{t})$. Thus, either there are two semantic rules for the one syntactic rule $\mathbf{S} \rightarrow \mathbf{NP VP}$, or all noun phrases are actually referential, or all noun phrases are actually quantificational. There is no sense in which we could consider noun phrases like *nothing* referential, so the idea that all noun phrases are referential must be ruled out. Having two semantic rules for the one syntactic rule will lead to a more complicated theory, and so should be avoided. Furthermore, as Partee (1986, p. 117) points out, “there are independent reasons for wanting to analyze at least some occurrences of proper names as generalised quantifiers, for instance when they occur in conjunctions like *John and every woman*.” The same point will apply for definite descriptions, with expressions like *the president and nobody else*. As such, having all noun phrases as quantificational expressions seems the only viable option. This point was first presented in Montague (1973): “one of Montague’s best-known contributions to semantics was to show how these and other NP’s could be given a uniform semantic type, by taking the type of all NP’s to be $\langle\langle e, t \rangle, t\rangle$ [i.e. $((\mathbf{e} \rightarrow \mathbf{t}) \rightarrow \mathbf{t})$]” (Partee 1986, p. 116).

Following Partee, I will suggest that we can still see definite descriptions as referential, albeit with perhaps a revision to the notion of denotation. Partee (1986, p. 117) proposes a system whereby “(i) each basic expression is lexically assigned the *simplest* type adequate to capture its meaning; (ii) there are general type-lifting rules that provide additional higher-type meanings for expressions, so that the uniform higher-type meanings Montague posited for a given syntactic category will indeed be *among* the available meanings for all expressions of that category.” For instance, a denotation of type **e** can be converted to a denotation of type $((\mathbf{e} \rightarrow \mathbf{t}) \rightarrow \mathbf{t})$ through the *lift function*: $\lambda x[\lambda P[P(x)]]$.⁹⁶ The denotation of a statement will then be determined not just through the functional application (according to semantic rules) of the denotations of the expression-uses that make it up, but also through the application (also according to semantic rules) of type-lifting functions (like the lift function). Definite descriptions can then be ‘lexically’ assigned type **e**, but in constructions where they must have the type $((\mathbf{e} \rightarrow \mathbf{t}) \rightarrow \mathbf{t})$, e.g. *the president and nobody else*, they can be converted using the lift function.

However, all I have shown so far is that it is *possible* to consider definite descriptions as type **e**. I have yet to show that that is the best analysis. Indeed, given the additions that need to be made to the theory to accommodate this, it would not seem

⁹⁶See Partee (1986, p. 121). Note that the lift function has the type $(\mathbf{e} \rightarrow ((\mathbf{e} \rightarrow \mathbf{t}) \rightarrow \mathbf{t}))$.

to be the simplest, and therefore best, analysis. However, I will present several reasons why I believe referential analyses are the best analyses of definite descriptions in the next section. Note that outside this section I will only provide examples of definite descriptions within sentences where those definite descriptions can be considered to be type **e**, so I can avoid discussing type-lifting functions.

Another reason why people have held that definite descriptions must be quantificational is due to *empty definite description-uses* and the truth-values of statements containing them. A definite description-use is empty where its restrictor set is the empty set. Some philosophers have claimed that statements containing empty uses of definite descriptions (which aren't embedded within any negations) are false. Russell (1905, p. 490), for instance, says that “**the present King of France is bald** is certainly false.” This claim is consistent with the quantificational analysis given above. In contrast, under the most natural interpretation, statements containing empty uses of definite descriptions will have no truth-value in referential analyses. We can see that this is the case because a) as I suggested in Chapter 1, under the most natural interpretation statements containing non-denoting expression-uses will have no truth-value, and b) as I will elaborate in Chapter 5, under a referential analysis empty definite description-uses will have no denotation. In other words, the most natural result under a referential analysis is for definite descriptions to trigger a presupposition of the form ‘there exists at least one entity which satisfies the description’s restrictor phrase.’ If Russell’s truth conditions are correct, this then suggests that definite descriptions are quantificational, and not referential, expressions.

I will reject this argument because I disagree with the truth conditions that Russell presents for sentences containing definite descriptions. I will instead, following Frege (1892) and Strawson (1950),⁹⁷ claim that statements containing empty uses of definite descriptions have no truth-value, and therefore we should favour a referential analysis. Why would we think that statements containing empty definite descriptions-uses have no truth-value? Intuitively, present assertions of **The King of France is bald** are unacceptable. Putting aside pragmatically imparted information, a statement will be acceptable if and only if it expresses a true proposition. Thus, either such assertions express a false proposition, or have no truth-value. However, if such assertions expressed a false proposition, any assertion that expressed the negation of that proposition would then be acceptable. Yet, present assertions of **The King of France is not bald** are also unacceptable. If present assertions of **The King of France is bald** have no truth-value then (given the cumulative hypothesis) present assertions of **The King of France is not bald** would also have no truth-value. This suggests that Russell’s truth conditions are incorrect, and instead statements containing empty uses of definite descriptions have no truth-value.

There are several ways supporters of quantificational analyses could respond to this problem. Russell’s (1905, p. 490) response is to suggest that **The King of France is not bald** contains a hidden scope ambiguity: “**the present King of France is not bald** is false if it means **There is an entity which is now King of France and is not bald**, but is true if it means **It is false that there is an entity which is now King of France and is bald**.” Thus Russell can explain the intuition that present assertions of **The King of France is not bald** are unacceptable by holding that it is driven by the first possible

⁹⁷I will discuss Frege’s (1892) and Strawson’s (1950) views in more detail in Chapter 6.

reading of the sentence. However, I think that Russell’s approach is problematic for two reasons. Firstly, positing this scope ambiguity increases the complexity of Russell’s approach, whereas this result flows naturally from referential analyses. Secondly, this scope ambiguity suggests that some utterances of **The King of France is not bald** should be acceptable (in contexts where there is no King of France), as some intuitions should be driven by the second possible reading. However, it does not seem as if any such acceptability intuitions exist.⁹⁸

Another way supporters of quantificational analyses could respond to this problem is to hold that, although definite descriptions are quantificational, statements containing empty uses of definite descriptions actually have no truth-value. The approach that Barwise and Cooper (1981, p. 166) take, when translated into the General Framework, will provide a quantificational analysis whereby definite descriptions trigger a presupposition of the form ‘there exists at least one entity which satisfies the description’s restrictor phrase’, thus leading to this result. Note, however, that to take this approach is to concede to the supporter of referential analyses that statements containing empty definite descriptions-uses have no truth-value. Thus, these cases could form no argument against referential analyses. Furthermore, any such quantificational analysis must add this presupposition trigger in an *ad hoc* fashion, while it comes naturally from referential analyses. Thus, supposing statements containing empty definite descriptions-uses actually have no truth-value, referential analyses should be favoured.⁹⁹

4.3 Arguments for the Referential Analysis

I find several positive arguments for the referential analysis persuasive. Firstly, there is the fact that statements containing empty uses of definite descriptions have no truth-value, which (as I suggested above) is better explained by referential, rather than quantificational, analyses.

Secondly, Löbner (1985, p. 284) notes that “we can now decide if an NP must be analysed as an individual term [i.e. referential expression] or not by checking the respective properties:

(T1’) The NP can be negated.

(T2’) If (NP+VP) is true and \overline{VP} is the negation of VP, then (NP+ \overline{VP}) cannot be true.

⁹⁸Supporters of quantificational analyses could try to appeal to pragmatically imparted information to explain why present uses of **The King of France is bald** and of **The King of France is not bald** are both unacceptable. They could suggest that present uses of **The King of France is not bald** semantically encode a true proposition but pragmatically impart a false one. But what would this pragmatically imparted proposition be? The obvious option is the proposition that ‘there is an entity which is King of France and is not bald’. But why would this proposition be pragmatically imparted by such utterances? I cannot see any reason why this proposition, or any other relevant false proposition, would be pragmatically imparted by present uses of **The King of France is not bald** under a quantificational analysis and as such I do not believe that pragmatically imparted information would help quantificational analyses here.

⁹⁹There is a complication in the fact that some statements containing empty definite description-uses seem acceptable, such as present uses of **The King of France does not exist**. I will not discuss such cases in this thesis. I will return to this point in the conclusion.

(T3') If (NP+VP) is false, then (NP+ $\overline{\text{VP}}$) is true."¹⁰⁰

A referential analysis will both predict and explain the possession (or dispossession for T1') of these properties by a noun phrase. (T1') will be false of a referential noun phrase as there is no sense in which an entity can be negated. If we suppose the verb phrase VP denotes the predicate P in a given context then $\overline{\text{VP}}$ will denote the predicate $\lambda x[\neg P(x)]$. If NP is referential, and denotes A in that context, then (NP+VP) will be true if and only if $P(A) = \text{TRUE}$ and (NP+ $\overline{\text{VP}}$) will be true if and only if $\neg P(A) = \text{TRUE}$. If (NP+VP) is true then $P(A) = \text{TRUE}$ then $\neg P(A) = \text{FALSE}$ so (NP+ $\overline{\text{VP}}$) is false. Therefore (T2') will hold. Alternatively, if (NP+VP) is false then $P(A) = \text{FALSE}$ then $\neg P(A) = \text{TRUE}$ so (NP+ $\overline{\text{VP}}$) is true. Therefore (T3') will hold.

In contrast, a quantificational analysis will not predict the possession (or dispossession for T1') of these properties by a noun phrase. In particular, all generalised quantifiers can be negated, using the following function of the type $((\mathbf{e} \rightarrow \mathbf{t}) \rightarrow \mathbf{t}) \rightarrow ((\mathbf{e} \rightarrow \mathbf{t}) \rightarrow \mathbf{t})$: $\lambda Q[\lambda P[\neg Q(P)]]$. Therefore, no quantificational analysis will predict that (T1') is false. This does not mean that a noun phrase with these properties *cannot* be analysed as a quantificational expression, but any such analysis will require some additional explanation of why the noun phrase has these properties, and this additional explanation will make the analysis a more complicated and therefore worse theory.

Löbner (1985, p. 285-286) shows that (T1') is false, and (T2') and (T3') are true, of definite descriptions, and therefore definite descriptions should be seen as referential expressions. For example, the sentence "Not the child is playing" is ungrammatical, and therefore (T1') does not hold (Löbner 1985, p. 285). Furthermore, (T2') holds given that sentences like "The child is loud and the child is not loud" are contradictory (Löbner 1985, p. 285). Finally, (T3') holds given that, for example, if the statement The child is loud is false (in a given context), then the statement The child is not loud is true (in that context). Definite descriptions therefore should be analysed as referential expressions.¹⁰¹

Thirdly, quantificational analyses make predictions that do not conform to the same-saying relation. Although I have not discussed what contents quantificational analyses predict definite description-uses have, presumably such uses would have the same content as quantificational expression-uses which have the same denotations (in every context).¹⁰² For example, uses of **the cat** would have the same content as uses of **there exists exactly one cat and that cat**. However, it is not intuitively correct to report (for example) Fred's utterance of **The cat is orange** by saying **Fred said that there exists exactly one cat and that cat is orange**. In contrast, as I will argue in Chapter 7, (certain)

¹⁰⁰Löbner (1985, p. 283) defines these terms as follows: "Let P be a one-place predicate constant ... For every predicate symbol P we can introduce its negation \bar{P} . $\bar{P}(t)$ is true if and only if $P(t)$ is false. Let us say " P is true for t " if $P(t)$ is true."

¹⁰¹Note that (T2') and (T3') hold for the generalised quantifiers Barwise and Cooper (1981, p. 166) argue serve as the denotations of definite description-uses, but so does (T1'). The negation of (the denotation of) the definite description **the X** will form (given a verb phrase is Y) sentences equivalent to **The X is not Y**. What the Barwise & Cooper analysis therefore fails to explain is why sentences of the form **Not the X is Y** are ungrammatical, as according to the analysis such sentences should just be another way of saying **The X is not Y**. Barwise and Cooper therefore require some additional explanation of this fact, and this makes their analysis more complicated than a referential analysis.

¹⁰²Any quantificational analysis that did *not* make this prediction would need to include two different contents which had the same denotation in every context, and therefore would be a more complicated and worse analysis than one that did make this prediction.

referential analyses *do* make predictions that conform to the samesaying relation.

5 The Denotation of Definite Descriptions

As I discussed in the previous chapter, I will hold that definite descriptions are referential expressions. But which entity (if any) will the use of a given definite description refer to? I will start my discussion of the denotation of definite description-uses with the following principle: *a definite description-use will refer to a member of its restrictor set, where that set is non-empty*. The intuitive justification for this principle seems clear: how could something be **the X** if it wasn't an X. Furthermore, this principle provides a clear explanation of the role of restrictor phrases in definite descriptions (i.e. the restrictor phrase determines the restrictor set and the restrictor set in part determines the referent).¹⁰³ With one notable exception, all the authors I discuss in this thesis concur with (a version of) this principle.¹⁰⁴

There are then three kinds of definite description-uses to consider: *empty uses* (where the restrictor set is empty), *proper uses* (where the restrictor set is a singleton) and *improper uses* (where the restrictor set has multiple members). The principle I gave above will determine that proper definite description-uses refer to the single member of their restrictor sets. In the rest of this chapter, I will answer the remaining questions: what are the referents (if any) of empty and of improper uses?¹⁰⁵

5.1 Empty Uses

There are three possibilities for the referents of empty uses of definite descriptions: either they refer to nothing, or they refer to something outside their restrictor set, or we hold that there are no empty uses. I will examine these three options here. To begin with, Meinong held (roughly speaking) that there were no empty restrictor sets and therefore no empty uses. Meinong's "theory regards any grammatically correct denoting phrase as standing for an *object*. Thus the present King of France, the round square, etc., are supposed to be genuine objects. It is admitted that such objects do not *subsist*, but nevertheless they are supposed to be objects" (Russell 1905, p. 482-483).¹⁰⁶ This approach is problematic for many reasons, but its most important flaw is that it requires a huge number of new entities to be posited, and is therefore more complicated than any theory which doesn't have this requirement. For this reason I will not adopt Meinong's approach.

The idea that empty uses of definite descriptions refer to something outside their restrictor set raises many questions. Firstly, do all empty uses refer to the same entity,

¹⁰³Note that restrictor phrases have an additional role in determining (directly or indirectly) the content of definite description-uses. I discuss this further in Chapter 6.

¹⁰⁴The exception is Donnellan (1966), who I discuss in Chapters 6 and 7. Those authors who espouse quantificational analyses do not literally speaking agree with this principle, but they do agree with the denotation_R version of it: *a definite description-use will denote_R to a member of its restrictor set, where that set is non-empty*. In Section 5.2, I will discuss another version of this principle: the context-level version.

¹⁰⁵One answer to this question is that such uses refer to what their speaker intends them to refer to. This view of definite description denotation, which I will call the *intentional view*, I will discuss and reject in Chapter 7.

¹⁰⁶Russell (1905, p. 482) cites Meinong (1904).

or do different empty uses refer to different entities? Suppose different empty uses refer to different entities, and therefore there is some use X which refers to some entity A and another use X' which refers to some other entity B . It is difficult, however, to see on what basis X refers to A and not B , as it cannot be because X is an empty use (as X' is an empty use and it doesn't refer to A) nor can it be because of anything about X 's restrictor phrase (as A and B both have the same relation to X 's restrictor phrase, in that neither of them are described by it). Thus it seems more plausible to hold that all empty uses refer to the same entity. But what entity? We might suppose all empty uses referred to the empty set,¹⁰⁷ but this would not work, as then present uses of **The King of France has no members** would be true, whereas I argued in Chapter 4 that such uses should have no truth-value. However, we cannot pick any other entity to be the referent of all empty uses either, as *some* claim is true of each entity.

Instead, we could posit a new entity, let's call it \dagger , and stipulate that, for all predicates P , $P(\dagger)$ has no truth-value.¹⁰⁸ If we then held that empty uses referred to \dagger we would get expected result that all statements containing empty definite description-uses have no truth value.¹⁰⁹ This approach is problematic for two reasons. Firstly, it would require major additions to be made to the definition of predicates I gave in Chapter 1, which would lead to a more complicated theory. Secondly, it would leave no way of talking about \dagger and the referents of empty uses within the object language. On this analysis, the statement **The referent of empty uses of definite descriptions is \dagger** would lack a truth-value. In so far as, under this theory, the main point of this theory cannot be truly stated, the theory is self-defeating.

I will hold that empty definite description-uses have no denotation. This means that statements which contain empty definite description-uses have no truth-value. This corresponds with the evidence from acceptability intuitions (as I argued in Chapter 4). Furthermore, this means that definite description-uses will presuppose that there exists something which satisfies their restrictor phrases. Finally, this means that the following principle (which is a generalisation of the principle given above) holds: *a definite description-use will refer to a member of its restrictor set*. In Chapter 4, I said that this was the most natural interpretation of a referential analysis. What I meant

¹⁰⁷Russell (1905, p. 484) says that Frege held this view: "Another way of taking the same course ... is adopted by Frege, who provides by definition some purely conventional denotation for the cases in which otherwise there would be none. Thus **the King of France**, is to denote the null-class." As an interpretation of Frege, this claim by Russell is at odds with what Frege (1892) seems to claim (as I will discuss further below). Russell (1905) does not cite any source for this claim, but we might suppose that it stems from Frege's (1892, p. 71fn) claim that "In accordance with what was said above, an expression of the kind in question [a definite description] must actually always be assured of reference [*Bedeutung*], by means of a special stipulation, e.g. by the convention that 0 shall count as its reference [*Bedeutung*], when the concept applies to no object or to more than one." However, in context Frege does not appear to be making any descriptive claim about natural language here, but rather seems to be making a prescriptive claim about a logically ideal language. Regardless of whether this was Frege's view, we can consider it as a hypothesis on its own merits.

¹⁰⁸Within his formal system, Kaplan (1980, p. 545) holds that empty definite description-uses denote \dagger . However, he says that \dagger "represents an 'undefined' value of the function" (Kaplan 1980, p. 544). By this, I will interpret Kaplan as saying that \dagger is an indicator (within this formal system) of the fact that a definite description-use lacks a denotation, rather than interpreting him as holding that actual empty definite description-uses denote some actual entity \dagger .

¹⁰⁹As I discussed in Chapter 4, there are some exceptions to this claim. I will return to this point in the conclusion.

by that was that this was the simplest way of answering the question of the reference of definite description-uses was under a referential analysis, in that it did not require positing additional entities or revising any existing notions. The fact that the simplest answer to this question also best explained the evidence was a major argument in favour of the referential analysis, as I discussed in Chapter 4. As I will elaborate in the next section, this view on the denotation of empty definite description-uses has been held by Frege (1892), Strawson (1950), Kaplan (1980) and Salmon (1986), amongst others.

5.2 The Uniqueness View

The only question that then remains is what denotation improper definite description-uses have (if any). In the rest of this chapter I will consider three possible views on the denotation of definite description-uses which will answer this question.¹¹⁰ I will start my discussion with the *uniqueness view of definite description denotation*. The uniqueness view holds that a definite description-use will denote the single member of its restrictor set if its restrictor set is a singleton, and will denote nothing otherwise.¹¹¹ Put another way, a use of **the X** in a context c and world of evaluation w will denote x if and only if the extension of **X** in c and w is $\{x\}$. In more formal terms, supposing the constitution of **X** is the property \mathcal{P} :¹¹²

$$\downarrow(\downarrow(\llbracket \text{the X} \rrbracket)(c))(w) = \begin{cases} x & \text{if } [\mathcal{P}^{c_t}]_w^{c_t} = \{x\} \text{ (for some } x) \\ \text{nothing} & \text{otherwise} \end{cases}$$

The uniqueness view then holds that only proper uses of definite descriptions have denotations, while empty and improper uses have no denotations. Thus this view answers the question of what denotation improper definite description-uses have: none at all. As I established in Chapter 1, this means that statements which contain improper definite description-uses have no truth-value. Furthermore, this means that definite descriptions will trigger a presupposition of the form ‘there exists a unique satisfier of the definite description’s restrictor phrase’. In other words, a use of **the X** will trigger a presupposition of the form ‘there is one and only one **X**’.

5.2.1 History of the View

The uniqueness view first appears in Frege (1892). To begin with, Frege considers definite descriptions a kind of proper name¹¹³ and adopts a referential analysis of ‘proper names’: “The designation of a single object can also consist of several words or other

¹¹⁰Note that these views are views on the denotation of definite description-uses *in general*, not just of *improper* definite description-uses. However, these views will answer the question of what denotation improper definite description-uses have. My discussion of this point follows that of Krahmer (1998, Ch. 7).

¹¹¹Note that the quantificational analysis I presented in Chapter 4 represents the denotation_R version of this view.

¹¹²Recall, as was established in Part I, that $\downarrow(\downarrow(\llbracket \text{X} \rrbracket)(c))(w)$ represents the denotation of the expression **X** in a context of use c , time of evaluation c^t and a world of evaluation w and that $[\mathcal{P}^t]_w^t$ represents the extension of the eternalised property \mathcal{P}^t at a time of evaluation t and a world of evaluation w .

¹¹³For example: “Instead of the square root of 4 which is smaller than 0, one can also say the negative square root of 4. We have here the case of a compound proper name constructed from the expression for a concept [i.e. a restrictor phrase] with the help of the singular definite article” (Frege 1892, p. 70-71).

signs. For brevity, let every such designation be called a proper name” (1892, p. 57). Frege (1892, p. 58) also holds that some uses of ‘proper names’ lack a denotation: “It may perhaps be granted that every grammatically well-formed expression representing a proper name always has a sense [*Sinn*]. But this is not to say that to the sense [*Sinne*] there also corresponds a reference [*Bedeutung*].” Furthermore, Frege (1892, p. 69) holds that proper name-uses trigger the presupposition that they have denotations: “if anything is asserted there is always an obvious presupposition that the simple or compound proper names used have reference [*Bedeutung*]. If one therefore asserts Kepler died in misery, there is a presupposition that the name[-use] Kepler designates something.”

Finally, Frege holds that only proper definite description-uses have referents. He clearly says that empty definite description-uses have no referents: “The expression the least rapidly convergent series has a sense [*Sinn*] but demonstrably has no reference [*Bedeutung*], since for every given convergent series, another convergent, but less rapidly convergent, series can be found” (Frege 1892, p. 58). Frege is less clear on the claim that improper definite description-uses have no referents. He does however say the following: “We have here the case of a compound proper name constructed from the expression for a concept [i.e. a restrictor phrase] with the help of the singular definite article. This is at any rate permissible if the concept [restrictor phrase] applies to one and only one single object” (Frege 1892, p. 70-71). The claim that such expression-uses are ‘impermissible’ appears to be a reflection of Frege’s (1892, p. 70) view that a logically perfect language should not contain any referential expression-uses without referents: “A logically perfect language . . . should satisfy the conditions, that every expression grammatically well constructed as a proper name out of signs already introduced shall in fact designate an object, and that no new sign shall be introduced as a proper name without being secured a reference [*Bedeutung*].” If definite description-uses are then permissible if and only if their restrictor phrase-uses apply to one and only one entity, it must therefore be the case that definite description-uses have a reference if and only if their restrictor phrase-uses apply to one and only one entity. Thus we can see that Frege holds the uniqueness view.

The uniqueness view is also held by Kaplan (1980, p. 545) and Salmon (1986, p. 21): “the description’s referent, . . . the individual to which the description’s constitutive monadic predicate . . . applies if there is only one such individual and is nothing otherwise.”

5.2.2 The Context-Level Uniqueness View

As I will discuss further in Chapter 6, an analysis whereby the constitution of a definite description is a two-dimensional iota term whose restrictor constitution is the description’s restrictor constitution accords with the uniqueness view. This analysis would then be an obvious choice for those who espouse the view. However, there is another analysis worth considering which, while it does not make exactly the same predictions as the uniqueness view, does make very similar predictions.

Before discussing this analysis, I will define some new terms. To begin with, I will define the *context-level restrictor set* of a definite description-use as the set of entities which satisfy the restrictor constitution of the description-use in the context of use and the *world parameter of the context of use*.¹¹⁴ In other words, if the restrictor constitution

¹¹⁴Where necessary to avoid confusion, I will refer to standard restrictor sets as *evaluation-level*

of a definite description was the property \mathcal{P} , then the context-level restrictor set of a use of that definite description in a context c and *any* world of evaluation would be $[\mathcal{P}^{c_t}]_{c_w}^{c_t}$. I will then define the *context-level uniqueness view of definite description denotation* as follows: a definite description-use will denote the single member of its context-level restrictor set if its context-level restrictor set is a singleton, and will denote nothing otherwise.¹¹⁵ In more formal terms, supposing the constitution of X is the property \mathcal{P} :

$$\downarrow(\downarrow(\llbracket \text{the } X \rrbracket)(c))(w) = \begin{cases} x & \text{if } [\mathcal{P}^{c_t}]_{c_w}^{c_t} = \{x\} \text{ (for some } x) \\ \text{nothing} & \text{otherwise} \end{cases}$$

I will then call a definite description-use *context proper* where the context-level restrictor set of that use is a singleton, *context empty* where the context-level restrictor set of that use is empty, and *context improper* where the context-level restrictor set of that use has multiple members. The context-level uniqueness view then holds that only context proper uses of definite descriptions have denotations, while both context empty and context improper uses have no denotations.¹¹⁶ This will mean that definite descriptions will trigger a presupposition of the form ‘there exists a unique satisfier *within the world of the context of use* of the definite description’s restrictor phrase’.

The (evaluation-level) restrictor set and context-level restrictor set of a definite description-use will differ only when the world parameter of the description-use’s context of use differs from the use’s world of evaluation. This will only occur when a definite description is part of the operand sentence of a modal claim. As such, the (evaluation-level) uniqueness view and the context-level uniqueness view will both make all the same predictions, except in the case of modal claims. Outside of modal claims, any evidence that supports one view also supports the other.

As I will discuss further in Chapter 6, an analysis of definite descriptions whereby the constitution of a definite description is a (non-eternal) iota term whose restrictor constitution is the description’s restrictor constitution accords with the context-level uniqueness view. The predictions of the denotations of definite description-uses made by this analysis versus the one I presented above differ only in those cases where the (evaluation-level) uniqueness view differs from the context-level uniqueness view, namely for modal claims. Thus, outside of modal claims, both of these analyses will be equally supported by the evidence of denotations (although other sources of evidence could tell between them).

5.2.3 Problems with the Uniqueness View

There are many cases where the uniqueness view’s prediction that improper uses of definite descriptions lack denotations is borne out by the evidence. Consider the following case (inspired by Strawson 1950, p. 332):

Situation **S5A**: Tammy and Betty are in a room with a three tables. The leftmost table in the room is covered in books while the other two are bare,

restrictor sets.

¹¹⁵Where necessary to avoid confusion, I will refer to the standard uniqueness view as the *evaluation-level uniqueness view*.

¹¹⁶Note that this view does not accord with the principle stated above that all definite description-uses refer to something in their (evaluation-level) restrictor sets (if they refer to anything), however it will accord with context-level version of this principle: all definite description-uses refer to something in their *context-level* restrictor sets (if they refer to anything)

but otherwise the tables are identical. Neither Tammy nor Betty has said anything about any tables, until Tammy says **The table is covered with books.**

Tammy's use of **the table** in **S5A** is improper, as there exists more than one table in the world. In this case it is not clear which table Tammy is referring to by her use of **the table**, and this fact is borne out by the uniqueness view's prediction that Tammy's improper use of **the table** has no denotation. Furthermore, it is not clear that we can call Tammy's assertion true or false, and this conforms to the uniqueness view's prediction that Tammy's assertion lacks a truth-value (as it contains an improper use).

However, the uniqueness view's prediction that improper uses *always* lack denotations is not borne out by the evidence. There are many cases of statements containing improper definite description-uses which are intuitively acceptable, which contradicts the uniqueness view's claim that such statements lack truth-values. As Strawson (1950, p. 332) notes:

“Russell says that a phrase of the form “**the so-and-so**”, used strictly, “will only have an application in the event of there being one so-and-so and no more”. Now it is obviously quite false that the phrase **the table** in the sentence **the table is covered with books**, used normally, will “only have an application in the event of there being one table and no more”.”¹¹⁷

To give a more concrete example, (inspired by Strawson 1950, p. 332), consider the following case:

Situation **S5B**: Tammy and Betty are in a room with a single table, and the table in the room is covered in books. Tammy says **The table is covered with books.**

Again, Tammy's use of **the table** in **S5B** is improper, as there exists more than one table in the world. Intuitively, though, Tammy is discussing the single table in the room she and Betty are in. However, under the uniqueness view, Tammy's utterance of **the table** will have no denotation, as it is an improper use of a definite description. At the very least, Tammy's assertion seems intuitively acceptable, yet under the uniqueness view her assertion will lack a truth-value. I will call the problem of reconciling this evidence with the uniqueness view *the problem of apparently referring improper uses*.¹¹⁸

I think that the problem of apparently referring improper uses reveals a fatal flaw in the uniqueness view. However, before abandoning the view, I will consider two attempts that have been made to solve this problem. The first proposal is provided by Russell, who suggested that the definite descriptions which feature in such cases should be seen as abbreviated versions of longer descriptions which uniquely specify

¹¹⁷Strawson's reference is to Russell and Whitehead (1910, p. 30). Technically speaking, what Strawson is objecting to here is not the claim that improper definite description-uses lack denotations, but rather that claim that improper definite description-uses lack denotations_R (as Russell held a quantificational analysis, and thus didn't claim that any definite description-uses lack denotations, in my sense of the term). However, Strawson's objection applies equally to the claim that improper definite description-uses lack denotations, as I will detail below.

¹¹⁸Note that both the context-level and evaluation-level uniqueness views make the same predictions about **S5B**, and therefore the problem of apparently referring improper uses is as much a problem for the context-level uniqueness view as it is for the evaluation-level uniqueness view.

their referents within the context.¹¹⁹ Tammy’s use of **the table** in **S5B** could then be seen as an abbreviation of **the table in this room**, which (under the uniqueness view) would refer to the table in the room Tammy and Betty are in.

Russell’s proposal has many problems, but the largest problem is that it is unclear how we determine both which definite description-uses are abbreviated and what those abbreviated uses abbreviate. Presumably this is not a fact about the language in general, as (for example) not every use of **the table** in English could abbreviate **the table in this room**, as we can use **the table** to refer to tables that are outside. Furthermore, it does not seem like anything about the context could determine what definite description-uses abbreviate (if anything). One could hold that a definite description-use X abbreviates a description-use Y where the speaker of X has Y in mind when uttering X . However, it is not clear that in every case of an apparently referring improper use the speaker has a *particular* extended description in mind. Such a speaker may have a particular *entity* in mind, however there will be many unique descriptions of this entity, and as such it will not be clear which such description the abbreviated uses abbreviates. Furthermore, if one were to hold that the speaker’s intention determines the extended description and the description then determines the referent, why wouldn’t one rather just hold the intention determines the referent directly?¹²⁰

Another proposal to solve the problem of apparently referring improper uses is the idea of *restricted domains*.¹²¹ The idea is that, in a given conversation, the speakers are not necessarily intending to make claims about the entire universe, and the listeners are not necessarily understanding those claims to be about the entire universe. The domain of an assertion could then be defined as the set of entities over which the speaker intends to make a claim. Definite description-uses could then be understood as referring to the unique entity in the intersection of the use’s restrictor set and the domain (if there is any such entity). In the cases of **S5A** and **S5B**, we could see the domain as everything in the room Tammy and Betty are in, in which case (under this view) Tammy’s use of **the table** would refer in **S5B** but not in **S5A** (and therefore the view accords with the evidence).

The problem with this solution pertains to those cases which require the domain to change during a conversation. That the domain can change during a conversation is certainly something that can be accepted on this view. Speakers can change the scope of claims their during a conversation. However, something must occur to signal this change in domain (e.g. the speaker prefacing an assertion by saying *in the whole world*). Consider this pair of statements from Lewis (1973, p. 115): “**The pig is grunting. The pig with floppy ears is not grunting.**” It seems that a speaker could truthfully assert

¹¹⁹“The considerations I have in mind have to do with the existence of “improper” definite descriptions, such as **the table**, where uniquely specifying conditions are not contained in the description itself. Contrary to the Russellian picture, I doubt that such descriptions can always be regarded as elliptical with some uniquely specifying conditions added” (Kripke 1977, p. 255). Note that Russell himself did not think that any definite description-uses were referential, and therefore was not concerned with the problem of apparently referring improper uses *per se*. However, under Russell’s analysis, Tammy’s assertion in **S5B** would fail to denote_R anything, and therefore would be false. Russell therefore faced the problem of apparently denoting_R improper uses, and suggested this solution as a solution to that problem. I raise Russell’s solution here as it applies equally well as a solution to the problem of apparently referring improper uses.

¹²⁰This is the intentional view, which I will consider and reject in Chapter 7.

¹²¹An example of this approach is given in Stanley and Szabó (2000).

these two sentences (for example, if there was a close-by grunting pig and a further-away silent pig). However, under the restricted domain view, the domain of the first statement would have to contain exactly one pig who also grunts to be true, while the domain of the second statement would need to contain a non-grunting pig. Thus the restricted domain view is committed to a change in domain in this case, however there seems to be no justification for it. In cases like these the restricted domain view seems too inflexible to account for the evidence.

5.3 The Familiarity View

A different approach to the denotation of definite descriptions is given by the *familiarity theory of definiteness*. This is a notion from traditional grammar, but it was introduced into formal semantics by Heim (1983, p. 164): “It amounts to the following, in a nutshell: ... A definite is used to refer to something which is already familiar at the current stage of the conversation.” Roughly speaking, a *familiarity view of definite description denotation* might hold the following: A definite description-use refers to the one and only previous referent in the conversation which is in the description-use’s restrictor set, if there is such an entity, and nothing otherwise. Definite description-uses would then trigger the presupposition that there exists a single previous referent in the conversation which is in the description-use’s restrictor set.

This view accords with the evidence in many cases. To begin with, every empty definite description-use will lack a denotation, which accords with the result I argued for in Section 5.1. Furthermore, this view accords with the evidence for at least some cases of improper definite description-uses. It is particularly well suited to handling *anaphoric definite description-uses*. An anaphoric definite description-use is one that has an *anaphoric link* to another expression-use. An anaphoric link exists between two expression-uses where the referent of the later expression-use (namely, the *anaphor*) is identical to, and (in some sense) determined by, the referent of the earlier expression-use (namely, the *antecedent*). Definite description-uses can form anaphoric links to proper names and pronouns, and this fact is predicted and explained by the familiarity view.¹²²

Consider the single sentence discourse **Napoleon fought at Waterloo and the French general was defeated**. Here, the expression-use **the French general** seems to refer to NAPOLEON in virtue of the fact that it is linked anaphorically with the expression-use **Napoleon** (which refers to NAPOLEON). The familiarity view has an explanation for this. The view holds that the expression-use **the French general** will refer to the only French general previously mentioned in the discourse. In the case of the statement above, the only French general previously mentioned in the discourse is NAPOLEON, who was mentioned by the proper name-use **Napoleon**. Thus, the familiarity view not only predicts that the anaphoric link exists, it also explains why it arises.¹²³

Furthermore, the familiarity view can handle cases where anaphoric links fail. Consider the single sentence discourse **Napoleon and Wellington fought at Waterloo and the general was defeated**. In this statement it is not clear who the expression-use **the general** refers to. It seems it could equally refer to NAPOLEON (in which case the statement

¹²²I am suggesting here that, under the familiarity view, anaphoric links should be seen as a semantic, rather than syntactic, phenomenon. I will return to this point in Section 5.4.

¹²³The uniqueness view would make the wrong prediction here, as there exists more than one French general, and therefore under the view the use of **the French general** would have no denotation.

would be true) or to WELLINGTON (in which case the statement would be false). In virtue of this failure of reference, the statement seems to lack a truth-value. The familiarity view also has an explanation for this. The view holds that the expression-use **the general** will refer to the *only* general previously mentioned in the discourse (if it refers to anything). In the case of the statement above, two generals have been mentioned, so the expression-use will not have a denotation. As a result of this, the statement will lack a truth-value. Thus the familiarity view not only predicts the failure of the anaphoric link, but also the truth-value gap that results from it.

However, the familiarity view seems to fail in cases which don't involve anaphoric definite description-uses. Take the single sentence discourse **The queen of Australia is wise**. In this discourse nothing has been mentioned before the use of **the queen of Australia**, so according to the familiarity view it fails to denote anything, but current uses of this expression intuitively refer to ELIZABETH II. As there is now only one queen of Australia, current uses of **the queen of Australia** are proper. Thus the familiarity view does not accord with the principle above that all proper definite description-uses refer to the single member of their restrictor sets. Consider also Tammy's utterance of **The table is covered with books** in **S5B**. In this discourse no table has been mentioned before Tammy's use of **the table**. However, intuitively, the expression-use refers to the single table in the room with Tammy and Betty. The familiarity view seems incorrect in this case too. Note that, unlike in the queen of Australia example, neither the uniqueness view nor the familiarity view seem to handle **S5B** correctly.¹²⁴

5.4 The Saliency View

What we then want is a theory that can handle both the cases that the uniqueness and familiarity views can handle correctly, while also agreeing with our intuitions in those cases where neither of these views make the correct predictions. The *saliency view of definite description denotation* is such a theory. The saliency view holds that a definite description-use will denote the *uniquely maximally salient* member of its restrictor set, if there is such an entity, and will denote nothing otherwise.¹²⁵ I will represent saliency formally using binary relations \geq , where $x \geq y$ holds if and only if an entity x is no less salient than an entity y .¹²⁶ Thus, in formal terms, supposing the constitution of **X** is the property \mathcal{P} .¹²⁷

$$\downarrow(\downarrow(\llbracket \text{the X} \rrbracket)(c))(w) = \begin{cases} x & \text{if } \max([\mathcal{P}^{c_t}]_w^c, \geq) = \{x\} \text{ (for some } x) \\ \text{nothing} & \text{otherwise} \end{cases}$$

Note that, for any set S and order \geq , $\max(\{x\}, \geq) = \{x\}$. As such, under the saliency view all proper uses of definite descriptions will refer to the single member of their restrictor sets. As Krahmer (1998, p. 211) notes: “if there is only one object

¹²⁴It is worth noting that the familiarity view, like the uniqueness view, makes the correct prediction in **S5A**, namely that Tammy's utterance of **the table** has no denotation. The familiarity view makes this prediction because no table has been mentioned before in the conversation.

¹²⁵I will discuss the notion of saliency further in Subsection 5.4.2.

¹²⁶It will then be the case that x is (strictly) more salient than y if and only if $y \not\geq x$, x is (strictly) less salient than y if and only if $x \not\geq y$ and x is equally salient to y if and only if $x \geq y$ and $y \geq x$. I will discuss such saliency orders in more detail in Subsection 5.4.4.

¹²⁷Note that \max here represents the maximal element function, such that (for any set S and order \geq) $\max(S, \geq) = \{x \in S : \forall y \in S(x \geq y)\}$.

with the right properties, it has to be the most salient one with these properties.” Furthermore, for any \geq , $\max(\emptyset, \geq) = \emptyset$. As such, under the salience view all empty uses of definite descriptions will have no referents. Thus, the salience view accords with the principle established in Section 5.1: a definite description-use will refer to a member of its restrictor set. This means that statements which contain empty definite description-uses will have no truth-values under the salience view.

I will define a definite description-use as *salience proper* where there exists a uniquely maximally salient entity in its restrictor set and as *salience improper* where there exist multiple equally maximally salient entities in its restrictor set. All proper uses will be salience proper, but salience proper uses may be improper. The salience view then holds that only salience proper uses of definite descriptions have denotations, while both empty and salience improper uses have no denotations. Thus this view answers the question of what denotation improper definite description-uses have: either the uniquely maximally salient member of their restrictor set (if the use is salience proper) or none (if the use is salience improper). This means that statements which contain salience improper definite description-uses have no truth-value. Furthermore, this means that definite descriptions will trigger a presupposition of the form ‘there exists a uniquely maximally salient satisfier of the definite description’s restrictor phrase’. In other words, a use of **the X** will trigger a presupposition of the form ‘there is one and only one maximally salient X’.

5.4.1 History of the View

The first to suggest that salience, or something like it, plays a role in definite description denotation was Strawson (1950, p. 336):

“what in general is required for making a unique reference is, obviously, some device, or devices, for showing both *that* a unique reference is intended and *what* unique reference it is . . . In securing this result, the context of utterance is of an importance which it is almost impossible to exaggerate; and by “context” I mean, at least, the time, the place, the situation, the identity of the speaker, *the subjects which form the immediate focus of interest* [my emphasis], and the personal histories of both the speaker and those he is addressing.”

Furthermore, Strawson (1950, p. 330) is clear on the claim that statements containing empty definite description-uses lack truth-values:

“Now suppose some one were in fact to say to you with a perfectly serious air: **The king of France is wise**. Would you say, **That’s untrue?** I think it’s quite certain that you wouldn’t. But suppose he went on to *ask* you whether you thought that what he had just said was true, or was false; whether you agreed or disagreed with what he had just said. I think you would be inclined, with some hesitation, to say that you didn’t do either; that the question of whether his statement was true or false simply *didn’t arise*, because there was no such person as the king of France.”

In addition, Strawson (1950, p. 332) holds that definite description-uses presuppose that there is a unique, contextually-determined (read: salient) referent for that description-use:

“Now, whenever a man uses any expression, the presumption is that he thinks he is using it correctly: so when he uses the expression, **the such-and-such**, in a uniquely referring way, the presumption is that he thinks both that there is *some* individual of that species, and that the context of use will sufficiently determine which one he has in mind.”

The salience view was first explicitly stated in Lewis (1979).¹²⁸ Lewis introduced a notion of “comparative salience” (1973, p. 112), and held that “**the F** denotes x if and only if x is the most salient F in the domain of discourse, according to some contextually determined salience ranking” (1979, p. 348). Note that Lewis holds here both that salience proper uses refer to the uniquely maximally salient member of their restrictor set *and* that empty and salience improper uses have no denotation. He does not, however, take a stance on whether such denotation gaps within statements lead to those statements having no truth-value: “Never mind what happens if two F ’s are tied for maximum salience, or if no F is at all salient” (Lewis 1979, p. 348).

5.4.2 The Notion of Salience

How salient an entity is to an agent reflects how relevant or important that entity is to that agent, and also how much interest or attention the agent has in the entity. Thus, a given entity A is more salient to a given agent than a different entity B where A is more important or relevant to the agent than B , or where the agent has more attention on or interest in A compared to B . Comparative salience is then ordering between entities which captures their relative salience to a given agent. To the agent above, A is comparatively more salient than B (and therefore $B \not\geq A$, where \geq is the agent’s comparative salience order).

How salient an entity is to an agent is determined by factors internal to their minds, such as the interest they have in an entity or the importance they place in it. As Lewis (1973, p. 113) puts it: “When i is a thing with a point of view . . . then some things are more salient than others from the point of view of i . They loom larger in his mental life; they are more important to him; they come more readily to the center of his attention.” However, comparative salience is an ordering of entities outside our mind, not an ordering of concepts of entities inside our minds. Lewis (1973, p. 113) seems to think that the fact that salience is determined by internal mental factors means that it can only order those entities an agent is aware of: “the system $\$$ [representing salience] is not universal . . . since for most things i there is something outside the ken of i .”¹²⁹ However, this is not the case. The fact salience is determined by internal mental factors does mean that all entities an agent is unaware of must have *equal* salience, but it does not mean that such entities are unranked by salience altogether. Indeed, I will hold

¹²⁸Lewis’ (1973, Ch. 5.3) presentation of “contextually definite descriptions” is very similar, but does not explicitly mention denotation.

¹²⁹See Lewis (1973, p. 16) for his notion of universality. It is worth noting that Lewis (1973) is not very consistent on this point. He says that “all of these [things I am aware of] are salient to me to some extent, in contrast to the countless things that are outside my ken altogether” (Lewis 1973, p. 113), which would suggest that the salience of entities outside an agent’s awareness is commensurate with (and less than) the salience of entities an agent is aware of. This would contradict his apparent claim above that entities outside an agent’s awareness are outside that agent’s salience order, and therefore incommensurate with other entities in terms of salience.

that an agent’s salience order extends over all entities and that entities that an agent is unaware of are minimal elements of their salience order (and therefore all such elements have equal salience).¹³⁰

In saying that a definite description-use will denote the uniquely maximally salient member of its restrictor set, the question must be asked: salient to *who*? To some degree, in presenting a semantic theory, I can avoid this question. In this thesis, I am discussing the informational contents and denotations of expression-uses, where expression-uses are a combination of a sign, a constitution and contextual features.¹³¹ The relevant salience order will then be one of these contextual features. A semantic theory can then take this salience order as given (within an expression-use) and from there determine the content and denotation of that use. Thus, the question of what exactly is salient for a given speech act, and in virtue of what, is properly a pragmatic (and metapragmatic) matter, and as such I will not explore it in detail here.¹³²

That being said, I do want to briefly discuss salience and its role under the salience view in the context of a face-to-face conversation, to give a sense of how salience should be understood as an aspect of this view. Supposing the salience view is true, definite descriptions give speakers a way of leveraging salience to talk about a particular entity (instead of using a proper name for that entity or describing the entity uniquely). Ideally, listeners will then be able to use salience to identify the entity that the speaker wants to discuss. This, however, will not be possible if the entity the speaker wants to discuss is only salient to them (if, for example, the entity has just jumped out behind the speaker). Similarly, it would make no sense for a listener to identify an entity as the one the speaker wished to discuss if that entity was salient only to the listener (as that would require the speaker to be leveraging salience they didn’t even know exists). Thus, the relevant salience order must be one that is determined relative to facts that the speaker and listeners are all aware of and agree upon. In other words, the relevant salience order must be the ordering of entities relative to the salience they have within the conversation’s *common ground*.¹³³ In an abuse of terminology, we may call this ordering the *conversation’s salience order*.¹³⁴ Such an order need not be identical to that of the speaker, or the listener, or any person at all. There is much more to say about salience, even in this case, but hopefully it is clearer now how a theory of speech acts might assign salience orders to expression-uses, at least within face-to-face conversations. Different sorts of speech acts, such as those within written language or internal monologue, would require different theories of salience.

As Lewis (1979, p. 348) notes “there are various ways for something to gain salience. Some have to do with the course of conversation, others do not.” Kripke (1977, p. 275en) mentions two possibilities: “Being physically distinguished against its background is a

¹³⁰An entity x is a *minimal element* of an order \geq if and only if, for all y , $y \geq x$. Note that nothing I have said here rules out the possibility that entities an agent is aware of may *also* be minimal elements of their salience order.

¹³¹I will give a more precise account of how salience is formally incorporated into expression-uses in Subsection 5.4.4.

¹³²One central reason why salience is not a semantic matter is that what is salient in a case of direct speech will be different from what is salient in a case of written language or a case of internal monologue, and semantics does not draw a distinction between these different ways of using language.

¹³³The notion of common ground comes from Stalnaker (1978).

¹³⁴This is an abuse of terminology in the sense that a conversation is not a conscious agent, and therefore nothing is salient to it.

property that may make an object salient; having been referred to by a previous speaker is another.” Other ways in which an entity may become more salient to an agent include being close to that agent, being pointed to in some way and by drawing attention to themselves in some way.

I have not here gone into any detail about how the salience of entities is in general decided, outside a couple of general principles. At the very least, this leaves a gap in my approach. This I am willing to accept, as it is not as if I can answer every question here. However, one might worry that my approach is merely an example of the pragmatic wastebasket approach. In other words, it isn’t clear that I’ve explained the denotation of definite descriptions any more clearly than just saying ‘That’s a pragmatic matter, and therefore not one that I need to deal with’. At the very least, we might worry that I have relegated all the interesting explanation of definite description denotation to pragmatics. The greatest concern might be that, given I haven’t exactly specified how salience operates, my theory is therefore unfalsifiable, given salience can do whatever I want it to whenever I want it to. In a related concern, without strict predictions about salience, my theory can’t deliver precise predictions about definite description denotation.

I think that I can respond at least partially to these worries. Firstly, although I have not presented a theory of salience, I don’t want to suggest that there couldn’t be such a theory, or at least one that applied in the great majority of cases. Secondly, salience is not a theoretical notion, and as such I cannot claim that just anything is salient (or not) in a given situation, or that just anything can cause a particular change in salience. My use of salience within my analysis must remain honest to the pre-theoretical notion.

5.4.3 Evidence for the View

The salience view delivers the intuitive results in all those cases where the uniqueness and familiarity views give the right results. Like all the views I have so far discussed, the salience view predicts that empty uses of definite descriptions have no denotations. Furthermore, as discussed above, the salience view gives the right result for proper uses. Given that ELIZABETH II is the only queen of Australia, she must therefore be the uniquely most salient queen of Australia. The salience view, like the uniqueness view (and the familiarity view for that matter), also gives the correct prediction for **S5A**. Given that all of the tables in the room are equal distance to both Tammy and Betty, and that none of those tables have been mentioned, pointed to or has drawn attention to itself, the three tables in the room are equally maximally salient to both Tammy and Betty, and therefore to the conversation.¹³⁵ The salience view will then predict that Tammy’s utterance of **the table** will have no denotation, which accords with the intuitive evidence. Thus the salience view makes all the correct predictions that the uniqueness view makes (predictions the familiarity view does not always make).

¹³⁵My discussion of **S5A** here is somewhat hasty. The description of the scenario I suggest, whereby Tammy utters **The table is covered with books** even though she herself has no particular table in mind, is quite unlikely. A more likely scenario would be for Tammy to have some particular table in mind, but to have failed to demonstrate which table she had in mind to Betty. In this case, one table would be more salient to Tammy than the others, but as Betty is unaware of the factors that make this table salient to Tammy (and therefore those factors aren’t part of the common ground), that table would not be more salient *to the conversation* than the others. Thus, even in this more plausible rendering of the scenario, the result (that Tammy’s utterance of **the table** has no denotation) will still hold.

The familiarity view gives the right results in cases of anaphoric definite description-use. Given that mentioning an entity increases its salience, the intuitively correct entities will be predicted to be denoted by anaphoric definite description-uses under the salience view as well.¹³⁶ Consider the statement **Napoleon fought at Waterloo and the French general was defeated**. When we come to the expression-use **the French general**, the most salient French general will be **NAPOLEON**, given he was mentioned earlier in the statement (and is a French general). Thus the expression-use **the French general** will refer to **NAPOLEON**. The salience view then not only predicts that the anaphoric link exists, it also explains why it arises.¹³⁷ In this way the salience view is better than the uniqueness view, which gives the wrong prediction in such cases.

The salience view also gives the correct results in those cases where both the uniqueness and familiarity views fail. Consider **S5B**. Given that the single table in the room is closest to both Tammy and Betty, and that no other table has been mentioned, pointed to or has drawn attention to itself, that table is the most salient table to both Tammy and Betty, and therefore the most salient table to the conversation. The salience view will then predict that Tammy’s utterance of **the table** will refer to the single table in the room, which accords with the intuitive evidence. Thus we can see that the evidence supports the salience view over rival views of definite description denotation.

There are, however, certain examples of definite description-uses which the salience view does not provide correct predictions for. Take the following example statement: **A dog and a poodle were in the park and the dog bit me**. In this case, intuitively, the use of **the dog** refers to the same dog as the use of **a dog**. Yet both the referent of the use of **a dog** and of **a poodle** will fall under the restrictor set of the use of **the dog** given all poodles are dogs. Given that both the referents of the uses of **a dog** and of **a poodle** have just been mentioned, both would seem to be equally maximally salient by the time **the dog** is used. What seems to make it the case that the use of **the dog** refers to the same animal as the use of **a dog** is that they both use the same restrictor phrase (i.e. **dog**), but the notion of salience that I am using doesn’t take into account under which *description* an entity becomes salient. The notion of salience I am presenting is in this sense *extensional*, rather than *intensional*. Lewis (1979, p. 348) suggests “the possibility that something might be highly salient in one of its guises, but less salient in another. Possibly we need to appeal to a salience ranking not of individuals but rather of individuals-in-guises—that is, of individual concepts.” Rather than exploring this possibility, I will modify the claim that all salience improper uses have no denotations.

¹³⁶Note that under the salience view (as with the familiarity view) anaphoric links are seen as a semantic phenomenon. This is in contrast with a commonly held view that anaphoric links are a syntactic phenomenon. Whether or not an anaphoric link exists on this view will depend on the context, which means that on this view anaphoric links are a weaker, more contingent phenomenon than they are under a syntactic understanding of anaphora. (Furthermore, speakers and listeners will not always be aware of whether a given anaphoric link exists). I believe that this view of anaphora is justified given that anaphoric links can be seen to be dependent on context. For example, **Sally and her** are normally linked anaphorically in uses of **Sally likes her car**, but not in contexts where the speaker points at some woman other than Sally when they utter the word **her**.

¹³⁷Note that these predictions rely on the possibility of the salience of an entity changing during the utterance of a statement. While I will hold that the salience of an entity can quite easily change during the utterance of a statement, the formal apparatus I present will not allow for such a possibility. This is a weakness of this formal approach (but not, it should be noted, all formal approaches) albeit one that is very difficult to properly address.

Instead, I will claim that, in cases of salience improper uses, factors other than salience may play a role in determining which entity that description-use refers to. Such factors may include whether a particular description has been used in conversation before. I will not discuss such factors here, but I will return to discuss them in the conclusion. Although this is a modification to the salience view, it is not a major one. It only affects salience improper uses, and even then I want to hold that the entity referred to (if any) must be equally maximally salient.

5.4.4 Formal Representations of Salience

Formally, I will represent salience using *total preorders* \geq over domains of entities. Total preorders are orders which are *transitive* and *total*. The transitivity of salience orders reflects the fact that if A is no less salient than B and B is no less salient than C then A must be no less salient than C. The totality of salience orders reflects the fact that, for any A and B, either A is no less salient than B or B is no less salient than A or both. Note that totality implies *reflexivity*, and as such nothing is less salient than itself. Salience orders are neither symmetric nor antisymmetric.

Lewis (1973) represents salience using a *system of spheres* approach. He considers “a system of spheres $\$$ based on comparative salience of things” (Lewis 1973, p. 112-113). Note firstly that Lewis takes $\$$ to be a function from entities to sets of sets of entities, where $\$_i$ is a set of nested spheres representing the comparative salience of entities to i . As such, \geq is not in my account playing the role of $\$$, rather it is playing the role of $\$_i$ (for some i). “A sphere around i is to be any set of things in the ken of i such that all those in the set are more salient to i than any of those outside” (Lewis 1973, p. 113). In Lewis’ (1973, p. 113) terms, salience “is not centered or weakly centered.”¹³⁸ Looking at systems of spheres, rather than just sets of spheres, is important when those sets are centred (or weakly centred). As salience is not centred (or weakly centred) we need not be concerned with systems of spheres.

Formally, every set of nested spheres $\$_i$ is interdefinable with a particular total preorder \geq_i ,¹³⁹ so nothing essential hinges of the choice between them. I will use orders instead of spheres as it is easier to state reference conditions using orders. For instance, $\max(S, \$_i)$ would have to be defined as the intersection of S with the most salient sphere in $\$_i$ which has a non-empty intersection with S , or as the empty set otherwise. The ordering presentation of ‘comparative’ salience also seems more intuitive to me, as it more obviously ‘compares’ the salience of different entities. Lewis (1973, p. 113) seems to treat the two interchangeably: “assuming that comparative salience orderings have the definitive properties of weak orderings, then these sets do indeed comprise a system of spheres.”¹⁴⁰

I hold that there are two orderings of the elements of a domain within the contextual elements of an expression-use within the General Framework: an ordering which is a parameter of the context of use and an ordering (relative to the time of evaluation)

¹³⁸“ $\$_i$ is *centered* on i ; that is, the set $\{i\}$ having i as its only member belongs to $\$_i$ ” (Lewis 1973, p. 14). “ $\$_i$ is *weakly centered* on i ; that is, i belongs to every nonempty sphere around i , and there is at least one nonempty sphere around i ” (Lewis 1973, p. 29).

¹³⁹Lewis (1973, p. 49) provides a method of deriving a total preorder from a set of nested spheres, and vice versa.

¹⁴⁰By ‘weak ordering’ Lewis means a total preorder. See Lewis (1973, p. 48).

which is an aspect of the world of evaluation. Both of these orderings can be used to represent salience orders, although how they do so will differ in important ways. To begin with, the two orders are defined over different domains: the domain of the world parameter of the context of use and the domain of the world of evaluation, respectively. Thus, where those two domains differ for an expression-use (i.e. in modal claims), the orderings will also be different. However, even if those domains are the same the two orderings may differ. There are, as such, two different salience views (corresponding to the two different orderings) to consider. The first is the *evaluation-level salience view*:

$$\downarrow(\downarrow(\llbracket \text{the } X \rrbracket)(c))(w) = \begin{cases} x & \text{if } \max([\mathcal{P}^{c_t}]_w^{c_t}, \geq^{c_t}) = \{x\} \text{ (for some } x) \\ \text{nothing} & \text{otherwise} \end{cases}$$

The evaluation-level salience view corresponds to the salience view I have been discussing so far, where the salience order is the ordering of the world of evaluation at the time of evaluation. The second is the *context-level salience view*:

$$\downarrow(\downarrow(\llbracket \text{the } X \rrbracket)(c))(w) = \begin{cases} x & \text{if } \max([\mathcal{P}^{c_t}]_{c_w}^{c_t}, \geq^c) = \{x\} \text{ (for some } x) \\ \text{nothing} & \text{otherwise} \end{cases}$$

The context-level salience view is slightly different to the salience view I have been discussing so far. I will call a definite description-use *salience context proper* where the context-level restrictor set of that use only contains one maximally salient element (relative to the ordering of the context) and *salience context improper* where the context-level restrictor set of that use only contains multiple maximally salient elements (relative to the ordering of the context). The context-level salience view then holds that only salience context proper uses of definite descriptions have denotations, while both context empty and salience context improper uses have no denotations.¹⁴¹ This will mean that definite descriptions will trigger a presupposition of the form ‘there exists a uniquely maximal satisfier *within the world of the context* of the definite description-use’s restrictor phrase (relative to the *ordering of the context*)’.

Note one important way in which the orderings of contexts of use and worlds of evaluation differ. As I have defined them, a world of evaluation will have only one ordering at a single point in time. In contrast, many different contexts of use (with different orderings) may exist in the same possible world at the same time. Thus, if salience is represented according to the evaluation-level salience view, every definite description-use in a given world at a given time must be interpreted according to the same salience order. In contrast, if salience is represented according to the context-level salience view, different definite description-uses in a given world at a given time (but with different contexts of use) may be interpreted according to different salience orders. Consider the sketch of salience in a face-to-face conversation I provided in Subsection 5.4.2. There, the relevant salience order was seen as an aspect of a particular conversation. Thus, there would be no reason to think that all conversations in a given world at a given time must have the *same* salience order. In this way, the evaluation-level salience view appears to be an unlikely way of rendering the notion of salience. In Chapter 7, I will more thoroughly develop this point as an argument against the evaluation-level salience view versus the context-level salience view.

¹⁴¹Note that this view does not accord with the principle above that all definite description-uses refer to something in their restrictor sets (if they refer to anything), however it (like the context-level uniqueness view) will accord with context-level version of this principle.

6 The Rival Analyses

Having established the denotation of definite description-uses, I will now move on to their meanings (i.e. contents and constitutions). We already have two major requirements on the meanings of definite description-uses. Firstly, definite description-uses must denote single entities (when they denote anything). In other words, definite descriptions must be referential expressions. Secondly, the denotations of definite description-uses must accord with salience view of definite description denotation, and as such definite description-uses must denote the most salient member of their restrictor set, if there is such an entity, and nothing otherwise.¹⁴²

Having rejected quantificational analyses, I will here examine the two major candidates for a referential analysis of definite descriptions: the *indirectly referential analysis* and the *directly referential analysis*. The indirectly referential analysis is very much the orthodox referential analysis, and my presentation of it here largely follows that of previous writers. In contrast, the directly referential analysis is a largely original view, though it has some antecedents. I will also raise the possibility of *hybrid referential analyses*, namely analyses that suggest that definite descriptions should be analysed according to an indirectly referential analysis in some cases and a directly referential analysis in others.

As I will discuss in further detail later, there is a sense in which the spirit of these theories of the meaning of definite descriptions is independent of the denotation they determine for definite description-uses. Thus I will provide different versions of these analyses for both the uniqueness and salience views. The salience versions of these analyses will then fulfil both the requirements I outlined above. I will follow this examination by arguing in Chapter 7 that the salience version of the directly referential analysis is the best analysis of definite descriptions.

6.1 The Indirectly Referential Analysis

The *indirectly referential analysis of definite descriptions* is so-called because, according to it, definite description-uses refer to their referents only *indirectly*, through those referents possessing certain properties contained within the contents of such uses. Put in terms of the General Framework, the indirectly referential analysis holds that the constitutions of definite descriptions are two-dimensional iota terms, with the description's restrictor constitution as the two-dimensional iota term's restrictor constitution. The content of a definite description-use will then be an eternal iota term and the denotation of a definite description-use (when it has a denotation) will be an entity. I will first present the analysis and some of its properties, before looking at some of its historical antecedents.

6.1.1 The Analysis

The indirectly referential analysis holds the following: the constitution of the expression **the** is the two-dimensional iota operator. Formally: $\llbracket \text{the} \rrbracket = \iota^2$.¹⁴³ Within definite

¹⁴²I leave it open for now whether definite descriptions accord with the evaluation-level or context-level salience views. I will return to this question in Chapter 7.

¹⁴³As I discussed in Chapter 3, $\llbracket X \rrbracket$ represents the constitution of an expression X .

descriptions, **the** is an operator expression. As such, for any definite description **the X**, $\llbracket \text{the X} \rrbracket = \llbracket \text{the} \rrbracket \langle \llbracket \text{X} \rrbracket \rangle$. Together, these claims imply the following: $\llbracket \text{the X} \rrbracket = \iota^2 \langle \llbracket \text{X} \rrbracket \rangle$. Supposing that the restrictor phrase **X** has as its constitution the property \mathcal{P} (i.e. $\llbracket \text{X} \rrbracket = \mathcal{P}$), and therefore that the restrictor constitution of **the X** is \mathcal{P} , it will then be the case that $\llbracket \text{the X} \rrbracket = \iota^2 \langle \mathcal{P} \rangle$.

In any c , the constitution ι^2 will have as its content the iota operator ι . This means that the following must hold: $\Downarrow(\llbracket \text{the} \rrbracket)(c) = \iota$. Furthermore, iota terms have standardly defined contents. As such, it must be the case that: $\Downarrow(\llbracket \text{the X} \rrbracket)(c) = \Downarrow(\llbracket \text{the} \rrbracket)(c) \langle \Downarrow(\llbracket \text{X} \rrbracket)(c) \rangle$.¹⁴⁴ Together, these claims imply the following: $\Downarrow(\llbracket \text{the X} \rrbracket)(c) = \iota \langle \Downarrow(\llbracket \text{X} \rrbracket)(c) \rangle$. Supposing the constitution of **X** is \mathcal{P} , then the following will hold: $\Downarrow(\llbracket \text{the X} \rrbracket)(c) = \iota \langle \mathcal{P}^{c_t} \rangle$. In a given world of evaluation w , the denotation of **the X** in c and w will then be:

$$\Downarrow(\Downarrow(\llbracket \text{the X} \rrbracket)(c))(w) = \begin{cases} x & \text{if } \llbracket \text{X} \rrbracket_w^{c_t} = \{x\} \text{ (for some } x) \\ \text{nothing} & \text{otherwise} \end{cases}$$

Supposing the constitution of **X** is \mathcal{P} , the denotation of **the X** in c and w will be:

$$\Downarrow(\Downarrow(\llbracket \text{the X} \rrbracket)(c))(w) = \begin{cases} x & \text{if } [\mathcal{P}^{c_t}]_w^{c_t} = \{x\} \text{ (for some } x) \\ \text{nothing} & \text{otherwise} \end{cases}$$

Take, for example, the definite description **the president of the US**. I will hold that the constitution of the restrictor phrase **president of the US** is the property **PRESIDENT**. Formally: $\llbracket \text{president of the US} \rrbracket = \text{PRESIDENT}$. As such, under the indirectly referential analysis, $\llbracket \text{the president of the US} \rrbracket = \iota^2 \langle \text{PRESIDENT} \rangle$. Supposing that c is the current context, $[\text{PRESIDENT}^{c_t}]_{c_w}^{c_t} = \{\text{OBAMA}\}$. Thus the indirectly referential analysis holds that, in the current context, **the president of the US** refers to **OBAMA**.

Several things should be noted about this analysis. Firstly, note that definite descriptions are, on this analysis, referential expressions. This agrees with the arguments I presented in Chapter 4 that definite descriptions are referential. Furthermore, on this analysis definite description-uses will denote the single entity in their (evaluation-level) restrictor set (if there is such an entity) and nothing otherwise. Thus this analysis conforms to the (evaluation-level) uniqueness view. Note that, as a consequence of this, certain definite description-uses may fail to denote anything. In this analysis, a use of the definite description **the X** will trigger a presupposition of the form ‘there exists exactly one member of the extension of **X**’. Supposing $\llbracket \text{X} \rrbracket = \mathcal{P}$, any sentence containing **the X** will then only have a truth-value in some context c and world w if $[\mathcal{P}^{c_t}]_w^{c_t}$ only has one member. This presupposition matches the presupposition that definite descriptions trigger according to the (evaluation-level) uniqueness view. Note however that, on this analysis, although definite descriptions are partial expressions (i.e. they lack denotations in some contexts), they are not incomplete expressions (i.e. they have contents in every context).

The indirectly referential analysis, as I have presented it so far, agrees with the uniqueness view, which I have rejected in favour of the salience view. As such, I cannot consider this a viable candidate view as to the meaning of definite descriptions. However, and I don’t think that sufficient attention has been paid to this point, we can split this analysis into two parts: a view as to the denotation of definite description-uses, and a view as to how the meaning of definite descriptions determines these denotations. This is important, because we can keep the spirit of the second part of the view while

¹⁴⁴I discuss standardly defined contents in the appendix.

abandoning the first part.

What do I mean by this? We could summarise the indirectly referential analysis' view as to how the meaning of definite descriptions determines the denotation of definite description-uses in the following way: the referents of definite description-uses are determined by the referent's possession of a property (namely the definite description-use's restrictor content) contained within the content of the definite description-use. We can combine this view with the (evaluation-level) salience view by holding that the content of a definite description-use is an eternalised epsilon term whose restrictor content is the definite description-use's restrictor content and by holding that the ordering the world of evaluation provides (at the time of use) is the salience order (of the world at that time). This would still count as an indirectly referential analysis, as definite description-uses would refer to their referents only indirectly, through those referents possessing certain properties. However, unlike in the *uniqueness version* of the analysis, the *salience version* of the indirectly referential analysis agrees with the (evaluation-level) salience view.

The *salience indirectly referential analysis* holds the following: the constitution of the expression **the** is the two-dimensional epsilon operator. Formally: $\llbracket \text{the} \rrbracket = \varepsilon^2$. Given that **the** is the operator of definite descriptions, this implies the following: $\llbracket \text{the X} \rrbracket = \varepsilon^2 \langle \llbracket \text{X} \rrbracket \rangle$. Supposing the constitution of **X** is \mathcal{P} , it will then be the case that $\llbracket \text{the X} \rrbracket = \varepsilon^2 \langle \mathcal{P} \rangle$. In any c , the constitution ε^2 will have as its content the eternalised epsilon operator ε^{c_t} . This means that the following must hold: $\Downarrow(\llbracket \text{the} \rrbracket)(c) = \varepsilon^{c_t}$. Furthermore, eternalised epsilon terms have standardly defined contents. As such, it must be the case that: $\Downarrow(\llbracket \text{the X} \rrbracket)(c) = \Downarrow(\llbracket \text{the} \rrbracket)(c) \langle \Downarrow(\llbracket \text{X} \rrbracket)(c) \rangle$. Together, these claims imply the following: $\Downarrow(\llbracket \text{the X} \rrbracket)(c) = \varepsilon^{c_t} \langle \Downarrow(\llbracket \text{X} \rrbracket)(c) \rangle$. Supposing the constitution of **X** is \mathcal{P} , the following will hold: $\Downarrow(\llbracket \text{the X} \rrbracket)(c) = \varepsilon^{c_t} \langle \mathcal{P}^{c_t} \rangle$. In a given world of evaluation w , the denotation of **the X** in c and w will be:

$$\Downarrow(\Downarrow(\llbracket \text{the X} \rrbracket)(c))(w) = \begin{cases} x & \text{if } \max([\Downarrow(\llbracket \text{X} \rrbracket)(c)]_w^{c_t}, \geq_w^{c_t}) = \{x\} \text{ (for some } x) \\ \text{nothing} & \text{otherwise} \end{cases}$$

Supposing the constitution of **X** is \mathcal{P} , the denotation of **the X** in c and w will be:

$$\Downarrow(\Downarrow(\llbracket \text{the X} \rrbracket)(c))(w) = \begin{cases} x & \text{if } \max([\mathcal{P}^{c_t}]_w^{c_t}, \geq_w^{c_t}) = \{x\} \text{ (for some } x) \\ \text{nothing} & \text{otherwise} \end{cases}$$

This analysis agrees with the evaluation-level salience view, in that it holds that uses of **the X** refer to the uniquely most salient **X** when there is such a uniquely most salient **X** (according to the order provided by the world of evaluation at the time of use) and nothing otherwise. A consequence of this is that certain definite description-uses may fail to denote anything. A use of the definite description **the X** in a context c and world w will then trigger the presupposition 'there exists a uniquely $\geq_w^{c_t}$ -maximal member of the extension of **X**'. Supposing $\llbracket \text{X} \rrbracket = \mathcal{P}$, any sentence containing **the X** will then only have a truth-value in a context c and world w if $\max([\mathcal{P}^{c_t}]_w^{c_t}, \geq_w^{c_t})$ only has one member. This presupposition matches the presupposition that definite descriptions trigger according to the evaluation-level salience view. Like in the uniqueness version, definite descriptions are on this analysis partial and complete.

6.1.2 The History of the Analysis

Amongst those that think that definite descriptions are referential expressions, the (uniqueness) indirectly referential analysis is overwhelmingly popular. One of the central figures to have held something resembling an indirectly referential analysis was Frege. Although interpreting Frege's views within the General Framework is difficult, as he did not draw any distinction like the distinction between contents and constitutions, I think that the indirectly referential analysis can be seen as a reasonable approximation of Frege's analysis of definite descriptions. There are many similarities between Frege's view and the indirectly referential analysis. Most importantly, the analysis agrees with Frege's acceptance of the uniqueness view, which I established in Chapter 5. Furthermore, there are several ways in which the contents that the indirectly referential analysis attributes to definite description-uses are analogous the *Sinne* that Frege attributes to definite descriptions.

Firstly, Frege (1892, p. 57) says that "the mode of presentation is contained" within the *Sinn* of an expression-use.¹⁴⁵ For definite description-uses, we might consider identifying their mode of presentation with their restrictor contents. Following this, the contents of definite description-uses will (on this analysis) contain their mode of presentation.

Secondly, Frege (1892, p. 58) says that "it may perhaps be granted that every grammatically well-formed expression representing a proper name always has a sense [*Sinn*]." Given, as I discussed in Chapter 5, Frege sees definite descriptions as a kind of proper name, this will also apply to definite descriptions. In other words, Frege held that definite descriptions must be complete expressions (i.e. they must have contents in every context). Following this, definite descriptions under the indirectly referential analysis are complete expressions. Note that the fact that definite descriptions are partial expressions (i.e. they lack denotations in some contexts) under the indirectly referential analysis does not conflict with Frege's views, as Frege did not hold that proper names always have *Bedeutungen*. Indeed, given Frege's acceptance of the uniqueness view, Frege is committed to the claim that definite descriptions are partial expressions.

Many other people have offered an indirectly referential analysis for definite descriptions. Kaplan (1980, p. 545) offers such an analysis in his formal system.¹⁴⁶ Salmon (1986, p. 21) also analyses definite descriptions as indirectly referential expressions: "a definite description 'the ϕ ', in contrast with other sorts of singular terms, is seen as involving a bifurcation of semantic values taken on with respect to a context of utterance. On the one hand there is the description's referent ... On the other hand there is the descriptions information value [i.e. content], which is a complex made up, in part, of the information value of the predicate [i.e. restrictor phrase] ... ϕ ." I will look at the argument Salmon provides for this analysis in Chapter 7. Russell (2008, p. 50) provides the following indirectly referential analysis: "take a description like **the shortest spy ever**. The referent of the description depends on who has been a spy

¹⁴⁵Technically Frege (1892) discusses the *Sinne* of signs not expression-uses. However, Frege is never clear about the distinction between signs, expressions and their uses, so I think we can massage his claims a little.

¹⁴⁶Kaplan (1980) does make some comments which might seem to suggest that he also sees a *directly* referential use of definite descriptions, which would mean he holds a hybrid referential analysis. However, as I argue in Section 6.3, I do not think that Kaplan's comments should be interpreted in that fashion.

and how tall the various spies have been, and it will vary given different contexts [i.e. worlds] of evaluation ... But the context [of use] in which the sentence is uttered is irrelevant to determining the referent of the shortest spy ever.”

6.2 The Directly Referential Analysis

The *directly referential analysis of definite descriptions* is so-called because, according to it, definite description-uses refer to their referents *directly*, through those referents being identical to the description-use’s content. In other words, the directly referential analysis holds that definite descriptions are directly referential expressions. Put in terms of the General Framework, the directly referential analysis holds that the constitutions of definite descriptions are iota terms, with the description’s restrictor constitution as the iota term’s restrictor constitution. The content and denotation of a definite description-use (when it has a content and a denotation) will then be an entity. I will first present the analysis and some of its properties, before looking at some of its historical antecedents.

6.2.1 The Analysis

The directly referential analysis holds the following: the constitution of the expression **the** is the iota operator. Formally: $\llbracket \text{the} \rrbracket = \iota$. Given that **the** is the operator of definite descriptions, this implies the following: $\llbracket \text{the } X \rrbracket = \iota \langle \llbracket X \rrbracket \rangle$. Supposing the constitution of X is \mathcal{P} , it is then the case that $\llbracket \text{the } X \rrbracket = \iota \langle \mathcal{P} \rangle$. In any c , an iota term $\iota \langle \mathcal{P} \rangle$ will have as its content the entity which is the unique satisfier of \mathcal{P} in c , if there is any such entity, and otherwise will have no content. Note that iota terms are decomplexifying constitutions, and therefore neither the iota operator nor its restrictor constitution will have contents in and of themselves.¹⁴⁷ The content of **the** X in c will then be:

$$\Downarrow(\llbracket \text{the } X \rrbracket)(c) = \begin{cases} x & \text{if } [\Downarrow(\llbracket X \rrbracket)(c)]_{c_w}^{c_t} = \{x\} \text{ (for some } x) \\ \text{nothing} & \text{otherwise} \end{cases}$$

Note that the denotation of **the** X in c and any world of evaluation w will be identical to its content in c . Supposing the constitution of X is \mathcal{P} , the content of **the** X in c will be:

$$\Downarrow(\llbracket \text{the } X \rrbracket)(c) = \begin{cases} x & \text{if } [\mathcal{P}^{c_t}]_{c_w}^{c_t} = \{x\} \text{ (for some } x) \\ \text{nothing} & \text{otherwise} \end{cases}$$

Let us consider again the example definite description **the president of the US** and recall that $\llbracket \text{president of the US} \rrbracket = \text{PRESIDENT}$. As such, under the directly referential analysis, $\llbracket \text{the president of the US} \rrbracket = \iota \langle \text{PRESIDENT} \rangle$. Once again, supposing that c is the current context, $[\text{PRESIDENT}^{c_t}]_{c_w}^{c_t} = \{\text{OBAMA}\}$. Thus the directly referential analysis holds that, in the current context, uses of **the president of the US** both have the content and refer to OBAMA.

Several things should be noted about this analysis. Firstly, note that definite descriptions are, on this analysis, referential expressions. This agrees with the arguments I presented in Chapter 4 that definite descriptions are referential. Furthermore, on this analysis definite description-uses will denote the single entity in their *context-level* restrictor set (if there is such an entity) and nothing otherwise. Thus this analysis

¹⁴⁷I discuss decomplexifying constitutions in the appendix.

conforms to the context-level uniqueness view. Note that, as a consequence of this, certain definite description-uses may fail to denote anything. In this analysis, a use of the definite description **the X** will trigger a presupposition of the form ‘there exists exactly one member of the extension of **X** in the world parameter of the context of use’. Supposing $\llbracket \mathbf{X} \rrbracket = \mathcal{P}$, any sentence containing **the X** will then only have a truth-value in some context c and world w if $[\mathcal{P}^{c_t}]_{c_w}^{c_t}$ only has one member. This presupposition matches the presupposition that definite descriptions trigger according to the context-level uniqueness view. Under the directly referential analysis, definite descriptions have denotations in every context where they have contents. In other words, they have total contents (when they have contents). In contrast, the analysis holds that definite descriptions have unconditionally incomplete constitutions (i.e. they lack contents in some contexts), as iota terms are unconditionally incomplete.¹⁴⁸ Finally, note that restrictor phrase-uses, under this analysis, do not have any content by themselves, but only as part of definite description-uses. Thus, on this analysis, definite descriptions are decomplexifying expressions.

As in the case of the uniqueness version of the indirectly referential analysis, I cannot agree with the analysis presented here as it does not accord with the salience view. We can, however, once again separate the spirit of this view about how the meaning of definite descriptions determines the denotation of definite description-uses from its claims about the denotation of definite description-uses. We could summarise the directly referential analysis’ view as to how the meaning of definite descriptions determines the denotations of definite description-uses in the following way: the denotation of a definite description-use is identical to its content. I think we can combine this view with the *context-level* salience view by holding that the constitution of a definite description is an epsilon term whose restrictor constitution is the definite description’s restrictor constitution and by holding that the ordering the context of use provides is the salience order (of the context). This would still count as a directly referential analysis, as definite description-uses would refer to their referents directly. However, unlike in the *uniqueness version* of the analysis, the *salience version* of the directly referential analysis agrees with the context-level salience view.

The *salience directly referential analysis* holds the following: the constitution of the expression **the** is the epsilon operator. Formally: $\llbracket \mathbf{the} \rrbracket = \varepsilon$. Given that **the** is the operator of definite descriptions, this implies the following: $\llbracket \mathbf{the X} \rrbracket = \varepsilon \langle \llbracket \mathbf{X} \rrbracket \rangle$. Supposing the constitution of **X** is \mathcal{P} , it will then be the case that $\llbracket \mathbf{the X} \rrbracket = \varepsilon \langle \mathcal{P} \rangle$. In any c , an epsilon term $\varepsilon \langle \mathcal{P} \rangle$ will have as its content the entity which is the uniquely \geq^c -maximal satisfier of \mathcal{P} in c , if there is any such entity, and otherwise will have no content. Note that epsilon terms are decomplexifying constitutions, and therefore neither the epsilon operator nor its restrictor constitution will have contents in and of themselves. The content of **the X** in c will then be:

$$\Downarrow(\llbracket \mathbf{the X} \rrbracket)(c) = \begin{cases} x & \text{if } \max([\Downarrow(\llbracket \mathbf{X} \rrbracket)](c)]_{c_w}^{c_t}, \geq^c) = \{x\} \text{ (for some } x) \\ \text{nothing} & \text{otherwise} \end{cases}$$

Supposing the constitution of **X** is \mathcal{P} , the content of **the X** in c will be:

$$\Downarrow(\llbracket \mathbf{the X} \rrbracket)(c) = \begin{cases} x & \text{if } \max([\mathcal{P}^{c_t}]_{c_w}^{c_t}, \geq^c) = \{x\} \text{ (for some } x) \\ \text{nothing} & \text{otherwise} \end{cases}$$

This analysis agrees with the context-level salience view, in that it holds that uses

¹⁴⁸I discuss the unconditional incompleteness of constitutions in the appendix.

of the X refer to the uniquely most salient X in the world of the context when there is such a uniquely most salient X (according to the order of the context) and nothing otherwise. A consequence of this is that certain definite description-uses may fail to denote anything. A use of the definite description **the X** in a context c will then trigger the presupposition ‘there exists a uniquely \geq^c -maximal member of the extension of X in c_w ’. Supposing $\llbracket X \rrbracket = \mathcal{P}$, any sentence containing **the X** will then only have a truth-value in a context c and world w if $\max([\mathcal{P}^{ct}]_{c_w}^{ct}, \geq^c)$ only has one member. This presupposition matches the presupposition that definite descriptions trigger according to the context-level salience view. Like in the uniqueness version, definite descriptions are on this analysis total but incomplete, as well as decomplexifying expressions.

6.2.2 The History of the Analysis

The claim that *all* uses of definite descriptions are directly referential is original to this thesis. However, others have suggested that *some* uses of definite descriptions are directly referential. In other words, they have offered hybrid referential analyses. In this section I will discuss the directly referential aspects of these theories, as they form the major historical antecedents to the directly referential analysis. I will then discuss these analyses more broadly in the next section, where I discuss hybrid referential analyses.

I will argue that the first to suggest that definite description-uses could be directly referential was Strawson (1950). Strawson did not present his analysis in anything like the General Framework, and as such it is not obvious how his work should be interpreted. However, I think that an argument can be made that he should be interpreted as presenting a directly referential analysis (for at least some definite description-uses), albeit in more informal terms.

Strawson (1950, p. 320) outlines a particular use of expressions: “We very commonly use expressions of certain kinds to mention or refer to some individual person or single object or particular event or place or process . . . I shall call this way of using expressions the “uniquely referring use”.” My interpretation of Strawson hinges on the idea that by ‘the uniquely referring use’, and more generally by the term ‘reference’, Strawson is best interpreted as meaning ‘direct reference’. Strawson (1950, p. 320) goes on to say that “the classes of expressions which are most commonly used in this way are: . . . phrases beginning with the definite article followed by a noun, qualified or unqualified, in the singular (e.g. **the table**, **the old man**, **the king of France**).” If I am correct, this amounts to the claim that some definite description-uses are directly referential. Note that Strawson (1950, p. 320) also claims that “I do not want to say that expressions belonging to these classes never have any other use than the one I want to discuss.¹⁴⁹ On the contrary, it is obvious that they do.” Thus, even if my interpretation is correct, Strawson cannot be said to have advanced a directly referential analysis. Rather, I will suggest that he presented a hybrid referential analysis. I will discuss those definite description-uses that Strawson thought were not directly referential in the next section.

Why think that Strawson thought that ‘reference’ was ‘direct reference’? To begin with, Strawson seems to think that two utterances of the same sentence will count as the same *use* of that sentence if and only if the two utterances express the same proposition, e.g. “it is logically impossible for two different people to *make the same use* of this sentence: or, if this is preferred, to use it to express the same proposition”

¹⁴⁹The ‘use’ that Strawson wants to discuss here is the ‘uniquely referring use’.

(Strawson 1950, p. 327). Furthermore, we might suppose that two uses of a sentence are the same if and only if all the subsentential expression-uses contained within them are the same. As such, two utterances of the same expression will count as the same use of that expression if and only if the two utterances have the same content.

However, Strawson also says that two utterances of the same referential expression will count as the same use of that expression only if they both refer to the same thing. Consider that Strawson (1950, p. 327) says of the sentence “I am hot” that “it is logically impossible for two different people to *make the same use* of this sentence.” If that is the case, then it must either be impossible for two different people to make the same use of I or for them to make the same use of am hot. Presumably everyone (at a given time) can make the same use of am hot, so it must be impossible for two different people to make the same use of I. Considering that Strawson (1950, p. 327) goes on to say that “the expression I may correctly be used by (and only by) any one of innumerable people to refer to himself,” I will suggest that the reason it is impossible for two different people to make the same use of I is because any two utterances of I will refer to different things. Two utterances of the same referential expression will then only count as the same use of that expression only if they both refer to the same thing. But two utterances of a referential expression with the same content must also count as the same use, and as such two utterances of a referential expression with the same content must have the same reference. But this can only be guaranteed if by ‘reference’ Strawson meant ‘direct reference’.

Strawson (1950, p. 339) also says the following: “In the case of phrases of the form the so-and-so used referringly, the use of the . . . acts as a signal *that* a unique reference is being made; and the following noun, or noun and adjective, together with the context of utterance, shows *what* unique reference is being made.” If the role of the ‘noun, or noun and adjective’, i.e. the restrictor phrase, of a definite description-use is *merely* to show what reference is being made, then this suggests that that definite description-use is directly referential. In contrast, the restrictor phrase of an indirectly referential definite description-use plays a further role, namely specifying what the *content* of that definite description-use will be.

I will not suggest that this is the only way of interpreting Strawson (1950). Indeed, there probably isn’t enough evidence to put Strawson clearly within either the indirectly or directly referential camp. However, I do think that this is a reasonable interpretation and an interesting one. I would particularly like to resist the idea that an indirectly referential analysis is a ‘simpler’ analysis, merely because indirectly referential analyses are more popular, and therefore seem like the default. If anything the benefit of the doubt should be given to the directly referential interpretation, as it does not require Strawson to have (implicitly) drawn a distinction between the referent and the content of a referential expression-use.

As I discussed in Chapter 5, Strawson (1950) adopts something like the salience view. As such, Strawson’s uniquely referential use should be understood as according with the salience directly referential analysis.

Donnellan (1966) can also be interpreted as arguing that some definite description-uses are directly referential. Donnellan (1966, p. 281) presents a hybrid referential analysis: “definite descriptions . . . have two possible functions.” Donnellan (1966, p. 281) calls one of these functions the “referential use” of a definite description. I will argue that Donnellan’s referential use can be best interpreted as directly referential.

Donnellan (1966, p. 281) says “that there are two uses of definite descriptions. The definition of denotation given by Russell is applicable to both, but in one of these the definite description serves to do something more. I shall say that in this use the speaker uses the definite description to *refer* to something.” Here, I want to argue that by ‘refer’ Donnellan (like Strawson) means ‘directly refer’.

Perhaps a more obvious reading of this would be that Donnellan is drawing a distinction between denoting and denoting_R an entity.¹⁵⁰ However, I don’t think that this is the best interpretation of Donnellan. Donnellan (1966, p. 282) says that “on Russell’s view the type of expression that comes closest to performing the function of the referential use of definite descriptions turns out . . . to be a proper name (in “the narrow logical sense”).” Russell (1918, p. 62) speaks of “a name, in the narrow logical sense of a word whose meaning is a particular.” In other words, *logically proper names* are directly referential. Thus, if referential definite descriptions are like logically proper names, they too should be considered directly referential.

Furthermore, Donnellan (1966, p. 285) says that “in the referential use the definite description is merely one tool for doing a certain job—calling attention to a person or thing—and in general any other device for doing the same job, another description or a name, would do as well.” This is true of directly referential definite description-uses, but not of indirectly referential definite description-uses, as in indirectly referential uses the particular description used plays an essential role in determining the content of the definite description-use.

Note that, although Donnellan’s referential uses of definite descriptions are directly referential, they are not in accordance with either the uniqueness or salience versions of the directly referential analysis. This is because, as I mentioned in Chapter 5, Donnellan holds that referential uses of definite descriptions may refer to entities outside their restrictor sets. As Donnellan (1966, p. 292) puts it: “for when the definite description is used referentially, one’s audience may succeed in seeing to what one refers even though neither it nor anything else fits the description.” I will discuss what exactly Donnellan thinks such definite description-uses refer to in Chapter 8.

For what it is worth, Donnellan (1966, p. 282) sets out to use the term ‘reference’ as Strawson did: “Strawson, on the other hand, certainly does recognize a referential use of definite definitions.” As such, if my interpretation of Donnellan is correct, Donnellan seems to also interpret Strawson as arguing that some definite description-uses are directly referential.

Iota operators within the General Framework correspond to the *dthat operator* in Kaplan’s Logic of Demonstratives. As defined by Kaplan (1980, p. 521), *dthat*[the X] will (at least) determine the same colour as $\iota\langle[[X]]\rangle$, where *the X* is interpreted according to the indirectly referential analysis (which I earlier established Kaplan espoused). Kaplan does not, however, explicitly associate the *dthat operator* with any analysis of definite descriptions. As such, we cannot say that Kaplan held that any definite description-use is directly referential. Kaplan (1980, p. 487) does describe the *dthat operator* as “something analogous to Donnellan’s referential use of a definite description.” This is relevant for two reasons. Firstly, it shows that Kaplan agrees with my interpretation of Donnellan, at least in so far as both Kaplan and I think that Don-

¹⁵⁰Indeed, Donnellan (1966, p. 281) provides the same quote from Russell (1905, p. 488) to define denotation that I used to define denotation_R in Chapter 4.

nellan’s referential definite descriptions are directly referential. Secondly, contrary to what I claimed above, this quote suggests that Kaplan, like Donnellan, may have had in mind a hybrid analysis. I will discuss and reject this possibility in the next section.

6.3 Hybrid Referential Analyses

A *hybrid referential analysis of definite descriptions* is one that holds that some definite description-uses should be interpreted according to the directly referential analysis while the other definite description-uses should be interpreted according to the indirectly referential analysis. Before looking at hybrid referential analyses in more detail, I want to make clear some of the terminology I will use to describe such analyses.

Firstly, by a *hybrid analysis of definite descriptions* I mean an analysis which posits that the sign **the** has (at least) two senses and therefore has (at least) two constitutions. This means that every definite description-sign must also have two constitutions. A hybrid referential analysis is an example of such a hybrid analysis. It holds that the sign **the** has two senses, which we may call **the**₁ and **the**₂, which have the following constitutions: $\llbracket \mathbf{the}_1 \rrbracket = \iota$ (or ε for the salience version) and $\llbracket \mathbf{the}_2 \rrbracket = \iota^2$ (or ε^2). Different hybrid referential analyses will then differ on which definite description-uses contain **the**₁ (and are therefore directly referential) and which contain **the**₂ (and are therefore indirectly referential), as well as differing on whether they agree with the uniqueness or salience views.

Secondly, I want to make a distinction between *polysemy* and *ambiguity*. A sign is polysemous when it has multiple constitutions. A hybrid analysis will therefore hold that definite description-signs are polysemous. In contrast, a sign is ambiguous when any sentence-sign containing it may have multiple constitutions. A hybrid analysis need not hold that definite description-signs are ambiguous. Consider the possibility that only definite description-signs appearing in certain sentential constructions may be referential. This suggestion reflects a hybrid analysis where definite description-signs are polysemous but not ambiguous. Different hybrid referential analyses may then posit ambiguity, or mere polysemy.

One major example of a hybrid analysis of definite descriptions is that of Strawson (1950). I argued above that Strawson’s (1950, p. 320) “uniquely referring use” of definite descriptions should be seen as directly referential. However, Strawson (1950, p. 320) also says that “I do not want to say that expressions belonging to these classes never have any other use than [the uniquely referential use]. On the contrary, it is obvious that they do.” This other use Strawson (1950, p. 334) calls the “ascriptive use.” We can see that the ascriptive use of definite descriptions is *not* directly referential. Strawson (1950, p. 320) says “if I said, **Napoleon was the greatest French soldier**, . . . I should not be using the phrase, **the greatest French soldier**, to mention an individual, but to say something about an individual I had already mentioned.” Given that Strawson uses ‘mention’ and ‘refer’ interchangeably¹⁵¹ and (as I argued above) by ‘refer’ Strawson means ‘directly refer’, it follows that the ascriptive use for Strawson is not directly referential. Unfortunately Strawson (1950) does not describe the ascriptive use in any detail, so it is not clear if Strawson intended an indirectly referential analysis for

¹⁵¹For example: “We very commonly use expressions of certain kinds to mention or refer to some individual person or single object or particular event or place or process” (Strawson 1950, p. 320).

ascriptive uses or some other sort of analysis (e.g. quantificational). Thus it is unclear if Strawson presents a hybrid *referential* analysis. For Strawson, whether a definite description-use is uniquely referring or ascriptive depends on its sentential context. For instance, Strawson (1950, p. 339) says that “the use of **the** together with the position of the phrase in the sentence . . . acts as a signal *that* a unique reference is being made.” As such, Strawson’s hybrid analysis posits polysemy but not ambiguity.

Another major example of a hybrid analysis of definite descriptions is that of Donnellan (1966). Donnellan in fact recognises three different senses of definite descriptions. One is analogous to Strawson’s ascriptive use. Donnellan (1966, p. 284) notes that “there are some uses of definite descriptions which carry neither any hint of a referential use nor any presupposition or implication that something fits the description. In general, it seems, these are recognizable from the sentence frame in which the description occurs.” Like Strawson, Donnellan holds that this sense is not directly referential, and that it introduces polysemy but not ambiguity. Furthermore, also like Strawson, Donnellan does not provide any detailed analysis of this sense.

The other two senses in Donnellan’s analysis are more interesting. “I will call the two uses of definite descriptions I have in mind the attributive use and the referential use” (Donnellan 1966, p. 285). I argued above that Donnellan’s referential use should be understood as directly referential. In contrast, Donnellan’s attributive use is not directly referential. Donnellan (1966, p. 285) says the following about the attributive use: “A speaker who uses a definite description attributively in an assertion states something about whoever or whatever is the so-and-so . . . the definite description might be said to occur essentially, for the speaker wishes to assert something about whatever or whoever fits that description . . . In the attributive use, the attribute of being the so-and-so is all important, while it is not in the referential use.” In a directly referential definite description-use the description is not essential, as some other directly referential expression-use could serve the same purpose. Thus the attributive use of definite descriptions cannot be directly referential.

Donnellan’s attributive use is not the same as Strawson’s ascriptive use. Donnellan (1966, p. 282) notes the following: “Strawson, it is true, points out nonreferential uses of definite descriptions, but which use a definite description has seems to be for him a function of the kind of sentence in which it occurs; whereas, if I am right, there can be two possible uses of a definite description in the same sentence.” The fact that both the referential and attributive senses of definite descriptions could, for Donnellan, occur in the same sentential context is centrally important, as it means that Donnellan’s analysis posits ambiguity, not just polysemy. “A definite description occurring in one and the same sentence may, on different occasions of its use, function in either way” (Donnellan 1966, p. 281).

For the most part, Donnellan remains open on whether the attributive use should be considered indirectly referential or quantificational. For instance, Donnellan (1966) states that “The presupposition or implication [that some entity fits the description] is borne by a definite description used attributively because if nothing fits the description the linguistic purpose of the speech act will be thwarted” (p. 291-292) while noting that “here and elsewhere I use the disjunction “presuppose or imply” to avoid taking a stand that would side me with Russell or Strawson on the issue of what the relationship involved is” (p. 283fn). Given that the indirectly referential analysis leads to such a presupposition and the quantificational analysis leads to such an implication,

this amounts to remaining open on whether the attributive use should be considered indirectly referential or quantificational.

However, Donnellan does at times lean towards the indirectly referential analysis. For instance, Donnellan (1966, p. 288) says that “when a definite description is used attributively in a command or question and nothing fits the description, the command cannot be obeyed and the question cannot be answered. This suggests some analogous consequence for assertions containing definite descriptions used attributively. Perhaps the analogous result is that the assertion is neither true nor false: this is Strawson’s view of what happens when the presupposition of the use of a definite description is false.” Supposing that the attributive use triggers such a presupposition, it must then be indirectly referential. Thus I will interpret Donnellan’s attributive use as indirectly referential, and as such I will hold that Donnellan presents a hybrid *referential* analysis of definite descriptions.

Kaplan (1980, p. 545) only offers an indirectly referential analysis in his formal system. However, he also makes several comments that might suggest that he also sees a directly referential use of definite descriptions, and therefore adopts a hybrid referential analysis. That being said, while what he means by these comments is not entirely clear, I do not think that they are best interpreted as implying that Kaplan saw a directly referential use for definite descriptions. Firstly, as I noted above, Kaplan (1980, p. 487) says that he “came to the conclusion that something analogous to Donnellan’s referential use of a definite description could be developed using my new demonstrative, “dthat.”” However, it is not clear if by ‘Donnellan’s referential use of a definite description’ Kaplan means ‘the referential use that definite description actually have which Donnellan discovered’ (which would mean Kaplan supports a hybrid referential analysis) or ‘the referential use that Donnellan suggested actually exists’ (which would allow Kaplan to remain neutral on whether such a use actually exists in English).

Secondly, Kaplan (1980, p. 490fn) suggests “that it is possible to treat the example as a *referential use* of the demonstrative *he* on the model of Donnellan’s referential use of a definite description.” This comment could be confusing, as demonstratives are already directly referential on Kaplan’s account.¹⁵² However, Kaplan (1980, p. 490fn) is picking up a different aspect of Donnellan’s referential use here, namely the fact that such uses will (directly) refer to whatever the speaker intends them to refer to: “Under the referential use, we would assign as referent whatever the speaker *intended* to demonstrate.” I will discuss this aspect of Donnellan’s referential use in more detail in Chapter 7.

Finally, Kaplan (1980, p. 560) says that “my notion here is closely related to Donnellan’s notion of a *referential use* of a definite description. Donnellan’s distinction between referential and attributive uses of definite descriptions is easily and naturally extended to referential and attributive uses of proper names.” In this case it does sound more like Kaplan is describing what he takes to be a real linguistic phenomena. However, we can see that in this case too Kaplan’s (1980, p. 561) interest in the referential use is limited to the fact that such uses will refer to whatever the speaker intends them to refer to: “in many, perhaps most, uses of definite descriptions there is a mixture of the intention to follow convention with the intention to refer to a preconceived individual. The same mixture of ‘attributive’ and ‘referential’ intensions can occur with a

¹⁵²See Kaplan (1980, p. 492).

proper name.” Thus, despite these few comments, I think that Kaplan can be held to have espoused a (unified) indirectly referential analysis.

7 The Best Analysis

In this chapter, I will argue that the salience directly referential analysis is the correct semantic analysis of definite descriptions. I will not, however, present any sort of ‘knock-down’ argument to show that no other analysis could possibly be correct. Instead, I will argue that the salience directly referential analysis is the most theoretically virtuous explanation of the semantic properties of definite descriptions, and is therefore the correct analysis. In the first section of this chapter, I will present several virtuous properties of the salience directly referential analysis. Note that it will not be the case that *all* of these properties are *only* possessed by the salience directly referential analysis. It is however the case that *only* the salience directly referential analysis possesses *all* of these properties. It is in this sense that the salience directly referential analysis is the best analysis.

In the second section of this chapter I will address several arguments against the salience directly referential analysis. In addressing these arguments I will have two tasks. Firstly, I will show how the purported counterexamples to the salience directly referential analysis presented by these arguments can be accommodated within the analysis. In doing so I will show how the salience directly referential analysis remains a viable analysis of definite descriptions. However, merely accommodating the counterexamples is not enough, as almost any analysis can accommodate almost any counterexample through positing certain additional linguistic machinery, but by committing to such machinery an analysis could become less theoretically virtuous. Thus, my second task will be to show that the salience directly referential analysis can accommodate these purported counterexamples while still remaining the best analysis. The primary way in which I will do this is by arguing that the additional machinery necessary to accommodate these counterexamples is *independently justified*. Given that we are then *already* committed to this machinery, the fact that it is required by the salience directly referential analysis does it make it a more complicated, and therefore less virtuous, theory.

7.1 Arguments for the Salience Directly Referential Analysis

7.1.1 Unified Analyses

One virtue of the salience directly referential analysis is that it provides a *unified analysis* of definite descriptions. A unified analysis of definite descriptions is an analysis that holds that the sign **the** only has one sense (and one constitution) and therefore that definite description-signs only have one sense (and one constitution). In other words, unified analyses are analyses that aren’t hybrid. The salience directly referential analysis then shares this virtue with the uniqueness directly referential analysis, the uniqueness and salience indirectly referential analyses and the quantificational analysis. Thus this argument is solely an argument against hybrid analyses.

There are several reasons why a unified analysis should be favoured over a hybrid analysis. To begin with there are general theoretical considerations of simplicity. A

unified analysis will be, *ceteris paribus*, simpler than any hybrid analysis. The *ceteris paribus* clause here, however, is doing significant work. Different uses of the same definite description can display differing behaviour. Indeed, these differences are the reason hybrid analyses are posited in the first place. Any unified analysis must posit some additional linguistic machinery to explain these differences, and these additional commitments could make the unified analysis more complicated than a hybrid analysis. In Section 7.2, I will discuss some of these differing behaviours of definite descriptions and describe what additional machinery is necessary to explain their occurrence given the salience directly referential analysis. I will, however, argue that such machinery is independently justified, and as such the salience directly referential analysis remains simpler than any hybrid analysis.

Kripke (1977) presents another argument as to why a unified analysis is more virtuous than a hybrid analysis that posits ambiguity, and in particular a hybrid referential analysis à la Donnellan (1966),¹⁵³ which I will examine here. As Kripke (1977, p. 256) puts it: “unitary theories . . . are preferable to theories that postulate an ambiguity.” Note that this argument is on top of the fact that “the unitary account conforms to considerations of economy” (Kripke 1977, p. 269) in that it applies only to ambiguous semantic analyses and not disjunctive explanations in general.

To begin with, all semantic ambiguities are localised to a particular language. “The notion of what words can mean, in the language, is semantical: it is given by the conventions of our language” (Kripke 1977, p. 263). As such, the ambiguity in definite description-signs that Donnellan posits can only explain how definite description-uses function in *English*. However, it seems likely that the phenomenon that Donnellan wants to explain (i.e. the referential/attributive divide) occurs in other languages. Donnellan would then, by parity of form, need to posit a separate ambiguity in every language this phenomenon occurred within. In contrast, Kripke (1977, p. 265) wishes “to account for the phenomenon on pragmatic grounds.” Importantly, such pragmatic explanations are “applicable to all human languages regardless of their special conventions” (Kripke 1977, p. 263). Thus, “any . . . unitary account (that is, any account that postulates no semantic ambiguity), accounts for Donnellan’s referential-attributive phenomenon by a general pragmatic theory of speech acts, [which is] applicable to a very wide range of languages” (Kripke 1977, p. 267). Kripke can then offer a single pragmatic explanation for the referential/attributive divide in every language it occurs within, while Donnellan must provide a separate semantic explanation for each language. Furthermore, if we already have a pragmatic explanation of the referential/attributive divide, there will be no need to posit a semantic ambiguity in addition. “Why posit a semantic ambiguity when it is both insufficient in general and superfluous for the special case it seeks to explain?” (Kripke 1977, p. 267).

There is one final note that I want to make about hybrid analyses and semantic ambiguity. One might think that, even if a semantic ambiguity is unnecessary, and would lead to a more complicated theory, it can do no other harm. However, consider that any semantic ambiguity is merely a historical accident in the development of the arbitrary semantic code of the language. The fact that the sign **bank** is ambiguous in English is interesting only to historical linguistics. In contrast, a pragmatic explana-

¹⁵³Recall that in Section 6.3 I argued that Donnellan (1966) presented an ambiguous hybrid referential analysis, where his referential use was directly referential and his attributive use was indirectly referential.

tion of differences in acceptability intuitions will be an expression of some underlying pragmatic principle, and such a principle will be both general to all languages and a consequence of some fact about human communication. As Kripke (1977, p. 271) says of his pragmatic explanation: “[it] will be of importance not only ... as a critical tool to block postulation of unwarranted ambiguities, but also will be of considerable constructive importance for a theory of language.” Pragmatic explanations, unlike semantic ambiguities, are therefore of great interest to philosophy. Any unnecessarily postulated semantic ambiguities could then disguise an important pragmatic principle and therefore do great harm to philosophy.

I will be positing a unified analysis: the salience directly referential analysis. Following Kripke, I will explain the referential/attributional divide, and other such behavioural divides in definite description-uses, through pragmatic principles. I will discuss these cases in detail in Section 7.2.

7.1.2 No Partial Contents

In Chapter 2, I discussed how the notion of partial expressions, i.e. expressions with uses that have contents but not denotations, was not clearly explicable. Thus I will hold it to be an advantage of the salience directly referential analysis that it holds that definite descriptions are total expressions, and therefore does not posit any partial expressions.¹⁵⁴ This is in contrast with the uniqueness and salience indirectly referential analyses, as well as hybrid referential analyses, which hold that (at least some) definite descriptions are partial expressions. The salience directly referential analysis shares this virtue with the uniqueness directly referential analysis as well as with quantificational analyses.

7.1.3 Samesaying and the *de re*

A major role of contents, as I discussed in Chapter 2, is to explain the samesaying relation, and thus the truth conditions of indirect speech reports. Given that every analysis of definite descriptions contains a theory of the contents of definite description-uses, such analyses will entail that statements containing definite-description uses will express certain propositions. Any analysis will only provide an adequate theory of contents if the claims it makes about contents track the samesaying relation. The primary evidence we have for the samesaying relation is the intuitive acceptability judgements that native speakers make with regards to indirect speech reports. The claims about contents made by any analysis must therefore also conform to these judgements. However, as I discussed in Chapter 2, there are two kinds of acceptability judgements that native speakers make towards indirect speech reports: *de re* and *de dicto*. Following Salmon (1986), I claimed that only *de re* acceptability judgements reflected semantically encoded propositions, and that *de dicto* judgements were instead driven by pragmatically imparted propositions. Only *de re* acceptability judgements are then evidence for the samesaying relation. As analyses are semantic theories, they must then conform to

¹⁵⁴This is an advantage of the salience directly referential analysis versus any analysis that posits partial expressions, as any analysis that posits partial expressions contains an inexplicable element that the salience directly referential analysis does not (namely, partial expressions) and therefore is a worse theory than the salience directly referential analysis.

(and only conform to) *de re* acceptability judgements. By conforming to those judgements, the analyses would then provide an explanation of why native speakers have those judgements, as well as providing an explanation of the acceptability conditions of (some) indirect speech reports.

Both the uniqueness and salience directly referential analyses track the samesaying relation. We can see this given that directly referential analyses conform to the evidence provided by *de re* acceptability judgements. Consider the fact that, according to directly referential analyses, definite description-uses and proper name-uses with the same referent will have the same content (as they are both directly referential expressions). Suppose then we have a statement S which contains a definite description-use, and a statement S' which is the same as S except that the definite description-use in S has been replaced with a different directly referential expression-use in S' . So long as the definite description-use in S and the directly referential expression-use in S' have the same referent, directly referential analyses will predict that S and S' are samesayers. This prediction seems correct given a *de re* reading. We can see how it is borne out by the evidence. Consider the following example:

Situation **S6**: Darryl is watching Barack Obama on the television. He says **The president is a democrat**. Carol and Maggie are in the next room. Carol asks Maggie **What did Darryl just say?** Maggie responds **Darryl said that Obama is a democrat**.

Intuitively, Maggie's indirect speech report in **S6** seems correct. For that to be the case, her use of **Obama is a democrat** would have to express the same proposition as Darryl's use of **The president is a democrat**. This is just the prediction that directly referential analyses make. According to directly referential analyses, both Maggie's use of **Obama is a democrat** and Darryl's use of **The president is a democrat** will express the singular proposition $\text{DEMOCRAT}^t\langle\text{OBAMA}\rangle$.¹⁵⁵

In contrast, neither the uniqueness nor the salience indirectly referential analysis tracks the samesaying relation. They do not conform to the evidence provided by *de re* acceptability judgements. According to indirectly referential analyses, Maggie's use of **Obama is a democrat** and Darryl's use of **The president is a democrat** in **S6** are not samesayers. Indirectly referential analyses hold that these utterances express different propositions. While Maggie's use of **Obama is a democrat** will still express the singular proposition $\text{DEMOCRAT}^t\langle\text{OBAMA}\rangle$, Darryl's utterance will express a general proposition: either $\text{DEMOCRAT}^t\langle\iota\langle\text{PRESIDENT}^t\rangle\rangle$ for the uniqueness version or $\text{DEMOCRAT}^t\langle\varepsilon^t\langle\text{PRESIDENT}^t\rangle\rangle$ for the salience version.

Directly referential analyses are therefore better than indirectly referential analyses, as directly referential analyses track the samesaying relation while the indirectly referential analyses don't. Indeed, this may appear to be a knock-down argument against indirectly referential analyses, as they do not appear to even fulfil their explanatory role as theories of content. It is important to note, however, that this result hinges entirely on my (thus far unargued for) claim that only *de re*, and not *de dicto*, acceptability judgements reflect semantically encoded propositions. If we instead held that *de dicto*, and not *de re*, acceptability judgements reflected semantically encoded propositions then directly referential analyses would be inadequate. While that would

¹⁵⁵Where t is the time of **S6**.

still leave indirectly referential analyses the task of explaining *de re* acceptability judgements, directly referential analyses still have the task of explaining *de dicto* acceptability judgements. Absent of any separate reason to think that only *de re*, and not *de dicto*, acceptability judgements reflect semantically encoded propositions, the two analyses seem to be on a par. By themselves, neither of them are fully adequate as neither of them account for the whole range of acceptability judgements speakers have towards indirect speech reports.

Thus we come to the central point: why think that only *de re*, and not *de dicto*, acceptability judgements reflect semantically encoded propositions? If I had an argument which showed that only *de re* acceptability judgements reflected semantically encoded propositions *and* this argument did not rely on the claim that definite descriptions are directly referential *then* this point would serve as evidence for a directly referential analysis. However, I do not have such an argument, and I am sceptical that any such argument could be given. This would then be an example of the point I made in Chapter 1 that we cannot always determine the semantic/pragmatic divide before determining which semantic *and* pragmatic theories together best explain intuitive acceptability judgements.

I could provide a different kind of argument to show that this property of directly referential analyses speaks in their favour over indirectly referential analyses. In Section 7.2, I will argue that there exists a pragmatic explanation of *de dicto* acceptability judgements which is in accordance with directly referential analyses. This explanation will be necessary to show that a directly referential analysis could be an adequate theory of content. If I could show that no such pragmatic explanation of *de re* acceptability judgements was compatible with indirectly referential analyses, this would serve to show that indirectly referential analyses are inadequate and that directly referential analyses should therefore be favoured. I am not sure that such a pragmatic explanation is possible, but I am also not sure that such an explanation is *impossible*. Thus, by leaving this possibility open, I cannot pursue this line of argument.

Another related kind of argument is still available to me. For an indirectly referential analysis to be favoured, there must not only be a pragmatic explanation of *de re* acceptability judgements compatible with the analysis, but this explanation must also not be more complicated than the pragmatic explanation of *de dicto* acceptability judgements compatible with directly referential analyses. If I could show that this explanation would have to be more complicated, this point would then favour directly referential analyses. However, it is not clear to me that, if such an explanation did exist, it would have to be more complicated than the pragmatic explanation in the directly referential case. Thus this line of argument is also unavailable to me.¹⁵⁶

Note that the fact that directly referential analyses can explain *de re* acceptability judgements is a point in their favour compared to quantificational analyses, which cannot explain either *de re* or *de dicto* acceptability judgements. As I discussed in Chapter 4, a quantificational analysis will hold that an utterance of **The cat is orange** is

¹⁵⁶If it were the case that there was a pragmatic explanation of *de re* acceptability judgements that was compatible with an indirectly referential analysis *and* it was *vastly simpler* than the pragmatic explanation of *de dicto* acceptability judgements that I will later offer, this would be a point in favour of an indirectly referential analysis. However, I think it is unlikely that there would be any such explanation. It would be surprising for such a simple explanation to exist and not be obvious, and I do not think there is any *obvious* such explanation.

a samesayer of an utterance of **There exists exactly one cat and that cat is orange**, which is not borne out by either *de re* or *de dicto* acceptability judgements.

In summary, the dialectic here is the following: the fact that directly referential analyses can explain *de re* acceptability judgements is unequivocally a point in their favour versus quantificational analyses. *After* it is established that directly referential analyses should be favoured over indirectly referential analyses, and thus that *de re* and not *de dicto* acceptability judgements reflect semantically encoded propositions, then this point will be a point in favour of directly referential analyses versus indirectly referential analyses (although by then it won't matter). In no case will this point be a point in favour of directly referential analyses versus hybrid referential analyses, as can hybrid referential analyses explain *de re* acceptability judgements (and for that matter *de dicto* acceptability judgements) in any case.

7.1.4 The Context-level Salience View

The salience directly referential analysis differs from all of the other analyses I have considered in that only it conforms to the context-level salience view of definite description denotation. Thus, if I can show that the context-level salience view is correct, this will provide evidence that the salience directly referential analysis is correct. I have presented some of this argument in earlier chapters of this thesis. To begin with, I argued in Chapter 4 that definite descriptions were referential, not quantificational, expressions. Thus the context-level salience view should be favoured over any view that holds that definite description-uses denote generalised quantifiers. I then argued in Chapter 5 that the salience view should be favoured over the uniqueness and familiarity views. What is then left to show in this section is that the context-level salience view should be favoured over the evaluation-level salience view.

Recall that the context-level salience view holds that definite description-uses refer to the entity within their *context-level* restrictor set which is uniquely maximally salient *relative to their context's salience order*. In contrast, the evaluation-level salience view holds that definite description-uses refer to the entity within their *evaluation-level* restrictor set which is uniquely maximally salient *relative to the salience order of their world of evaluation at their time of use*. There are then two occasions when the context-level and evaluation-level salience views may provide different predictions: when a definite description-use's world of evaluation differs from the world parameter of its context, and when the salience order provided by a definite description-use's world of evaluation (at the time of use) differs from the salience order provided by its context. I will argue that in both of these cases the evidence supports the context-level salience view.

The world parameter of an expression-use's context will come apart from its world of evaluation only where that expression is embedded within a modal operator. Thus, intuitive acceptability judgements that native speakers make with regards to modal claims should provide evidence as to the correctness of either the context-level or evaluation-level salience view. However, acceptability judgements are a problematic source of evidence in this case. Consider the following example:

Situation **S7**: The actual greatest detective in the world is Bruce. Harley asks James and Selina **Is the world's greatest detective necessarily a detective?** James replies **Of course, you can't be the greatest detective without even being**

a detective. Selena replies No, Bruce could have just been a millionaire playboy instead.

Even though James and Selena are giving opposing responses to Harley's question in **S7**, intuitively it seems like both responses are correct, relevant answers to the question. As I discussed in Chapter 2, the reason for this is that, as in the case of indirect speech reports, native speakers (in some cases) display two sorts of intuitive acceptability judgements towards modal claims: *de re* and *de dicto*. In **S7**, James is taking Harley to be speaking about whoever is the world's greatest detective and is therefore responding with a (positive) *de dicto* acceptability judgement towards the sentence in question. In contrast, Selena is taking Harley to be speaking specifically about Bruce and is therefore responding with a (negative) *de re* acceptability judgement towards the sentence in question.

In Chapter 2, I suggested that, unlike in the case of indirect speech reports, this division of acceptability judgements reflected an ambiguity in the sign *necessarily*. In Section 7.2, I will posit that the sign *necessarily* has two senses and provide analyses for these two senses. As I will elaborate in that section, the analyses that I will provide will explain the two different kinds of acceptability judgements, but only provided that the context-level salience (or uniqueness) view is correct. The analyses I provide together with the evaluation-level salience (or uniqueness) view could only explain *de dicto* acceptability judgements. Thus, assuming my analyses of the two senses of *necessarily* are correct, the division in acceptability judgements towards modal claims provides evidence in favour of the context-level salience view versus the evaluation-level salience view. In Section 7.2, I will provide an argument for my analyses of *necessarily* which is *independent* of the claim that the context-level salience view is correct. This division of acceptability judgements is therefore evidence for the view.

Cases where the salience order provided by a definite description-use's world of evaluation (at the time of use) differs from the salience order provided by its context provide clearer evidence for the context-level salience view. In Chapter 6, I noted that it was unclear how the salience order provided by a world of evaluation at a particular time was to be defined. However, we know that a world of evaluation only has one salience order at a given time. Thus if we have a case of two statements spoken in the same world at the same time and their contexts provide different salience orders, then the salience order of the world of evaluation (at that time) can at best be the same as the salience order of *only one* of the contexts. The *other* statement will then be a case where the salience order provided by the world of evaluation (at the time of use) differs from the salience order provided by the context.

Consider then the following example:

Situation **S8**: Ana and Bernard are watching their cat Chestnut sleep on a table in their house in Sydney. Meanwhile, in New York, Steven and George are watching their cat Cornelius playing outside. At the very same time, Ana says to Bernard and Steven says to George **The cat is inside**.

Intuitively, Ana's assertion in **S8** seems acceptable while Steven's seems unacceptable. The obvious explanation for this fact is that Ana's utterance of **the cat** refers to Chestnut while Steven's utterance of **the cat** refers to Cornelius (and Chestnut is inside while Cornelius is outside). The context-level salience view has an explanation for this fact.

The context of Ana’s assertion differs from Steven’s, as they are in different locations. Thus the salience order of Ana’s assertion’s context could hold that Chestnut is the uniquely maximally salient cat, while the salience order of Steven’s assertion’s context could hold that Cornelius is the uniquely maximally salient cat. This would explain how Ana’s and Steven’s assertions could differ in truth-value.

In contrast, the evaluation-level salience view could not explain this difference in truth-values. Both Ana’s and Steven’s utterances of **the cat** occur in the same world at the same time, and as such they must both refer to the same cat (if any) according to the evaluation-level salience view. Either the salience order of the world at that time is the same as that of Ana’s assertion’s context, in which case both utterances of **the cat** would refer to Chestnut and both assertions would be true, or the salience order of the world at that time is the same as that of Steven’s assertion’s context, in which case both utterances of **the cat** would refer to Cornelius and both assertions would be false.¹⁵⁷ In no case can the assertions have *different* truth-values according to the evaluation-level salience view. Thus this case, which is a case where the salience order provided by a definite description-use’s world of evaluation (at the time of use) differs from the salience order provided by its context,¹⁵⁸ provides evidence for the context-level salience view.

In Chapter 5, I noted two problems with the evaluation-level salience view that are worth returning to. Firstly, as I noted above, it is not clear how the salience order provided by a world of evaluation at a particular time was to be defined. Secondly, I suggested that it seemed highly unlikely that there could be any coherent notion of salience that remained constant throughout an entire world of evaluation at a given time. We can see **S8** as a positive example of the incoherence of this notion. The existence of these problems speaks in favour of the context-level salience view, as it does not posit that salience is a property of worlds of evaluation.

7.1.5 The Salience Directly Referential Analysis is the Best Analysis

The salience directly referential analysis is the best analysis of definite descriptions. This is because it, unlike any of its rivals, possesses all of the positive properties I outlined above. To recap, salience directly referential analysis is better than:

- Quantificational analyses, as they are not referential and the contents they posit don’t track the samesaying relation.
- Hybrid referential analyses, as they are not unified and they posit partial expressions.

¹⁵⁷Or alternatively the salience order provided by the world of evaluation at the time of the assertions may match *neither* of the salience orders of the contexts. In that case, either some third cat will be maximally salient, and therefore both assertions will be true or both false depending on whether that cat is inside or outside, or no cat will be maximally salient, in which case neither assertion will have a truth-value. In neither case will the assertions have different truth-values.

¹⁵⁸We can see that **S8** provides a case where the salience order provided by a definite description-use’s world of evaluation (at the time of use) differs from the salience order provided by its context. Either the salience order provided by the world of evaluation at the time of the assertions will be identical to that of the context of Ana’s assertion, in which case the salience orders will differ for Steven’s assertion, or it will be identical to that of the context of Steven’s assertion, in which case the salience orders will differ for Ana’s assertion, or it will be different to both of them, in which case the salience orders will differ for both assertions.

- Indirectly referential analyses, as they posit partial expressions, cannot explain *de re* acceptability judgements¹⁵⁹ and don't accord with the context-level salience view.
- The uniqueness directly referential analysis, as it doesn't accord with the context-level salience view.

7.2 Arguments against the Salience Directly Referential Analysis

Before I can claim definitively that salience directly referential analysis is the correct analysis of definite descriptions, I must first examine some of the arguments against it. In each of these arguments (except for the last) some evidence is presented which does not conform to the predictions made by the salience directly referential analysis. To respond to these arguments I will in each case present some piece of additional linguistic machinery which will show how the salience directly referential analysis is actually compatible with these supposed counterexamples. Furthermore, I will argue that the addition of this machinery to my overall theory does not make it more complicated than its rivals, as in each case the additional machinery is necessary for analyses of other kinds of expression, and therefore is independently justified.

7.2.1 Frege's Puzzle

Frege's Puzzle, as defined by Salmon (1986, p. 12) "is a problem concerning pieces of information." "Specifically, the question poses a serious problem for ... the naïve theory ... a theory of the information values of certain expressions. According to the naïve theory, the information value [i.e. content] of a singular term, as used in a possible context, is simply its referent in that context" (Salmon 1986, p. 16). Directly referential analyses can be seen as an aspect of the naïve theory, as they hold that the content of a definite description-use is simply its referent. Thus Frege's Puzzle will be a problem for any directly referential analysis. Note, however, that Frege's Puzzle will not be a problem for any indirectly referential or quantificational analysis, as those analyses do not assert that definite descriptions are directly referential expressions. Thus the existence of Frege's Puzzle could be used to argue in favour of either an indirectly referential or quantificational analysis versus any directly referential analysis. Frege's Puzzle will only be a problem for some hybrid referential analyses, as I will explain below.

Frege's Puzzle is a problem that arises in its classic form in relation to *identity statements*,¹⁶⁰ i.e. statements of the form *N is M* where *N* and *M* are referential expressions, and the notion of *informativeness*. I will take 'informativeness' to be an intuitive notion for the moment so as to demonstrate the puzzle, before discussing the notion in more

¹⁵⁹Although this is a questionable piece of evidence, as I discussed above.

¹⁶⁰See Salmon (1986, p. 7): "I shall be primarily concerned with another nest of problems stemming from a puzzle due to Frege concerning the cognitive content of statements, especially identity statements." That being said, Salmon (1986, p. 12) notes that "different versions of the very same puzzle ... arise with certain constructions not involving the identity predicate or the identity relation." My solution to this problem, following that of Salmon, will not hinge on the notion of identity, and as such will apply to these other cases as well.

detail below. The puzzle is as follows: Suppose an identity statement N is M is true in a given context c . It must then be the case that these uses of N and M refer to the same entity, which we can call A . If we suppose that N and M are directly referential, then these uses of N and M must have the same content, namely A . The content of this use of N is M would then be $A=A$. But $A=A$ would also be the content of the identity statement N is N in c . As Frege (1892, p. 56) puts the point: “if we were to regard equality as a relation between that which the names a and b designate, it would seem that $a = b$ could not differ from $a = a$ (i.e. provided $a = b$ is true).” However, it does not seem as if the statements N is M and N is N could have the same content, as statements of the form N is M can tell us things we don’t already know and therefore “often contain very valuable extensions of our knowledge” (Frege 1892, p. 56) while all statements of the form N is N seem entirely trivial and can tell us nothing we don’t already know. As Salmon (1986, p. 11) puts it: “clearly they differ, since the first is informative . . . where the latter is uninformative.” As Frege (1892, p. 56) notes: “ $a = a$ and $a = b$ are obviously statements of differing cognitive value.”

We therefore have a puzzle. According to the naïve theory the two statements N is M and N is N must have the same content in a context c if they are both true in c , yet it seems that they must have different contents as one is informative and one isn’t. To provide an example in terms of definite descriptions, a directly referential analysis¹⁶¹ will hold that current uses of (1) The last star-like thing to appear in the morning is the first star-like thing to appear in the evening and (2) The last star-like thing to appear in the morning is the last star-like thing to appear in the morning both have the same content, namely $VENUS=VENUS$, however utterances of (2) seem trivial and uninformative (and are therefore unlikely to be spoken) while utterances of (1) could inform us of an interesting astronomical fact. We can call the version of the puzzle that pertains to definite descriptions *Frege’s Puzzle for definite descriptions*.

There are various ways we could resolve this puzzle. One would be to reject directly referential analyses. Neither an indirectly referential analysis nor a quantificational analysis will hold that current uses of (1) and (2) have the same content.¹⁶² Alternatively, a hybrid referential analysis could avoid this problem by holding that definite descriptions in identity statements are indirectly referential.¹⁶³ Whether or not a hybrid referential analysis avoids Frege’s Puzzle for definite descriptions will then depend on which definite description-uses it holds are directly referential. However, as I want to defend a directly referential analysis, I will not pursue either of these possible approaches.

Another way in which one could respond to this puzzle is to note that, even under

¹⁶¹Note that the uses of the last star-like thing to appear in the morning and the first star-like thing to appear in the evening I am discussing are proper, and therefore I do not need to specify whether the directly referential analysis conforms with the uniqueness or salience views (as their predictions will coincide in this case).

¹⁶²This is Frege’s (1892, p. 57) approach: “The reference [*Bedeutung*] of evening star would be the same as that of morning star, but not the sense [*Sinn*].”

¹⁶³As I discussed above, versions of Frege’s Puzzle can arise which do not involve identity. Thus if a hybrid referential analysis were to deal with Frege’s Puzzle in this manner it would be necessary for every problematic definite description-use to be held to be indirectly referential. It is not clear that any systematic, non-*ad hoc* hybrid referential analysis could hold this without collapsing into an indirectly referential analysis. That being said, as I am not primarily concerned with hybrid referential analyses I will put aside this point.

a directly referential analysis, (1) and (2) will still have different constitutions and characters.¹⁶⁴ We could then explain the difference in informativeness between uses of (1) and (2) in terms of their constitutions or characters, rather than their contents. Kaplan (1980, p. 529-530) responds to Frege's Puzzle in this manner. He asks the question "How can $dthat[\alpha] = dthat[\beta]$ if true, differ in cognitive significance from $dthat[\alpha] = dthat[\alpha]$?" (Kaplan 1980, p. 529). Given that 'dthat' "is treated as a directly referential term whose referent is the denotation of the associated description" (Kaplan 1980, p. 521), Kaplan's question is roughly the same as the question 'How can **the X = the Y**, if true, differ in cognitive significance from **the X = the X**?', supposing that definite descriptions are directly referential. To answer this, Kaplan (1980, p. 530) says that:

"what we must do is disentangle two epistemical notions: *the objects of thought* (what Frege called "Thoughts" [*Gedanken*]) and the *cognitive significance of an object of thought* ... a character may be likened to a manner of presentation of a content. This suggests that we identify objects of thought with contents and the cognitive significance of such objects with characters ... According to this view, the thoughts [i.e. contents] associated with $dthat[\alpha] = dthat[\beta]$ and $dthat[\alpha] = dthat[\alpha]$ are the same, but the thought ... is *presented* differently."

I think that much of what Kaplan says here is correct. However, I do not think that he presents a solution to Frege's Puzzle, as Salmon presents it. In fairness to Kaplan, I think that he does present a solution to part of the problem Frege presents. Frege's notion of *Sinn* can be seen as a conflation of many different notions of meaning, including content, constitution and character. Different versions of Frege's Puzzle can then be offered for each of these kinds of meaning, so long as we have a property of statements that depends on that kind of meaning. For instance, whether a statement is *a priori* will depend on its character, as apriority is a property of narrow mental states. If two statements had the same character but only one was *a priori* then a Frege-style puzzle would arise. This point is relevant to the present example as (2) is *a priori* but (1) is not. Kaplan's observation then is key to show that, even if a directly referential analysis is true, (1) and (2) have different characters and therefore a Frege-style puzzle regarding characters does not arise in this case.¹⁶⁵

All this being said, Frege's Puzzle, as presented by Salmon, is a puzzle about content. As such, no appeal to constitutions or characters or any other kind of meaning will help solve the puzzle. Frege's Puzzle is a puzzle about content because "to say that a sentence, on an occasion of use, is (as the term is used in Frege's Puzzle) *informative* ... is to say something about the information content of the sentence[-use]" (Salmon 1986, p. 57). More specifically, to call a statement informative "is to say that the

¹⁶⁴I have not established what the characters of (1) and (2) are. However, for reasons I will discuss below, I will hold that, whatever they are, they must differ from each other. Note that this claim is consistent with (but not entailed by) a directly referential analysis.

¹⁶⁵To return to the point I made above, I have not established what the characters of (1) and (2) are. However, for the reason presented here, I will hold that they differ from each other. Within the dialectic here, all that I need to show is that a directly referential analysis is consistent with the claim that (1) and (2) have different characters and as such their difference in apriority cannot be used to argue against the analysis.

information content [of the statement] is not somehow given, or that the content is nontrivial . . . or that it is an “extension of our knowledge,” or something along those lines. There is some property P of pieces of information such that a sentence[-use] is informative, in the sense relevant to Frege’s Puzzle, if and only if its information content has the property P ” (Salmon 1986, p. 57).

What reason do we have to think that this is the correct definition of ‘informative’? This is the wrong question to ask. Suppose we hold that some propositions contain ‘valuable extensions to our knowledge’ and are therefore non-trivial, while all other propositions are trivial. I need not specify exactly which propositions are and are not trivial, other than holding that all propositions $x=x$ (for any entity x) are trivial. I will then *stipulate* that a statement is informative if and only if its (semantically encoded) content is non-trivial.¹⁶⁶ Whether or not this property of statements tracks the intuitive notion of ‘informativeness’ is irrelevant. We could call the property ‘shinformativeness’ if we liked. What matters is that this property exists and that it can be used to present a Frege-style puzzle regarding contents.¹⁶⁷

We can then restate Frege’s Puzzle as follows: According to a directly referential analysis, current uses of (1) and (2) have the same content, and therefore either both are informative or neither is. Yet we have reason to think that uses of (1) may be informative while uses of (2) can’t be. Indeed I can make a stronger point: According to directly referential analyses, current uses of (1) and (2) express the trivial proposition VENUS=VENUS, and therefore such uses must be uninformative, yet we have reason to think uses of (1) may be informative.¹⁶⁸ The way I will resolve this puzzle is to argue, following Salmon (1986, p. 78), that current uses of (1) are actually uninformative. I will first present Salmon’s argument before showing how it can be applied to the case of definite descriptions.

Salmon (1986) considers Frege’s Puzzle in terms of proper names. More specifically, Salmon (1986, p. 61) considers the sentences “Hesperus is Hesperus and Hesperus is Phosphorus”, which I will call (2*) and (1*) respectively. Salmon (1986, p. 16) holds that proper names like Hesperus and Phosphorus are directly referential, and therefore that, in any context where they are both true, uses of (1*) and (2*) must express the same content. Yet we have reason to think that uses of (1*), but not (2*) may be informative. More specifically, Salmon holds that current uses of (1*) and (2*) both have the trivial content VENUS=VENUS, yet we have reason to think current uses of (1*) may be informative.¹⁶⁹ Hence we have a puzzle.

Salmon’s solution to this puzzle is to claim that, despite appearances, uses of (1*) are uninformative. “It is precisely the seemingly trivial premise that $\ulcorner a = b \urcorner$ is informative whereas $\ulcorner a = a \urcorner$ is not informative that should be challenged” (Salmon 1986, p. 78). But why would we think that uses of (1*) are informative? The major reason seems to be that we can learn more from uses of (1*) than from uses of (2*). What we can

¹⁶⁶I will discuss why only *semantically encoded* content is included in this definition later in this section.

¹⁶⁷Note that there could exist a similar property to triviality which applied to narrow mental contents, and this property could then be used to define apriority. This fact does not preclude the existence of the property of triviality I have presented here, which applies to wide mental contents (i.e. propositions). The question of which of these notions best defines the intuitive notion of ‘informativeness’ is, as I have pointed out here, irrelevant to my purposes.

¹⁶⁸I will discuss what these reasons are below.

¹⁶⁹Again, I will discuss what these reasons are below.

learn from uses of (1*), and not from uses of (2*), is that roughly the proposition ‘that the proper names **Hesperus** and **Phosphorus** are co-referential.’¹⁷⁰ ‘Learning’ here can be understood as gaining a belief, so then we might say that we can gain a belief in the proposition ‘that **Hesperus** and **Phosphorus** are co-referential.’ The most direct way that we can gain a belief in a proposition from a statement is if that proposition is semantically encoded by that statement.¹⁷¹ Thus we have good reason to think that uses of (1*) express the non-trivial proposition ‘that **Hesperus** and **Phosphorus** are co-referential’ and are therefore informative.

As discussed in Chapter 2, I claim that there are two notions of belief: wide and narrow. Thus, one might question the claim I made in the above paragraph that the belief gained through uses of (1*) is a belief in a proposition (i.e. a wide belief) and not a narrow belief. However, note where the burden of proof is here. I am supposing that an opponent of the naïve theory is using Frege’s Puzzle as an argument against the view. To do so, the opponent must establish that uses of (1*) are informative *in the sense of having non-trivial content*. Making some claim about the narrow mental content expressed by uses of (1*) would be irrelevant in opposing the naïve theory, as it is a theory about informational content (and not narrow mental content). If the opponent of the naïve theory then wants to establish that uses of (1*) are informative in virtue of the beliefs we can gain from them (and I can’t see how else this claim would be established), (at least some of) those beliefs must then be belief in propositions. Highlighting what narrow beliefs we might gain from such uses would be irrelevant to establishing that such uses are informative *in the relevant sense*. Thus, as a proponent of the naïve theory, I can grant this claim for the sake of argument, as the burden of proof is not on me. As I show below, *even when granting* the opponent of the naïve theory this claim, Frege’s Puzzle can still be resolved within the naïve theory.

Salmon’s solution hinges on the division between semantically encoded and pragmatically imparted information. “It is extremely important in dealing with Frege’s Puzzle . . . to distinguish the notion of the *information content* of a sentence on a particular occasion of use from the notion of the *information imparted* by the particular utterance of the sentence” (Salmon 1986, p. 58). Even if uses of (1*) are uninformative, and therefore only semantically encode trivial propositions, it is still possible that they could pragmatically impart non-trivial propositions. As Salmon (1986, p. 78) notes “an utterance of ‘ $a = b$ ’ genuinely imparts information that is more valuable than that imparted by an utterance of ‘ $a = a$.’” In particular, a (sincere) assertion of (1*) “imparts the nontrivial linguistic information about the sentence [(1*)] that it is true [in this context], and hence that the names [**Hesperus**] and [**Phosphorus**] are co-referential. But that is pragmatically imparted and . . . not semantically encoded information” (Salmon 1986, p. 78-79).

Why is this the case? Suppose Alice sincerely asserted (1*) to Renee, and Renee knew Alice’s assertion was sincere (and they are both native speakers of English). Given that the social purpose of assertions is to make claims that are true, Alice’s assertion will pragmatically impart to Renee the proposition ‘that (1*) is true in the current

¹⁷⁰As I discussed in Chapter 3 proper names are *strongly* directly referential, and as such every use of a given proper name will have the same referent. As such, we can (in a slight abuse of terminology) describe proper names, and not just *uses* of proper names, as co-referential.

¹⁷¹This is not the *only* way in which we can gain a belief in a proposition from a statement. Indeed, this point will become central to the argument given below.

context.’ As Salmon (1986, p. 59) notes “one piece of information typically imparted by the utterance of a sentence S is the information that S is true with respect to the context of the utterance.”¹⁷² Furthermore, we can suppose that any statement which pragmatically imparts some proposition p will also pragmatically impart the necessary conditions for p , at least where those conditions are known and obvious. For the proposition ‘that (1*) is true in the current context’ to be true, it must be the case that **Hesperus** and **Phosphorus** are co-referential (in the context). Furthermore, this is an obvious semantic rule of English, and one that Renee knows (implicitly) as a native speaker of English. Thus Alice’s assertion pragmatically imparts the proposition ‘that **Hesperus** and **Phosphorus** are co-referential.’

We then have an explanation of how it is that we can learn something from uses of (1*). In addition to gaining a belief in the proposition semantically encoded by an assertion, we can also gain a belief in any proposition pragmatically imparted by that assertion. Thus we can learn from assertions of (1*) ‘that **Hesperus** and **Phosphorus** are co-referential’ without that proposition being semantically encoded by the assertion. There is then no problem with holding that uses of (1*) have the content VENUS=VENUS and are therefore uninformative.¹⁷³ Furthermore, there is no problem with holding that uses of (1*) and (2*) semantically encode the same information: “abstracting from their markedly different pragmatic impartations, one can see that these two sentences may well semantically encode the very same piece of information. I believe that they do” (Salmon 1986, p. 79).

One question that remains is: why hold that a statement is informative if and only if its *semantically encoded* content is non-trivial? Why not instead hold that a statement is informative if and only if either its semantically encoded *or* its pragmatically imparted content is non-trivial? However, as Salmon (1986, p. 58) notes, by *that* definition, it is no longer true that all uses of (2*) are uninformative: “of course there are other senses of ‘informative’ on which even a trivial identity statement may be described as “informative”.” A use of (2*) pragmatically imparts the non-trivial proposition ‘that **Hesperus is Hesperus** is an English sentence’ (to those who understand that the speaker is speaking English). A non-English user could then learn from an utterance of (2*) that **Hesperus is Hesperus** is a sentence in English (supposing they knew that the speaker was speaking English). Thus, if Frege’s Puzzle is to have bite, this must be the definition used.

I do not want to claim that there are not important differences between uses of (1*)

¹⁷²Note that this is only the case with sincere assertions, as an utterance during a play (for example) will not impart such a proposition, as such utterances have different social roles. Furthermore, note that the sentence-use will not (normally) *semantically encode* this information. “It is rarely the case, however, that a sentence[-use] semantically encodes the information about itself that it is true” (Salmon 1986, p. 59). We can see that this is the case given that what is semantically encoded by different uses of the same sentence will not depend on the pragmatic force of the use while what is pragmatically imparted will. The exception would be for sentences like **This statement is true**.

¹⁷³The opponent of the naïve theory might hold, not merely that can we learn ‘that **Hesperus** and **Phosphorus** are co-referential’ from utterances of (1*), but also that if we do learn that proposition then we learn it in virtue of that proposition being the content of the utterance. In other words, not merely do we learn it but we also learn it in the usual fashion, and not via any pragmatically imparted propositions. “If Frege’s Strategy is ultimately to succeed, a further argument must be made to show that the information imparted by ‘ $a = b$ ’ that makes it sound informative is, in fact, semantically encoded” (Salmon 1986, p. 79). However, it is not clear what any such argument would be.

and (2*). For instance, no-one can learn from utterances of (2*) that **Hesperus** and **Phosphorus** are co-referential. Furthermore, English speakers are much more likely to say (1*) compared to (2*). All I want to claim is that these differences do not need to be explained semantically. Following the reasoning above, we can see that sincere assertions of (2*) will only pragmatically impart to English speakers the proposition ‘that **Hesperus** and **Hesperus** are co-referential’, rather than the proposition ‘that **Hesperus** and **Phosphorus** are co-referential.’ This is why we cannot learn from utterances of (2*) that **Hesperus** and **Phosphorus** are co-referential. Furthermore, sincere assertions of (1*) will also pragmatically impart to English speakers the proposition ‘that **Hesperus** and **Hesperus** are co-referential.’ We can see that this is the case given a) ‘that **Hesperus** refers’ is a known and obvious necessary condition of ‘that **Hesperus** and **Phosphorus** are co-referential’, b) ‘if **Hesperus** refers then **Hesperus** and **Hesperus** are co-referential’ is a trivial proposition, and c) if an utterance pragmatically imparts p , and q is an obvious logical consequence of p and some trivial proposition p' , then we can suppose the utterance also pragmatically imparts q . As uses of (1*) pragmatically impart everything uses of (2*) do to English speakers, and more besides, we can see why English speakers are more likely to utter (1*) than (2*). This is the sense in which “an utterance of $\ulcorner a = b \urcorner$ genuinely imparts information that is *more valuable* than that imparted by an utterance of $\ulcorner a = a \urcorner$ ” (Salmon 1986, p. 78, emphasis mine).

I intend to use Salmon’s approach to Frege’s Puzzle for proper nouns to resolve Frege’s Puzzle for definite descriptions. My solution is as follows: The reason we have to think that uses of (1) are informative is that we (as English speakers) can learn more from them than we can from uses of (2). What we can learn from uses of (1), that we can’t from uses of (2), is the proposition ‘that there exists some star-like thing which both last appears in the morning and first appears in the evening.’¹⁷⁴ Given that most direct way that we can gain a belief in a proposition from a statement is if that proposition is semantically encoded by that statement, we then have reason to think that uses of (1) express the non-trivial proposition ‘that there exists some star-like thing which both last appears in the morning and first appears in the evening’ and are therefore informative. However, we can also explain this result if we hold that uses of (1) can *pragmatically impart* the proposition ‘that there exists some star-like thing which both last appears in the morning and first appears in the evening,’ and if we follow the reasoning given above we come to this result. Sincere assertions of (1) will pragmatically impart the proposition ‘that (1) is true in this context’ and an (obvious-to-English-speakers) necessary condition for that proposition is the proposition ‘that there exists some star-like thing which both last appears in the morning and first appears in the evening.’¹⁷⁵

Furthermore, we can explain the differences between (1) and (2) pragmatically, and therefore hold that uses of (1) and of (2) express the same proposition. By the reasoning above, a sincere utterance of (2) would only pragmatically impart to English speakers the proposition ‘that there exists some star-like thing which both last appears in the morning and last appears in the morning.’ Thus we cannot learn from uses of (2)

¹⁷⁴That is not necessarily all we learn from uses of (1). For instance, we also learn that there exists one *maximally salient* such thing. However, this simpler non-trivial proposition is sufficient to establish the appearance of informativeness.

¹⁷⁵This is not a *sufficient* condition for the proposition ‘that (1) is true in this context of use’, but sufficiency is not needed for a proposition to be pragmatically imparted in this fashion.

that there exists some star-like thing which both last appears in the morning and first appears in the evening. This is why uses of (2) seem less informative than those of (1). Furthermore, sincere assertions of (1) will also pragmatically impart the proposition ‘that there exists some star-like thing which both last appears in the morning and first appears in the evening.’ We can see that this is the case given a) ‘that there exists some star-like thing which last appears in the morning’ is a known and obvious necessary condition of ‘that there exists some star-like thing which both last appears in the morning and last appears in the morning,’ and b) ‘if there exists some star-like thing which last appears in the morning then there exists some star-like thing which both last appears in the morning and last appears in the morning’ is a trivial proposition. Given that sincere assertions of (1) will then pragmatically impart everything to English speakers that sincere assertions of (2) do, we can see why English speakers are more likely to assert (1) than (2). Thus the differences between uses of (1) and (2) raised by Frege’s Puzzle do not necessitate a difference in content and are therefore compatible with the directly referential analysis.

Moreover, we can see that all the linguistic machinery invoked to explain how it was that the directly referential analysis could be compatible with the evidence raised by Frege’s Puzzle (i.e. the division between semantically encoded and pragmatically imparted information, as well as the particular method of pragmatically imparting information) is also needed to account for Frege’s Puzzle for proper names. In other words, all the linguistic machinery invoked by the solution to Frege’s Puzzle for definite descriptions presented here is independently justified. As such, not only have I shown that the directly referential analysis is compatible with the evidence raised by Frege’s Puzzle, but I have also shown that this compatibility does not come at the cost of making the directly referential analysis a more complicated theory.¹⁷⁶ The directly referential analysis remains the simplest, and therefore the best, analysis of definite descriptions.

7.2.2 *de dicto* Indirect Speech Reports

As noted above, the salience directly referential analysis predicts that two statements S and S' will have the same content, and therefore be samesayers, where S contains a definite description-use X and S' is identical to S except that S' contains a directly referential expression-use X' instead of X and X and X' have the same referent (and therefore content). This prediction is borne out by *de re* acceptability judgements, but not by *de dicto* acceptability judgements. Thus, for the salience directly referential analysis to be an adequate theory, it must provide some explanation of these judgements. I will provide such an explanation here.¹⁷⁷

¹⁷⁶Note that the linguistic machinery invoked by the solution to Frege’s Puzzle for definite descriptions is only independently justified supposing we adopt a directly referential analysis of proper names. Without such an analysis of proper names, it will no longer be the case that the salience directly referential analysis is the simplest and best analysis. However, I believe that the arguments Salmon (1986) and others present for the directly referential analysis of proper names are persuasive, and therefore that the truth of the directly referential analysis of proper names can be used to argue for the truth of the salience directly referential analysis.

¹⁷⁷This problem may also be called the *problem of the apparent failure of substitutivity of co-referential definite description-uses in indirect speech reports*, as *de dicto* acceptability judgements appear to suggest that a definite description-use within the content-sentence-use of an indirect speech report

The first thing I want to note in giving this explanation is the similarity between this problem and Frege’s Puzzle.¹⁷⁸ In both cases we have a property of statements which is determined by their content (i.e. samesaying and informativeness) and two statements which seem to differ in terms of this property but which are predicted by the salience directly referential analysis to have the same content. This points towards a solution to this problem in line with the solution I offered for Frege’s Puzzle. As Salmon (1986, p. 87) suggests “the distinction between semantically encoded and pragmatically imparted information goes a long way towards solving the problems posed by . . . the apparent failure of substitutivity of [co-referential directly referential expression-uses] in propositional-attitude contexts.” Thus I will explain *de dicto* acceptability judgements through the division between semantically encoded and pragmatically imparted information. Note that an explanation of this sort will have two benefits. Firstly, given the similarity between the phenomena we would expect a similar explanation in each case, which is what an explanation of this sort will provide. Secondly, given that the linguistic machinery invoked by this explanation is already needed to solve Frege’s Puzzle, such machinery will be independently justified.

To see how *de dicto* acceptability judgements can be explained in terms of semantically encoded and pragmatically imparted information, consider the following example:

Situation **S9**: Rebecca is listening to Alice the Astronomer give a public lecture. During the lecture Alice says (1) **The last star-like thing to appear in the morning is the first star-like thing to appear in the evening.** Meanwhile Wesley is listening to Terry the Tautology-Teller give a very boring public lecture. During the lecture Terry says (2) **The last star-like thing to appear in the morning is the last star-like thing to appear in the morning.** Afterwards, Rebecca and Wesley meet to discuss the lectures. Rebecca says **Alice said that the last star-like thing to appear in the morning is the last star-like thing to appear in the morning** and Wesley says **Terry said that the last star-like thing to appear in the morning is the first star-like thing to appear in the evening.**

According to the salience directly referential analysis, both Alice and Terry’s statements had the same content: VENUS=VENUS. Furthermore, Rebecca’s use of (2) and Wesley’s use of (1) also have the content VENUS=VENUS. As such, according to the analysis, Rebecca and Wesley’s indirect speech reports are both true. However, Rebecca and Wesley’s reports are intuitively unacceptable. **S9** is then a case where native speakers display *de dicto* acceptability judgements. The similarity between Frege’s Puzzle and this problem should now be clear, given that I have used the same example sentences to illustrate both problems. Also like Frege’s Puzzle, this problem is not a problem for indirectly referential analyses nor certain hybrid referential analyses.¹⁷⁹

cannot always be substituted *salva veritate* for another definite description-use (or more generally a directly referential expression-use) with the same referent (and therefore content).

¹⁷⁸Salmon (1986, p. 8) notes this similarity: “In addition to Frege’s Puzzle I shall discuss the related problem of the apparent failure of substitutivity of co-referential [directly referential expression-uses] in propositional attitude attributions.” Note that (as I discussed in Chapter 2) indirect speech reports can be seen as a kind of propositional attitude, so the problem Salmon raises here is the same as the problem of *de dicto* acceptability judgements of indirect speech reports.

¹⁷⁹Indirectly referential analyses will have the opposite problem to directly referential analyses, namely explaining certain *de re* acceptability judgements of indirect speech reports. Hybrid refer-

I will suggest that these *de dicto* acceptability judgements are driven by pragmatically imparted information. As I discussed in Chapter 2, an assertion will only be judged acceptable if both the information it semantically encodes and the information it pragmatically imparts is considered true. Thus, although Rebecca and Wesley's reports both semantically encode true propositions, I will suggest that they each pragmatically impart false propositions. This fact can then explain *de dicto* acceptability judgements, while remaining consistent with the salience directly referential analysis (which, as a semantic theory, makes no claims about pragmatically imparted information).

What information is pragmatically imparted by Rebecca and Wesley's reports? Consider that Rebecca and Wesley had some freedom in how they presented their reports from a semantic point of view. By this, I mean that there were multiple sentences they each could have used to express the same content: (1), (2), **Venus is Venus** and so on. When a speaker has a choice like this, and a listener is aware of the fact that this choice exists, the particular choice made by a speaker may (but need not) convey information additional to that semantically encoded by their statement. This additional information is then pragmatically imparted by the statement. In the case of **S9**, the choices made by Rebecca and Wesley in their reports convey additional information. In particular, I will suggest that Rebecca's report conveyed the claim that Alice expressed the proposition **VENUS=VENUS** *by means of* the sentence (2) while Wesley's report conveyed the claim that Alice expressed the proposition **VENUS=VENUS** *by means of* the sentence (1). Both of these claims will then be pragmatically imparted by Rebecca and Wesley's assertions, and given that both of these claims are false, we have an explanation of why Rebecca and Wesley's assertions seem unacceptable. Salmon (1986, p. 116) puts this point as follows, while discussing assertions like Wesley's:¹⁸⁰ "Though the sentences [Terry said that the last star-like thing to appear in the morning is the last star-like thing to appear in the morning and Terry said that the last star-like thing to appear in the morning is the first star-like thing to appear in the evening] are materially equivalent, and even modally equivalent (true with respect to exactly the same possible worlds), there is a sense in which the first is better than the second, given our normal purpose in [indirectly reporting speech]. Both sentences state the same fact . . . but the first sentence also manages to convey *how* [Terry asserted] the proposition. Indeed, the second sentence, though true, is in some sense inappropriate; it is positively misleading in the way it (correctly) specifies the content of [Terry's speech]."

By generalising this method of explanation, a pragmatic explanation of *de dicto*

ential analyses will be able to avoid the problem of *de dicto* acceptability judgements by holding that all such judgements reflect an indirectly referential reading of the relevant definite description-use. If such an analysis also held that all *de re* acceptability judgements reflected a directly referential reading of the relevant definite description-use, then such an analysis would be able to explain both *de re* and *de dicto* judgements semantically. This is a major point in favour of such analyses, but I do not believe that this is enough to outweigh the problems with such analyses I discussed in Section 7.1, given that (as I discuss in this section) the salience directly referential analysis can also explain these judgements and it doesn't have the problems of hybrid analyses.

¹⁸⁰Speaking precisely, Salmon's (1986, p. 116) discussion is in regard to proper names and belief reports, and more specifically the differences between the reports "The astronomer believes that Hesperus is Hesperus and . . . The astronomer believes that Hesperus is Phosphorus." Given that I have provided the same analysis for belief and indirect speech reports, and that I have held that both proper names and definite descriptions are directly referential, I will hold that Salmon's point holds equally for the problem I am discussing. I have altered the quote above so that its relevance to the problem I am discussing is clear.

acceptability judgements consistent with the salience directly referential analysis is possible. Where a speaker has freedom in their indirect speech reports (and their listeners are aware of this) their choice of content-sentence can pragmatically impart information about *how* the reported speaker conveyed the reported content of their speech. “The **that**-clause, whose semantic function is simply to specify the content of the [speech], is also used here to perform a pragmatic function involving an autonomous mention-use of the clause” (Salmon 1986, p. 117-118). In such cases native speakers will have *de dicto* acceptability intuitions towards the reports.

One thing to note is that **S9** is in some ways a special case of a more general phenomenon. In **S9**, Rebecca and Wesley were able to report the content of Alice and Terry’s statements *using the very words* Alice and Terry used (although they unacceptably did not choose to do so). This will not always be the case. For instance, suppose Alice began her lecture by saying **I am an astronomer**. It would then be (both *de dicto* and *de re*) unacceptable for Rebecca to report this assertion by saying **Alice said I am an astronomer**, as Alice’s utterance of **I am an astronomer** has the content $\text{ASTRONOMER}^t\langle\text{ALICE}\rangle$ while Rebecca’s utterance of **I am an astronomer** has the content $\text{ASTRONOMER}^t\langle\text{REBECCA}\rangle$. Thus, I only want to make the claim that an indirect speech report pragmatically imparts that the reported speaker used the very same words as those in the report *only where* the reporter can express the same content by those words as the reported speaker. In other words, indirect speech reports do not *in general* pragmatically impart their corresponding direct speech reports.

In cases where a reporter cannot use the same words to express the same content as the speaker being reported, what exactly is *de dicto* acceptable becomes somewhat complicated. For instance, it would be *de dicto* acceptable for Rebecca to report Alice’s assertion **I am an astronomer** by saying **Alice said she was an astronomer** while it would be *de dicto* unacceptable for her to report **Alice said the person giving the lecture was an astronomer** (both reports are *de re* acceptable however). An indirect speech report is *de dicto* acceptable where a) it reports the content of the speaker’s utterance correctly (i.e. it is *de re* acceptable) and b) the way in which the content of the speaker’s utterance is reported *in some sense* reflects how that content was originally expressed. Exactly what that ‘sense’ is depends on the particular case. This flexibility in *de dicto* acceptability judgements is, I will hold, reflected by a flexibility in what indirect speech reports pragmatically impart. Indirect speech reports may pragmatically impart how the reported speaker conveyed the reported content of their speech, but exactly what is pragmatically imparted about how the reported speaker conveyed the reported content of their speech will depend on the particular case. It may be the exact words, like in **S9**, but it may also be less than that.

As I noted above, the division between semantically encoded and pragmatically imparted information invoked by this explanation is independently justified, as it is needed to solve Frege’s Puzzle. However, there might be a concern that the particular use of pragmatically imparted information made by this explanation is not independently justified. However, that is not the case. Again, we can see this by noting the similarities between this problem and Frege’s Puzzle. As with Frege’s Puzzle, there is also a problem concerning *de dicto* acceptability judgements and *proper names*. For instance, if in **S9** Alice had instead said **Hesperus is Phosphorus**, we would need to explain why the indirect speech report **Alice said that Hesperus was Hesperus** would be *de dicto* unacceptable. We can explain these *de dicto* acceptability judgements by making the

same use of pragmatically imparted information as we did in the definite description case, as Salmon (1986) originally did, and as such its use in definite description case is independently justified.

7.2.3 Donnellan on Definite Descriptions

If correct, both of the analyses of definite descriptions that Donnellan (1966) provides, the referential use and the attributive use, will serve as counterexamples to the salience directly referential analysis. Thus, I will here account for evidence Donnellan provides for these analyses while staying within the salience directly referential analysis. I will discuss Donnellan's referential use first before moving on to his attributive use.

In Chapter 6, I argued that Donnellan's referential use is best interpreted as directly referential and his attributive use is best interpreted as indirectly referential. The divergence between the salience directly referential analysis and the attributive use should then be clear. Less clear is how the referential use diverges from the salience directly referential analysis. Note, however, unlike in the salience directly referential analysis, Donnellan does not hold that referential uses of definite description refer to the most salient entity in the definite description-use's context-level restrictor set. Indeed, Donnellan (1966, p. 287) held that a referential use may refer to an entity which is not even within the description-use's restrictor sets:¹⁸¹ "In the referential use of a definite description we may succeed in picking out a person or thing ... even though he or it does not really fit the description." Thus, Donnellan's referential use does not correspond to *any* of the analyses I have discussed so far. Instead, Donnellan (1966, p. 285-286) holds that a referential use will (directly) refer to whatever the speaker *intends* to refer to by that definite description-use (whether or not it is within the description's restrictor sets): "The contrast with [the attributive use] is one of those situations in which we expect and intend our audience to realize whom we have in mind when we speak ... and, most importantly, to know that it is this ... about whom we are going to say something."

For Donnellan (1966, p. 290), a speaker normally believes that the intended referent of a referential use of definite description fits the description-use's restrictor phrase: "It is true ... that if a speaker does not believe that anything fits the description or does not believe that he is in a position to pick out what does fit the description, it is likely that he is not using it referentially." To see why, consider the following: Suppose a speaker intends to refer to some entity A. In most cases listeners will not have any idea who the speaker intends to refer to. However, suppose there is some property \mathcal{P} such that it is commonly believed (and therefore believed by the speaker and listeners) that A is the maximally salient entity that possesses \mathcal{P} . If the speaker then uses a definite description which has \mathcal{P} as its restrictor content the listeners will be able to infer that the speaker likely intends to refer to A.

However, this is not always the case: "It is also possible to think of cases in which the speaker does not believe that what he means to refer to by using the definite description fits the description, or to imagine cases in which the definite description is used referentially even though the speaker believes nothing fits the description" (Donnellan 1966, p. 290). For this to be the case the listeners must know what speaker intends

¹⁸¹By 'the definite description-use's restrictor sets' I mean the description-use's context-level and evaluation-level restrictor sets.

to refer to in a way that does not depend on that entity being believed (by both the speaker and listener) to have a certain property.

Thus, we can see that Donnellan's notion of a referential use of a definite description has two aspects: direct reference and what I will call the *intentional view of definite description-use denotation*. Donnellan seems to think that these two things must go together. However, I do not think that this is the case. Consider the following sentence: **The world's greatest detective may not have been a detective**. A speaker might assert this sentence merely to make the claim that 'being a detective' is not a necessary property. If we suppose that 'being a detective' actually is a contingent property, then this statement would be true.¹⁸² Note, however, that it can only be true if the use of **the world's greatest detective** is directly referential, as (to be true) the statement must say that whoever is *actually* the world's greatest detective is not a detective in some possible world, not that in some possible world whoever is the world's greatest detective in that world is not a detective in that world. However, a speaker could (truly) assert **The world's greatest detective may not have been a detective** without intending to refer to *anyone* specifically by the use of **the world's greatest detective**. If the speaker merely wants to make a claim about the necessity of a given property, then the actual identity of the world's greatest detective is irrelevant to them. However, the intentional view would then hold that this definite description-use would have no referent, and therefore the statement would lack a truth-value. Given that the statement does not lack a truth-value, this is a case of a directly referential definite description-use that does not conform to the intentional view.

However, there do seem to be some cases where the intentional view gives the correct predictions and the (context-level) salience view does not. Consider the following example (inspired by Donnellan 1966, p. 287):

Situation **S10**: Bruce, Selena and James are attending a party at James' house. The unmarried Bruce has surreptitiously poured out his glass of champagne and filled it with ginger ale. Both Selena and James see Bruce drinking what they think is champagne. Furthermore, Bruce is the only one drinking in the room. James then says to Selena **The man drinking champagne isn't married**.

We can presume that, given no-one is actually drinking champagne in the room, there is no *actual* maximally salient champagne-drinking man. As such, James' use of **the man drinking champagne** would, under the context-level salience view, lack a denotation.¹⁸³ However, it seems as if James has said something true about Bruce. Furthermore, it seems as if Selena would be able to gain the (true) belief from James' words that Bruce, that very individual, is unmarried. Donnellan could explain this case by holding that James' use of **the man drinking champagne** was (in his terms) referential and, given that he intended to refer to Bruce, then by the intentional view the denotation of the description-use is BRUCE.

¹⁸²Note that the statement will only be true (and for that matter will only express the claim that 'being a detective' is not a necessary property) given a *de re* reading of the claim. I will elaborate on this point in Subsection 7.2.4.

¹⁸³Note that the evaluation-level salience view, as well as context-level and evaluation-level uniqueness views, also make this prediction. As such this problem is as much a problem for all of those views as it is for the context-level salience view.

Given my claim above that the intentional view is not correct for all directly referential definite description-uses, I cannot adopt Donnellan's approach. However, a related approach is available. We could propose a *hybrid analysis*, whereby some (directly referential) definite description-uses accord with the context-level salience view and others with the intentional view. Thus in cases like the 'World's Greatest Detective' case the definite description-uses would be analysed in accordance with the context-level salience view and in cases like **S10** the definite description-uses would be analysed in accordance with the intentional view. Such an analysis would posit that the sign **the** is (semantically) ambiguous.

Such an analysis would be problematic. To begin with there are the arguments against such hybrid analyses I presented in Section 7.1: Firstly, a unified analysis will be, *ceteris paribus*, simpler than any hybrid analysis. Secondly, we would expect this intentional/non-intentional divide to exist in other languages, which a semantic ambiguity in English could not explain.

Kripke (1977) presents a further argument against hybrid semantic analyses (versus pragmatic explanations) that pertains specifically to this case. Kripke (1977, p. 263) points out that the intentional/non-intentional divide occurs for proper names, as well as definite descriptions, using the following example:

“Two people see Smith in the distance and mistake him for Jones. They have a brief colloquy: “What is Jones doing?” “Raking the leaves.” Jones, in the common language of both, is a name of Jones; it never names Smith. Yet, in some sense, on this occasion, clearly both participants in the dialogue have referred to Smith, and the second participant has said something true about the man he referred to if and only if Smith was raking the leaves (whether or not Jones was).”

This example appears to be an example of a use of the proper name **Jones** which refers to **SMITH**. Such a use appears to accord with the intentional view, yet Donnellan's analysis of definite descriptions can have no bearing on this case. In contrast, “the unitary account appeals to a general apparatus that applies to cases, such as the “Smith-Jones” case ... According to the unitary account, far from the [intentional] use constituting a special namelike use of definite descriptions, the [intentional/non-intentional] distinction is simply a special case of a general distinction, applicable to proper names as well as to definite descriptions, and illustrated in practice by the (leaf-raking) Smith-Jones case” (Kripke 1977, p. 267).

Note that the unified explanation has two advantages here. Firstly, the unified explanation can account for both of these cases, whereas the semantic explanation would require an additional explanation for the proper name case. Thus, the unified approach will be simpler. “The metalinguistic apparatus invoked by the unitary account to explain the [intentional/non-intentional] distinction is an apparatus that is needed in any case for other cases, such as proper names. The separate [intentional] sense of descriptions ... is an idle wheel that does no work.” (Kripke 1977, p. 269). Secondly, given the similarity between the phenomena in both cases, we would expect a unified explanation. As Kripke (1977, p. 269) puts it: “the resemblance between the case of descriptions and that of proper names ... is so close that any attempt to explain the cases differently is automatically suspect.”

Luckily, Kripke (1977) provides a pragmatic explanation of cases like **S10** which does not posit any ambiguity and is compatible with the salience directly referential analysis. I agree with Kripke (1977, p. 265) that “we wish to account for the phenomenon on pragmatic grounds, encapsulated in the distinction between speaker’s reference and semantic reference”. “If a speaker has a designator in his idiolect, certain conventions of his idiolect (given various facts about the world) determine the referent in the idiolect: that I call the *semantic referent* of the designator” (Kripke 1977, p. 263). Within the General Framework, the semantic referent of a referential expression-use is just that use’s standard referent. Extending Kripke’s notion, I will also define the *semantic content* of a referential expression-use as that use’s standard content. The semantic content of a directly referential expression-use will be identical to its semantic referent. “We may . . . define the speaker’s referent of a designator to be that object which the speaker wishes to talk about, on a given occasion” (Kripke 1977, p. 264). The intentional view then holds that definite description-uses (and more generally referential expression-uses) refer to their speaker’s referents. Extending Kripke’s notion, I will also define the *speaker’s content* of a (directly or indirectly) referential expression-use as identical to its speaker’s referent. I will explain why I do this later.

Kripke (1977, p. 264) uses this distinction between speaker’s reference and semantic reference to provide a pragmatic explanation of the intentional/non-intentional divide as follows:

“In a given idiolect, the semantic referent of a designator . . . is given by a *general* intention of the speaker to refer to a certain object whenever the designator is used [relative to contextual factors]. The speaker’s referent is given by a *specific* intention, on a given occasion, to refer to a certain object. If the speaker believes that the object he wants to talk about, on a given occasion, fulfills the conditions for being the semantic referent, then he believes that there is no clash between his general intentions and his specific intentions. My hypothesis is that Donnellan’s [intentional/non-intentional] distinction should be generalized in this light. For the speaker, on a given occasion, may believe that his specific intention coincides with his general intention for one of two reasons. In one case (the “simple” case), his specific intention is simply to refer to the semantic referent: that is, his specific intention is simply his general semantic intention. (For example, he uses *Jones* as a name of Jones . . . and, on this occasion, simply wishes to use *Jones* to refer to Jones.) Alternatively—the “complex” case—he has a specific intention, which is distinct from his general intention, but which he believes, as a matter of fact, to determine the same object as the one determined by his general intention. (For example, he wishes to refer to the man “over there” but believes that he *is* Jones.) In the “simple” case, the speaker’s referent is, *by definition*, the semantic referent. In the “complex” case, they may coincide, if the speaker’s belief is correct, but they need not. (The man “over there” may be Smith and not Jones.)”

Kripke only discusses denotations, and not contents, in relation to this explanation, so I will extend his explanation to discuss contents as well. For a given expression-use, its semantic content (i.e. its standard content according to the semantic code) is given by a general intention of the speaker to express that content whenever they use that

expression (relative to contextual factors). In other words, the semantic content of an expression-use is given by a speaker's general intention to follow the semantic code of the language. In contrast, the speaker's content of a referential expression-use is given by a specific intention of the speaker to make a claim about a specific entity. Because this specific intention is an intention to express a singular proposition about a specific entity, speaker's contents must be particular entities. From there we can define *semantic propositions* and *speaker's propositions*. The semantic proposition expressed by a statement is its standard proposition according to the semantic code, while its speaker's proposition is its standard proposition except that the referential expression-uses it contains are treated as if they had their speaker's content as their content. All speaker's propositions will then be singular, even if their corresponding semantic propositions aren't. Putting aside indirectly referential expressions, in the simple case the semantic and speaker's propositions of a statement will coincide while in the complex case they may not. In complex cases, listeners have the option of interpreting an assertion as expressing its speaker's proposition, instead of its semantic proposition, where doing so would better fulfil the communicative purpose of the assertion.

Let us return to **S10**: In saying **the man drinking champagne**, James intended to refer to Bruce. Thus the speaker's referent, and content, of James' utterance of **the man drinking champagne** is BRUCE. The speaker's proposition of his assertion will then be $\neg\text{MARRIED}^t\langle\text{BRUCE}\rangle$.¹⁸⁴ Given that Bruce is actually unmarried, this proposition is true in this situation. We can thus explain why it seems that James' has said something true about Bruce in **S10**, and also how Selena can come to believe the proposition $\neg\text{MARRIED}^t\langle\text{BRUCE}\rangle$ from James' words.

Kripke therefore provides a pragmatic explanation of the intentional/non-intentional divide which does not posit any ambiguity and is compatible with the salience directly referential analysis. Note that this explanation has all the virtues we wanted: Firstly, it is a unified analysis. Secondly, as a pragmatic explanation it applies to all languages equally. Finally, the explanation holds equally in the proper name case as the definite description case. This final point is the most important, as it shows that the divide between speaker's reference and semantic reference is independently justified, and therefore invoking it in support of the salience directly referential analysis will not make that analysis a more complicated theory.

Kripke's explanation allows me to account for the intentional aspect of Donnellan's referential use. I have not yet discussed Donnellan's attributive use, which I argued in Chapter 6 should be analysed as indirectly referential. If Donnellan was correct to claim that some definite description-uses were indirectly referential, this would contradict the salience directly referential analysis. However, I do not believe Donnellan (1966) provides any evidence for this claim. Donnellan does provide evidence that some definite description-uses are *not* interpreted according to the intentional view and seems to believe that all directly referential definite description-uses must conform to the intentional view. If Donnellan was correct about this, then there would exist indirectly referential definite description-uses. However, directly referential analyses need not accord with the intentional view: for example, a speaker asserting **The world's greatest detective may not have been a detective** merely to make the claim that 'being a detective' is not a necessary property. Donnellan does not therefore present any evidence that

¹⁸⁴Where t is the time of **S10**.

there are indirectly referential definite description-uses, and as such his attributive uses do not present any problem for the salience directly referential analysis .

7.2.4 *de dicto* Modal Claims

In Section 7.1, I discussed how the context-level salience view (and therefore the salience directly referential analysis), together with the analysis of *necessarily* I provided in Chapter 2, could explain *de re*, but not *de dicto*, intuitive acceptability judgements towards modal claims. I then suggested that a hybrid analysis of *necessarily* was needed to explain *de dicto* judgements towards modal claims. In this section I will present this hybrid analysis and show how it explains *de dicto* judgements towards modal claims while remaining consistent with the salience directly referential analysis. I will also explain how this hybrid analysis is independently justified, why the explanation of *de dicto* judgements towards indirect speech reports will not apply in this case and how this hybrid analysis avoids Kripke’s (1977) objections against hybrid analyses.

Recall **S7** from Section 7.1. From that example, we can see that native speakers make two different kinds of acceptability judgements towards assertions of (3) **Necessarily, the world’s greatest detective is a detective**. Under *de re* judgements, this assertion is about the person who is actually the world’s greatest detective (e.g. BRUCE) and therefore is unacceptable (supposing ‘being a detective’ is a contingent property of people). This kind of judgement is reflected in Selena’s negative answer in **S7**. In contrast, under *de dicto* judgements, this assertion is about whoever is the world’s greatest detective in each possible world, and is therefore acceptable. This kind of judgement is reflected in James’ positive answer in **S7**.

Under the salience directly referential analysis, and the analysis of *necessarily* I provided in Chapter 2, an assertion of (3) will be true in a context c (where Bruce is the world’s greatest detective) if and only if the proposition $\text{DETECTIVE}^{c_t} \langle \text{BRUCE} \rangle$ is true in every possible world. This proposition is false in some possible worlds (e.g. where Bruce is just a millionaire playboy), thus the assertion is false. The salience directly referential analysis can then (with this analysis of *necessarily*) explain *de re*, but not *de dicto*, judgements towards modal claims. In contrast the salience indirectly referential analysis can explain *de dicto*, but not *de re*, judgements towards modal claims (with this analysis of *necessarily*).¹⁸⁵ Under that analysis, an assertion of (3) will be true in a context c if and only if the proposition $\text{DETECTIVE}^{c_t} \langle \varepsilon^{c_t} \langle \text{GREATEST-DETECTIVE}^{c_t} \rangle \rangle$ is true in every possible world. This proposition is true in all possible worlds, thus the assertion is true. A hybrid referential analysis could explain both *de re* and *de dicto* judgements towards modal claims by holding that definite descriptions are directly referential in *de re* cases and indirectly referential in *de dicto* cases. However, as I want to advance the salience directly referential analysis, I will not pursue such an analysis as a solution to this problem.

The solution I offered above for the problem of *de dicto* judgements of indirect speech reports will not apply to the problem of *de dicto* judgements of modal claims. To see why, consider the following: in **S7**, an assertion of (3) would semantically encode

¹⁸⁵Note that there can be only a single greatest detective in any possible world, and therefore the uniqueness indirectly and directly referential analyses will make the same predictions as the salience indirectly and directly referential analyses respectively. This is why I leave aside the uniqueness indirectly and directly referential analyses in this discussion.

the proposition $\mathcal{N}\langle\text{DETECTIVE}^t\langle\text{BRUCE}\rangle\rangle$.¹⁸⁶ This proposition is false (in every world of evaluation) as Bruce is not a detective in every possible world (at t). If we were to pursue a solution similar to that advanced in the case of *de dicto* judgements of indirect speech reports, we would look for some proposition p such that an utterance of (3) in **S7** pragmatically imparts p and therefore is acceptable. Note, however, that this is impossible as an assertion is only acceptable where its *semantically encoded*, as well as its pragmatically imparted, information is true (as established in Chapter 2). Given that (3) semantically encodes a false proposition in **S7**, no recourse to pragmatically imparted information will help us here. In some ways this result should not be surprising, as the *de re/de dicto* divide is different for modal claims versus indirect speech reports. For instance, there is no *de dicto* reading of proper names within modal claims, while there is for indirect speech reports.

To resolve this problem I will revise the analysis of **necessarily** I presented in Chapter 2. I now want to claim that **necessarily** is an ambiguous sign with two senses. The first sense, which I will call **necessarily**₁, has the analysis I gave in Chapter 2, namely: A use of **Necessarily**₁ **S** (where **S** is any sentence) will be true in a context c if and only if the proposition expressed by **S** in c is true in every world of evaluation. **Necessarily**₁ is then an operator on contents. The second sense, which I will call **necessarily**₂, is an operator on *constitutions*: A use of **Necessarily**₂ **S** will be true in c if and only if the propositional constitution of **S** is true in every possible context of use (in the world and at the time of that use). In other words, **Necessarily**₂ **S** is true if and only if, for every c , the proposition expressed by **S** in c is true in c_w at c_t .¹⁸⁷

We have already seen that the analysis of **necessarily**₁ accords with *de re* acceptability judgements. We can also see that this analysis of **necessarily**₂ accords with *de dicto* acceptability judgements. An utterance of **Necessarily**₂ **the world's greatest detective is a detective** will be true if and only if the propositional constitution $\text{DETECTIVE}\langle\varepsilon\langle\text{GREATEST-DETECTIVE}\rangle\rangle$ is true in every context c (at time c_t and world c_w). In every c , this propositional constitution will express the proposition $\text{DETECTIVE}^{c_t}\langle x \rangle$ where x is the greatest detective in c_w at c_t .¹⁸⁸ If x is the greatest detective in c_w at c_t then x must be *a* detective in c_w at c_t . $\text{DETECTIVE}^{c_t}\langle x \rangle$ is therefore true in c_w . This means that utterances of **Necessarily**₂ **the world's greatest detective is a detective** are true, in accordance with *de dicto* acceptability judgements.

Note that this division between the senses of **necessarily** will have no effect on proper names. This is because proper names are strongly directly referential, and therefore the content of a proper name-use is identical to its constitution. This explains why the *de re/de dicto* divide does not exist for modal claims containing proper names. Furthermore, this demonstrates why constitutions are needed in addition to their colours they determine, as definite descriptions and proper names may have the same colours but cannot have the same constitutions. This difference in constitutions is necessary to explain the differing behaviour definite descriptions and proper names have vis-à-vis acceptability judgements of modal claims.

Part of the justification offered by Kaplan (1980, p. 509) for both his analysis of indexicals as directly referential and his analysis of **necessarily** as an operator on

¹⁸⁶Where t is the time of **S7**. I discuss the \mathcal{N} operator in the appendix.

¹⁸⁷This approach is inspired by that of Davies and Humberstone (1980).

¹⁸⁸Technically, x must be the *most salient* greatest detective in c_w at c_t , but given that there can only be one greatest detective in a world at a time this additional point will not matter.

contents was the fact that utterances of **Necessarily I am here now** were unacceptable. It is unclear whether my ambiguous analysis of **necessarily** is compatible with Kaplan's position. Note, however, that there is a reading of **Necessarily I am here now** that is acceptable. We could imagine someone saying (acceptably) **Of course I must here now, how I could be anywhere other than the place I am**. Thus I will suggest that this sentence too displays the *de re/de dicto* divide. Uses of **Necessarily₁ I am here now** are false, which reflects both Kaplan's observations and his analysis, while uses of **Necessarily₂ I am here now** are true.

This point is important because it shows that the ambiguous analysis of **necessarily** I introduced to explain *de dicto* acceptability judgements is already needed to explain acceptability judgements we have towards statements which do not contain definite descriptions. As such, I will suggest that this analysis is independently justified. Note that, in virtue of this fact, we now have an argument for directly referential analyses versus hybrid referential analyses and one versus indirectly referential analyses. I will present these arguments below.

To begin with, one might posit a hybrid referential analysis to explain *de re* and *de dicto* acceptability judgements (i.e. by holding that *de re* judgements stem from directly referential definite description-uses and *de dicto* judgements stem from indirectly referential definite description-uses). However, in that case there would be *two* explanations of *de re* and *de dicto* acceptability judgements. Thus this theory would have the added cost of positing that definite descriptions are ambiguous with no explanatory benefit. This is an argument for directly referential analyses versus hybrid referential analysis, but it will only apply to those hybrid referential analyses which are only posited to explain *de re* and *de dicto* acceptability judgements. This argument then has limited force, as hybrid referential analyses may be introduced for other reasons.

Secondly, note that the ambiguous analysis of **necessarily** will only explain *de re* and *de dicto* acceptability judgements where definite descriptions are directly referential. Under the salience indirectly referential analysis, an utterance of **Necessarily₁ the world's greatest detective is a detective** will express the proposition $\mathcal{N}\langle\text{DETECTIVE}^t\langle\varepsilon^t\langle\text{GREATEST-DETECTIVE}^t\rangle\rangle\rangle$ (at time t).¹⁸⁹ This proposition is true (in all worlds of evaluation). Thus neither utterances of **Necessarily₁ the world's greatest detective is a detective** nor of **Necessarily₂ the world's greatest detective is a detective** will then accord with *de re* acceptability judgements. This will not in itself rule out indirectly referential analyses, as there could be *another* explanation of the *de re/de dicto* divide which is compatible with indirectly referential analyses. However, given that the ambiguous analysis of **necessarily** is already needed (for indexical cases, like **Necessarily I am here now**), indirectly referential analyses must be more complicated, and therefore worse, than directly referential analyses (as they posit this additional explanation).

My analysis of **necessarily** is ambiguous, and therefore subject the argument Kripke (1977) levelled against ambiguous analyses: Supposing the *de re/de dicto* divide exists in other languages (which seems likely), a different semantic ambiguity will need to be posited in every language (which would make this explanation worse than any pragmatic explanation of the divide, which would apply to all languages). However, Kripke (1977,

¹⁸⁹Note that we will get the same results from the uniqueness indirectly referential analysis, as a given world will only ever have greatest detective at a given time, and therefore the most salient greatest detective (in a world at a time) will always be identical to the unique greatest detective (in that world at that time).

p. 275en) does present an exception to this argument which I will suggest applies in this case: “a word may have different senses that are obviously related . . . The more we can explain relations among senses, and the more “natural” and “inevitable” the relationship, the more we will expect the different senses to be preserved in a wide variety of other languages.” I will hold that the two senses of *necessarily* are closely related, in that they both capture the idea of some claim holding in every possible case. Thus I do not think that Kripke’s argument against ambiguity applies in this case.

7.2.5 Salmon on Definite Descriptions

Salmon (1986, p. 21) analyses definite descriptions as indirectly referential expressions: “a definite description ‘the ϕ ’, in contrast with other sorts of singular terms, is seen as involving a bifurcation of semantic values taken on with respect to a context of utterance. On the one hand there is the description’s referent . . . On the other hand there is the descriptions information value [i.e. content], which is a complex made up, in part, of the information value of the predicate [i.e. restrictor phrase] . . . ϕ .” He also provides an argument that definite descriptions are indirectly referential in his discussion of the “*singularly modified naïve theory*” (Salmon 1986, p. 21). As this is a direct argument against the salience directly referential analysis, I must address it here.

Salmon (1986, p. 20-21) identifies an inconsistency in the (unmodified) naïve theory:

“The naïve theory rests upon two central ideas. The first is the identification of the information value [content] of a singular term with its referent . . . The second major idea is that the information value of a sentence, as uttered on a particular occasion, is made up of the information values of its information-valued components . . . Unfortunately, these two ideas come into conflict in the case of definite descriptions. According to the naïve theory, the information value of a definite description . . . is simply its referent . . . But the definite description is a phrase that, like a sentence, has parts with identifiable information values . . . These information-valued components of the definite description are, ipso facto, information-valued components of the containing sentence . . . if the information value of a sentence is something made up of the information values of its information-valued components, it stands to reason that the information value of a definite description, which is like a sentence at least in having information-valued components, should also be something made up of the information values of those components.”

In other words, it cannot *both* be the case that definite description-uses have their referents as their contents *and* that the content of each expression-use contains all the contents of its sub-expression-uses (where it has sub-expression-uses with contents), as definite description-uses have sub-expression-uses with contents (i.e. restrictor phrase-uses) and should therefore have complex contents (so as to contain the contents of their sub-expression-uses), but referent entities are simple (and therefore cannot contain anything).

Salmon (1986, p. 21) responds to this inconsistency by modifying the first main idea of the (unmodified) naïve theory, so that it doesn’t apply to complex singular terms (like definite descriptions): “Thus, instead of identifying the information value

[content] of the individual who wrote *The Republic*, as used on a particular occasion, with its referent, one should look instead for some complex [content] made up partly of the relational property of having written *The Republic* . . . and partly of something else—something that serves as the information value of the definite description operator **the**.” This modification results in the singularly modified naïve theory. “A proper name or other single-word singular term is seen as involving a collapse of semantic values; its information value with respect to a particular context is just its referent with respect to that context. From the point of view of the singularly modified naïve theory, the original naïve theory errs by treating definite descriptions on the model of a proper name” (Salmon 1986, p. 21). Thus, Salmon argues, directly referential analyses are incorrect.

There is a lot I agree with in Salmon’s argument. Certainly, by definition, the content of a statement contains the contents of its sub-expression-uses, so I want to hold to the second major idea of the naïve theory. But I also want to hold that definite descriptions are directly referential, and thus hold to the first major idea of the naïve theory, at least as far as definite descriptions are concerned. To avoid inconsistency, I will question the third (unspoken) premise of Salmon’s argument, the claim that definite description-uses contain sub-expression-uses with contents. Certainly, restrictor phrases, as nominal phrases, have contents (namely eternalised properties) in *standard cases*. However, I will now suggest that restrictor phrase-uses do not have their standard contents. Under the salience directly referential analysis, definite descriptions are *decomplexifying expressions* and therefore do not have *standardly defined contents*. Thus, I will claim that restrictor phrases-uses, *by themselves*, have no contents, as they *by themselves* do not contribute anything to the proposition expressed by the statements they are contained within. They do, of course, contribute something *together with* the rest of the definite description-use they are part of (i.e. together with the word **the**). Furthermore, note that uses of **the** under directly referential analyses never have any content by themselves, only as part of the definite description-use they are contained within. Thus, contrary to Salmon, I will hold that uses of **the** do not contribute their content to the proposition expressed by the statement they are part of as they have no content (by themselves).

If we acknowledge the existence of decomplexifying expressions, Salmon’s observations no longer provide a knock-down argument against directly referential analyses. Salmon could still make the point that his approach to the problem is simpler, and therefore better, as my approach requires the additional postulation of decomplexifying expressions. However, as I will argue in the next paragraph, Salmon is also already committed to this form of non-standard content, so this argument also holds no weight. On the other side, I could argue that my approach is simpler than Salmon’s, as my approach is not committed to the idea that denotations that differ from the contents that determine them. However, I cannot use this fact to argue against Salmon’s solution as I am already committed to denotations that differ from the contents that determine them (e.g. propositions differ from truth-values). Note that this means that I do not disagree with the singularly modified naïve theory in general, just its application to definite descriptions. Thus I do not think that these observations provide an argument on either side.

As I stated above, I believe that Salmon is already committed to decomplexifying expressions, specifically in the case of *complex demonstratives*: expressions of the form **this**

X or that X, where X is a nominal phrase. Following Kaplan (1980, p. 524-527), Salmon seems to treat complex demonstratives as directly referential expressions.¹⁹⁰ However, complex demonstratives also have components which have contents in standard cases. Complex demonstratives are therefore decomplexifying expressions for Salmon. Given that Salmon is committed to decomplexifying expressions in the case of complex demonstratives, there would be no extra cost to accept it in the case of definite descriptions. Hence Salmon's argument against directly referential analyses loses all its bite.

One background concern that Salmon might have with the idea that definite descriptions are directly referential is the fact that they are complex expressions. "Definite descriptions are not single worlds but phrases, and therefore have a richer semantic constitution" (Salmon 1986, p. 21). Perhaps an unspoken view that he has is that complex expressions require complex contents. I do not think that this is the case. Indeed, it is not clear that even Salmon could hold this view, as he thinks that complex demonstratives (which are complex expressions) are directly referential, and therefore have simple contents. However, I think there is something to the idea that complex expressions should have complex meanings, at least in some sense. Within the General Framework, however, this view needn't be in conflict with the claim that definite descriptions are directly referential, as definite descriptions have complex *constitutions*. Indeed, this forms one reason why constitutions are needed in addition to the colours they determine (as colours, being functions, cannot be complex as functions have no internal structure).

¹⁹⁰To give one example: "the information content of This tree is covered with green leaves with respect to a context c and a time t ... is the singular proposition about the tree contextually indicated in c that it is covered in green leaves at t " (Salmon 1986, p. 30).

Conclusion

The salience directly referential analysis is the best analysis of definite descriptions. Definite descriptions are therefore directly referential expressions. My main argument for this conclusion is that the evidence from native speaker intuitions favours the context-level salience view of definite description denotation, and only the salience directly referential analysis accords with the context-level salience view. Other arguments included the fact that the salience directly referential analysis was a unified analysis, that it did not posit any partial expressions, and that it tracked the samesaying relation though the propositions it predicted statements containing definite description-uses would have.

This result is important for several reasons. Firstly, the notion of informational content is an important one, as it has consequences for indirect speech reports, propositional attitude reports and modal claims. Given that a large number of statements contain definite description-uses, determining the informational content of those uses is highly important. Secondly, to this point most who have held that definite descriptions are referential expressions have adopted indirectly referential analyses uncritically or have considered an indirectly referential analysis the obvious alternative to a quantificational analysis. Thus I hope to have shown here that directly referential analyses are at the very least a viable alternative, and that anyone espousing an indirectly referential analysis needs to show more than just that definite descriptions are referential. This is especially true for those who agree with Kaplan (1980) that indexicals, demonstratives and proper names are directly referential, and who agree with Salmon (1986) that there is a division between semantically encoded and pragmatically imparted information, as they can adopt the salience directly referential analysis with essentially no theoretical cost. Finally, in the process of presenting the salience directly referential analysis and defending it from some major objections, I have touched on many other areas of philosophical and linguistic interest, such as conversational salience, pragmatically imparted information and the *de re/de dicto* divide.

Some problems for the salience directly referential analysis remain which I do not have space to discuss here. In particular, some explanation is required for those statements which contain empty definite description-uses but are nonetheless judged to be acceptable. Examples of these include negative existentials, counterfactual conditionals and indirect speech and propositional attitude reports. I will speculate that the division between semantically encoded and pragmatically imparted information may also provide an explanation of how these examples can be reconciled with the salience directly referential analysis. An explanation of what factors in addition to salience determine the referents of improper definite description-uses is also required. I believe that both of these issues should provide fruitful areas for further research.

There is much still to be said about the salience directly referential analysis. For example, there is the question of how this analysis of definite descriptions compares to analyses of demonstratives. This is relevant if we see the purpose of demonstrations (pointing and the like) as raising salience, and therefore suppose that demonstratives pick out entities in part due to how salient they are. For example, uses of *it* could be seen to refer to the maximally salient entity, uses of *her* could be seen to refer to the maximally salient female, uses of *this X* could be seen to refer to the maximally salient

X, and so on. If we also agree with Kaplan that demonstratives are directly referential, we could then offer a *unified* analysis of definite descriptions *and* demonstratives. This would have the advantage of a simpler overall semantic theory (versus any analysis that treated them separately), but it would mean that some explanation would be required to account for the fact that uses of **the X**, **this X** and **that X** do not always refer to the same entity. This analysis might also be extended to indexicals and indefinite descriptions. Were such a unified analysis of singular terms possible (and this is highly speculative) this would provide both a strong argument for the salience directly referential analysis and reveal a great deal about the nature of our language.

A A Formal System of Contents and Constitutions

In this appendix, I will present a formal system of contents and a formal system of constitutions. These two systems are quite similar, although their details differ. Before presenting these systems I will discuss how the type system I introduced for denotata and expressions in Chapter 1 applies to (standard) contents and constitutions, as this type system places certain limitations on the formal systems.

A.1 A Type System for Content and Constitutions

The type system I introduced for denotata and expressions in Chapter 1 also applies to (standard) contents and constitutions. In this section I will explain why this is the case and what the consequences of this are. The consequences of extending the type system to contents and to constitutions will be very similar for both contents and constitutions, although some of the details differ. I should note that the type system will not apply to the contents and constitutions of non-extensional operators and of expression-uses with non-standard denotations. I will therefore put these kinds of contents and constitutions aside for this section.

I will hold that each kind of content (other than the exceptions named above) will denote only one type of denotatum.¹⁹¹ For instance, propositions will only denote truth-values (when they denote anything at all). Furthermore, I will hold that each kind of constitution (other than the exceptions named above) will have only one kind of content.¹⁹² Given that every content of a given kind will denote only one type of denotatum, each kind of constitution will also denote only one type of denotatum (in those contexts where they denote anything). For instance, propositional constitutions express only propositions, and therefore denote only truth-values (when they denote anything at all).

These limitations on contents and constitutions make it possible to extend the type system to them. If a given content only denotes denotata of type τ (relative to some world of evaluation), then that content is a *content of type τ* and if a given constitution only denotes denotata of type τ (relative to some context), then that constitution is a *constitution of type τ* . Thus, for instance, propositions and propositional constitutions only denote denotata of type **t** (namely truth-values) so propositions and propositional constitutions are of type **t**. Constitutions of a given type will also only have contents of that type (in those contexts where they have any contents). Thus, for instance, propositional constitutions only express contents of type **t** (namely propositions). The limitations stated above mean that every content and constitution (outside the exceptions named above) has a type, and that all contents and constitutions of a given kind have the same type (although contents and constitutions of different kinds can also be of the same type).

Note that, unlike in the case of denotata, the type of a content or a constitution does not directly determine what kind of thing the content or constitution is, only what kind of thing it denotes. Contents and constitutions of type **t** (i.e. propositions and propo-

¹⁹¹Which is to say: every content of that kind will, in every world of evaluation where it denotes anything, denote a denotatum of a particular type. I will discuss what the kinds of content are below.

¹⁹²Which is to say: every constitution of that kind will, in every context where it has a content, have a content of a particular kind. I will discuss what the kinds of constitution are below.

sitional constitutions) aren't themselves truth-values, rather they denote truth-values. Indeed, the type of a content or a constitution does not even *indirectly* determine what kind of thing the content or constitution is, as multiple kinds of content or constitution may be of the same type, as I will detail below. In particular, note that to say that a content or constitution is of type $(\tau \rightarrow \sigma)$ is not to say that it is a *function* of type $(\tau \rightarrow \sigma)$, or of any type for that matter. Rather, it is to say that it denotes functions of that type.

The fact that every content and constitution has a type will have five consequences. Firstly, it places restrictions on what kinds of content a given expression-use could have and what kinds of constitution a given expression could have. Expressions of type τ must have constitutions of type τ and uses of such expressions must have contents of type τ (when they have any contents). Thus, for instance, expressions of type **t** (sentences) have constitutions of type **t** (propositional constitutions) and uses of such expressions have contents of type **t** (propositions). We can see then that the type of an expression reflects what uses of it will contribute to the statements they are part of, in that uses of expressions of type τ will contribute contents of type τ to the propositions expressed by the statements those expression-uses are a part of, and will contribute denotations of type τ to the determination of the truth-value of the statements those expression-uses are a part of.

Secondly, it means that the restrictions that the type system places on what expressions can be combined grammatically will also restrict what contents and what constitutions can be combined to form complex contents and constitutions. Two contents or constitutions will be able to combine only when one is of some type τ and the other is of some type $(\tau \rightarrow \sigma)$.

Thirdly, note that the type system also determines the type of complex expressions in terms of the subexpressions that expression contains. The same will be true of contents and of constitutions. The result of combining a content or a constitution of type $(\tau \rightarrow \sigma)$ with a content or a constitution of type τ is a complex content or constitution of type σ .

Fourthly, note that the type system determines the way in which the denotation of a use of a complex expression is determined relative to the denotations of the subexpression-uses that make it up. This means that the type system must also determine 1) what denotation a complex content must have (in some world of evaluation) relative to the denotations of its subcontents (in that world), and 2) what content a complex constitution must have (in some context of use) relative to the contents of its subconstitutions (in that context). I will describe how this determination functions below:

For contents, suppose we have a content X of type τ and a content Y of type $(\tau \rightarrow \sigma)$. X and Y can be combined into the complex content $Y\langle X \rangle$ with the type σ . In a given world of evaluation w , X will have a denotation of type τ , which we can call α , and Y will have a denotation which is a function of type $(\tau \rightarrow \sigma)$, which we can call f .¹⁹³ The denotation of Y , f , can be (and can *only* be) applied to the denotation of X , α , to return a denotatum of type σ , namely $f(\alpha)$. This denotatum will then be the denotation of $Y\langle X \rangle$ in w . I will call any complex content whose denotation is defined in

¹⁹³I am supposing here that both X and Y have denotations in w . If either of them didn't have denotations in w , then (as established in Chapter 1) $Y\langle X \rangle$ would also not have a denotation in w .

this manner a content with *standardly defined denotation*. Putting aside the exceptions noted above, all contents have standardly defined denotations.

For constitutions, suppose we have a constitution X of type τ and a constitution Y of type $(\tau \rightarrow \sigma)$. X and Y can be combined into the complex content $Y\langle X \rangle$ with the type σ . In any given context, $Y\langle X \rangle$ must then have a content of type σ (if it has any content). In a given context c , X will have a content of type τ , which we can call X , and Y will have a content of type $(\tau \rightarrow \sigma)$, which we can call Y .¹⁹⁴ The only way X and Y can be combined is into $Y\langle X \rangle$, which will be a complex content of type σ . $Y\langle X \rangle$ must therefore be the content of $Y\langle X \rangle$ in c . I will call any complex constitution whose content is defined in this manner a constitution with *standardly defined content*. Putting aside the exceptions noted above, all constitutions have standardly defined content.

Fifthly, the type system determines that an expression-use has no content where some sub-expression-use which is a part of that expression-use has no content.¹⁹⁵ To see why, suppose we have an expression $X Y$ of some type σ and that the expression X has no content in a context c . If $X Y$ were to have content in c , the only constituent that content could have is the content of Y in c (given I established in Chapter 1 that the only constituents the content of an expression-use can have are the contents of its sub-expression-uses). However, the content of Y will be either some type τ or some type $(\tau \rightarrow \sigma)$, but uses of $X Y$ must have contents of type σ (if they have any content). Thus, a use of $X Y$ in c must not have any content. This also means that a constitution has no content in a context where some sub-constitution of that constitution has no content in that context. An expression will have no content in a context if and only if its constitution has no content in that context. Therefore, a use of $X Y$ in c will have no content if the constitution of X has no content in c . Furthermore, if $X Y$ has no content in c because the constitution of X has no content in c then the constitution of $X Y$ must have no content in c because the constitution of X has no content in c .

A.1.1 Intensions, Colours and the Type System

The fact that the type system determines the denotations of complex contents relative to the denotations of their subcontents, and the contents of complex constitutions relative to the contents of their subconstitutions, means that the type system will also allow us to define the intensions and colours of complex contents and constitutions in a systematic manner (except for those exceptions noted above).

Let's consider intensions first. Suppose we have a content X of type τ and a content Y of type $(\tau \rightarrow \sigma)$. As established above, the denotation of the complex content $Y\langle X \rangle$ in a world of evaluation w will be the denotation of Y in w applied to the denotation of X in w . In other words, $\downarrow(Y\langle X \rangle)(w) = \downarrow(Y)(w)(\downarrow(X)(w))$.¹⁹⁶ Given

¹⁹⁴I am supposing here that both X and Y have contents in c . I will discuss the result of either X or Y lacking contents below.

¹⁹⁵Note that, as established in Chapter 1, we already know that such an expression-use has no denotation. This is compatible with, but not sufficient for, such an expression-use having no content, as an expression-use may have a content and no denotation. It is necessary for such expression-uses to have no denotation so as to have no content, as an expression-use with a denotation must have a content.

¹⁹⁶Because Y is a content of type $(\tau \rightarrow \sigma)$ and X is a content of type τ , $\downarrow(Y)(w)$ must be a function of type $(\tau \rightarrow \sigma)$ and $\downarrow(X)(w)$ must be a denotatum of type τ . Thus the type system allows $\downarrow(Y)(w)$ to be applied to $\downarrow(X)(w)$.

that $\downarrow(Y)(w)$ returns denotata of type σ , $\downarrow(Y)(w)(\downarrow(X)(w))$ must be a denotatum of type σ , which reflects the fact established above that $Y\langle X \rangle$ has the type σ . There is nothing special about the world w , so we can abstract away from it, as follows: $\downarrow(Y\langle X \rangle) = \lambda w[\downarrow(Y)(w)(\downarrow(X)(w))]$. Thus we have the intension of $Y\langle X \rangle$. In terms of the **S** combinator in combinatory logic, $\downarrow(Y\langle X \rangle) = \mathbf{S}(\downarrow(Y))(\downarrow(X))$.¹⁹⁷

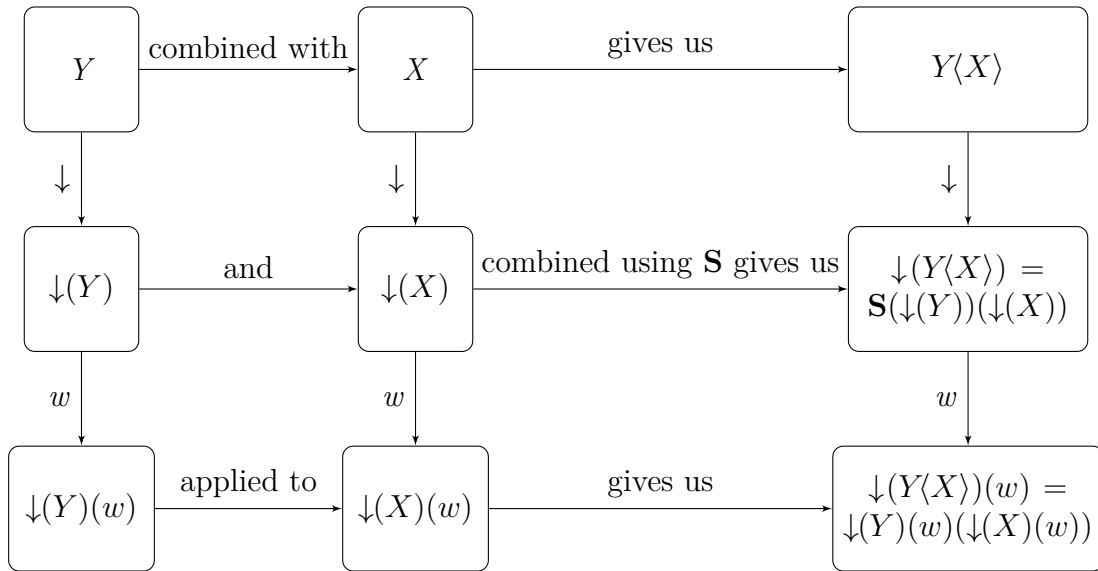
Putting aside the exceptions noted above, this system provides three ways in which we can determine the denotation of a complex content in a given world of evaluation relative to the subcontents of that complex content (and their intensions and denotations in that world). Suppose we have a content X of type τ and a content Y of type $(\tau \rightarrow \sigma)$ which can combine into a complex content $Y\langle X \rangle$ of type σ . There are then three ways of determining the denotation of $Y\langle X \rangle$ in a given world w , relative to X and Y (and their intensions and denotations in w).

The *first* method: first, combine X and Y into $Y\langle X \rangle$. Next, determine the intension of $Y\langle X \rangle$, namely $\downarrow(Y\langle X \rangle)$. Finally, determine the value of that intension provided with w as argument, namely $\downarrow(Y\langle X \rangle)(w)$.

The *second* method : first, determine the intensions of X and Y , namely $\downarrow(X)$ and $\downarrow(Y)$. Next, combine those intensions (using the **S** combinator) to get the intension of $Y\langle X \rangle$, namely $\downarrow(Y\langle X \rangle)$. Finally, determine the value of that intension provided with w as argument, namely $\downarrow(Y\langle X \rangle)(w)$.

The *third* method: first, determine the intensions of X and Y , namely $\downarrow(X)$ and $\downarrow(Y)$. Next, determine the value of those intensions provided with w as their arguments, namely $\downarrow(X)(w)$ and $\downarrow(Y)(w)$. Finally, combine those denotations (using functional application), namely $\downarrow(Y)(w)(\downarrow(X)(w))$.

The following diagram should illustrate this idea:¹⁹⁸



Next, let's consider constitutions. Suppose we have a constitution \mathbf{X} of type τ and a constitution \mathbf{Y} of type $(\tau \rightarrow \sigma)$. As established above, the content of the complex constitution $\mathbf{Y}\langle \mathbf{X} \rangle$ in a context c will be the content of \mathbf{Y} in c combined with the content

¹⁹⁷The **S** combinator is a function defined as follows: $\mathbf{S} = \lambda\alpha[\lambda\beta[\lambda\gamma[\alpha(\gamma)(\beta(\gamma))]]]$.

¹⁹⁸This is a commutative diagram, in the sense that you can follow the arrows in any order and you will end up with the same result at the same place.

of X in c (where the content of Y in c is the operator). In other words, $\Downarrow(Y\langle X \rangle)(c) = \Downarrow(Y)(c)\langle \Downarrow(X)(c) \rangle$. There is nothing special about the context c , so we can abstract away from it, as follows: $\Downarrow(Y\langle X \rangle) = \lambda c[\Downarrow(Y)(c)\langle \Downarrow(X)(c) \rangle]$. Thus we have the colour of $Y\langle X \rangle$.

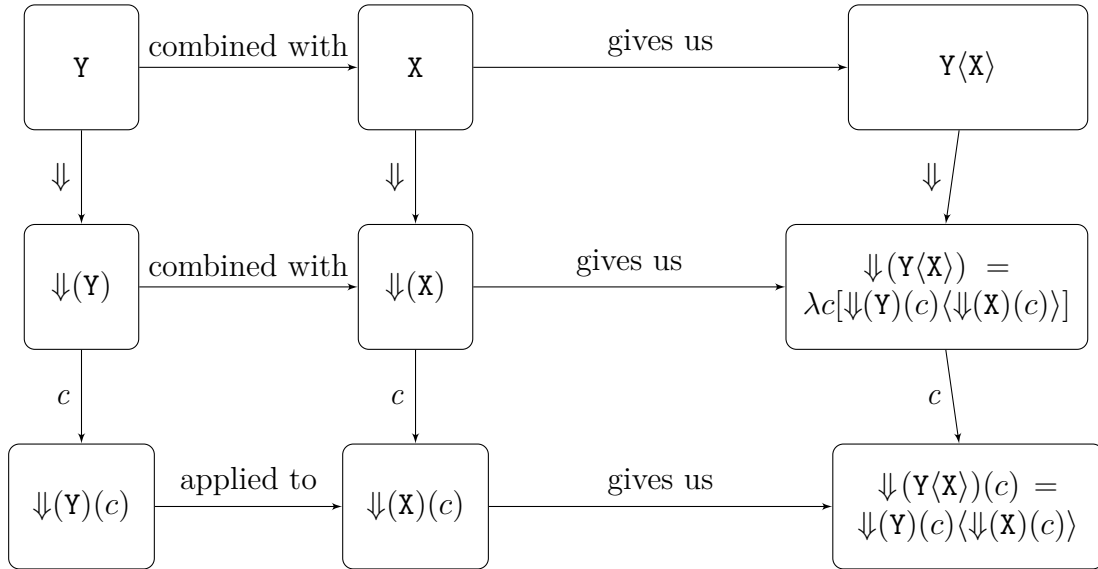
Putting aside the exceptions noted above, this system again provides three ways in which we can determine the content of a complex constitution in a given context relative to the substitutions of that complex constitution (and their colours and contents in that context). Suppose we have a constitution X of type τ and a constitution Y of type $(\tau \rightarrow \sigma)$ which can combine into a complex constitution $Y\langle X \rangle$ of type σ . There are then three ways of determining the content of $Y\langle X \rangle$ in a given context c , relative to X and Y (and their colours and contents in c).

The *first* method: first, combine X and Y into $Y\langle X \rangle$. Next, determine the colour of $Y\langle X \rangle$, namely $\Downarrow(Y\langle X \rangle)$. Finally, determine the value of that colour provided with c as argument, namely $\Downarrow(Y\langle X \rangle)(c)$.

The *second* method: first, determine the colours of X and Y , namely $\Downarrow(X)$ and $\Downarrow(Y)$. Next, combine those colours to get the colour of $Y\langle X \rangle$, namely $\Downarrow(Y\langle X \rangle)$. Finally, determine the value of that colour provided with c as argument, namely $\Downarrow(Y\langle X \rangle)(c)$.

The *third* method: first, determine the colours of X and Y , namely $\Downarrow(X)$ and $\Downarrow(Y)$. Next, determine the value of those colours provided with c as their arguments, namely $\Downarrow(X)(c)$ and $\Downarrow(Y)(c)$. Finally, combine those contents to get $\Downarrow(Y)(c)\langle \Downarrow(X)(c) \rangle$.

The following diagram should illustrate this idea:¹⁹⁹



A.1.2 Non-extensional Operators, Non-standard Denotations and the Type System

The type system will not, however, apply to non-extensional operators and non-standard denotations. Non-extensional operators do not denote standard denotata, and as such neither they nor their contents or constitutions have types. Expression-uses with non-standard denotations do not denote standard denotata, and as such they do not denote denotata of the type of the expression they are uses of. Note that only the first method

¹⁹⁹This is also a commutative diagram.

of both deriving the denotation of a complex content and of deriving the content of a complex constitution will work in cases of non-extensional operators and non-standard denotations. For intensions, the second and third methods will not work because the intension that expression-uses with non-standard denotations have is not their *standard intension* given by the \downarrow function. Instead, given that expression-uses with non-standard denotations denote their contents, the intension of an expression-use with a non-standard denotation is the constant function that returns the expression-use's content in every world of evaluation. For colours, the second and third methods will not work because either the colours that such constitutions have is not their *standard colour* given by the \Downarrow function or the constitutions do not have standardly defined contents. Thus, only the first method can be considered strictly the correct method of deriving the denotation of a complex content and the content of a complex constitution respectively.

A.2 A Formal Definition of Contents

In this section I will present a formal system of contents and propositions. This system will allow us to answer several important questions: Firstly, it will answer the question of what sorts of things contents are. Secondly, it will answer the question of how these contents can combine, and what contents or propositions will result. Thirdly, it will answer the question of how these contents can combine in such a way as to guarantee that all propositions are eternal.

Parallel to this formal system of contents, I will provide a recursive definition of the \downarrow function. This too will answer several important questions: Firstly, it will answer the question of what intension each content and proposition has. Secondly, it will answer the question of what denotations contents have relative to worlds of evaluation (and, thus, what truth-values propositions have relative to worlds of evaluation).

A.2.1 The System

As discussed above, the type system tells us what types of content can and cannot be combined, and what type the resulting complex content will have (at least in standard cases). However, the type system tells us nothing about what kinds of content there are, nor does it say anything about what kinds of content result from combining other contents. I will therefore present a *formal system of contents* here. I will list all of the simple contents, and then provide all the ways in which contents can combine into complex contents. I will provide the types of the simple contents, and then the type system will determine the types of all the complex contents. I will present the system here before looking in more detail at each kind of content later. Note that, for reasons of space, this system will not cover every kind of content needed to describe the entirety of the English language, but rather only those kinds necessary for describing my analysis of definite descriptions and the rival analyses I compare it to. Indeed, the system will not even cover every kind of content needed to fully describe definite descriptions, but it will be sufficient for the major points I want to make. I will note what further contents would be needed for a full analysis of definite descriptions below.

I will take for granted a set \mathbb{E} of entities and a set \mathbb{P} of properties. For every property $\mathcal{P} \in \mathbb{P}$, every possible world w and every time t , I will also take as given the extension

of \mathcal{P} in w at t , which I will designate $[\mathcal{P}]_w^t$. $[\mathcal{P}]_w^t$ is the set of entities that possess \mathcal{P} in w at t . The predicate \mathcal{P}_w^t can then be defined as the characteristic function of $[\mathcal{P}]_w^t$.²⁰⁰ Given what I have said so far, we could consider properties to be functions from worlds and times to sets of entities. Going from a property to its extension (at a world and time) would then just be a process of functional application. However, this would have the consequence that *necessarily and eternally coextensive properties* would have to be identical.²⁰¹ I don't want to commit to the claim that necessarily and eternally coextensive properties are identical, so I will not identify properties with any sort of function. In addition, I will hold that, for every property $\mathcal{P} \in \mathbb{P}$ and every time t there exists an eternalised property \mathcal{P}^t , such that x possesses \mathcal{P}^t in w (at every time) if and only if x possesses \mathcal{P} in w at t . Therefore, for all times t' , $[\mathcal{P}^t]_w^{t'} = [\mathcal{P}]_w^t$. Note that a property \mathcal{P} is eternal if and only if, for all times t and t' , $[\mathcal{P}]_w^t = [\mathcal{P}]_w^{t'}$.²⁰² All eternalised properties are therefore eternal.²⁰³ Finally, I will take for granted that an ordering \geq_w^t over the set of entities which exist at a world w and time t exists relative to every time t and world w . As I discussed in Chapter 5, this ordering represents salience under the evaluation-level salience view of definite description denotation.

This formal system of contents will then be defined as follows:

1. If $x \in \mathbb{E}$ is an entity then x is a content of type **e**.
2. If $\mathcal{P} \in \mathbb{P}$ is a property and t is a time then \mathcal{P}^t is a content of type **(e → t)**.
3. ι is a content of type **((e → t) → e)**.
4. If t is a time then ε^t is a content of type **((e → t) → e)**.
5. If \mathbf{P} is a content of type **(e → t)** and o is a content of type **((e → t) → e)** then $o\langle\mathbf{P}\rangle$ is a content of type **e**.
6. If \mathbf{P} is a content of type **(e → t)** and \mathbf{x} is a content of type **e** then $\mathbf{P}\langle\mathbf{x}\rangle$ is a content of type **t**.

Note that this definition includes two kinds of *operator*: the *iota operator* ι and the *epsilon operator* ε . I will discuss these operators in more detail below. Note also that

²⁰⁰Note that, by defining predicates this way, all predicates must be total functions. In other words, for all properties \mathcal{P} , times t , worlds w and entities x , either $\mathcal{P}_w^t(x) = \text{TRUE}$ or $\mathcal{P}_w^t(x) = \text{FALSE}$. I have therefore not allowed for the possibility that entities may *neither* have nor not have a property (at a world and time). In other words, there are no gaps in property possession. Such gaps may be useful in representing vagueness and category mistakes, but as I am not covering those phenomena I needn't leave open this possibility.

²⁰¹Two properties \mathcal{P} and \mathcal{Q} are necessarily and eternally coextensive if and only if, for all worlds w and times t , $[\mathcal{P}]_w^t = [\mathcal{Q}]_w^t$.

²⁰²In Chapter 2, I called things 'eternal' where they were the same at all times of evaluation. By this definition, having the same extension at all times of evaluation is necessary, but insufficient, for being eternal. I will therefore make the further claim that a property which has the same extension at all times of evaluation is the same in all ways at all times of evaluation.

²⁰³Some properties are eternal without being eternalised. This raises an ontological question: can an eternal property be eternalised? In other words, if \mathcal{P} is eternal, is \mathcal{P} therefore identical to \mathcal{P}^t (for any time t)? If all necessarily and eternally coextensive properties are identical then \mathcal{P} and \mathcal{P}^t must be identical, but without holding that we might still think that eternal properties cannot be eternalised. I will leave this question open, as it will not bear on the issues discussed in this thesis.

(5) and (6) are the only methods of combining these contents licensed by the type system.

A.2.2 A Recursive Definition of the \downarrow Function

I have defined \downarrow as a *polymorphic function*, which can take contents of multiple different kinds as argument and return intensions of multiple different types as value. However, the \downarrow function is less flexible than I have made it seem, in the sense that every kind of (standard) content is associated with a type of intension. Propositions, as contents of type \mathbf{t} , are associated with intensions which return truth-values, i.e. propositional intensions. Thus, for any proposition p , $\downarrow(p)$ will be a propositional intension. The \downarrow function can therefore be more precisely understood as describing a *family of functions*, including the functions $\downarrow_{\mathbf{t}}$ from propositions to propositional intensions, $\downarrow_{(\mathbf{e} \rightarrow \mathbf{t})}$ from contents of type $(\mathbf{e} \rightarrow \mathbf{t})$ to intensions which return predicates, and $\downarrow_{\mathbf{e}}$ from contents of type \mathbf{e} to intensions which return entities. In other words, although \downarrow can take arguments of multiple kinds and return values of multiple kinds, an argument of a particular kind will always return a value of a particular kind (e.g. propositions always return propositional intensions).

Contents and the intensions they determine are closely related, as I will detail presently. Generally speaking, intensions can be seen as coarse-grained versions of fine-grained contents, in the sense that the \downarrow function is a many-to-one relation. Thus I use the *down* arrow notation, as the \downarrow function *reduces* some of the distinctions made between contents. As I discussed in Chapter 2, contents are needed because intensions are not fine-grained enough to play the ‘what it says’ role. We can call a kind of contents *fine-grained* when there exists a content of that kind which determines an intension which is identical to a different content’s intension. Note that the different content, although it must be of the same *type* as the first content, needn’t be an instance of the same *kind*. This is because, as I will discuss, two different kinds of contents may have the same type. As such, a kind of content may be *fine-grained by type*, when there exists a content of that kind which determines an intension which is identical to the intension of a different content (which is of the same type but not necessarily of the same kind), or it may be *fine-grained by kind*, when there exists a content of that kind which determines an intension which is identical to the intension of a different content *of the same kind*. Any kind which is fine-grained by kind must also be fine-grained by type. Any kind which isn’t fine-grained (by type or kind) is coarse-grained (by type or kind, respectively).

Parallel to the formal system of contents, I will present a *recursive definition of the \downarrow function*. This definition will also serve as a theory of the denotation of contents, as for every content X and world of evaluation w , $\downarrow(X)(w)$ is the denotation of X in w . This definition is parallel with the system of contents in that they each have the same base cases and recursive cases. This definition too will cover only those kinds of content I need to discuss in this thesis.

The \downarrow function is defined as follows (for the relevant kinds of content and given an arbitrary world of evaluation w):²⁰⁴

²⁰⁴Where π is the first (and only) projection function on singletons, $\lambda\alpha : \varphi[\beta](\gamma)$ is a partial lambda term that takes the value β (with α replaced by γ) if and only if φ (with α replaced by γ) is true and otherwise takes no value, and \max is the maximal element function, such that $\max(S, \geq) = \{x \in S :$

1. If x is an entity then $\downarrow(x)(w) = x$.
2. If \mathcal{P}^t is an eternalised property then $\downarrow(\mathcal{P}^t)(w) = \mathcal{P}_w^t$.
3. $\downarrow(\iota)(w) = \lambda\mathcal{P}^t: |[\mathcal{P}^t]_w^t| = 1 [\pi([\mathcal{P}^t]_w^t)]$.
4. $\downarrow(\varepsilon^t)(w) = \lambda\mathcal{P}^t: |\max([\mathcal{P}^t]_w^t, \geq_w^t)| = 1 [\pi(\max([\mathcal{P}^t]_w^t, \geq_w^t))]$
5. If \mathbf{P} is a content of type $(\mathbf{e} \rightarrow \mathbf{t})$ and o is a content of type $((\mathbf{e} \rightarrow \mathbf{t}) \rightarrow \mathbf{e})$ then $\downarrow(o \langle \mathbf{P} \rangle)(w) = \downarrow(o)(w)(\downarrow(\mathbf{P})(w))$.
6. If \mathbf{P} is a content of type $(\mathbf{e} \rightarrow \mathbf{t})$ and \mathbf{x} is a content of type \mathbf{e} then $\downarrow(\mathbf{P} \langle \mathbf{x} \rangle)(w) = \downarrow(\mathbf{P})(w)(\downarrow(\mathbf{x})(w))$.

Note that this is an implicit definition of the \downarrow function, relative to an arbitrary world w . An explicit definition can be derived by abstracting away from w . I will revisit the definition of the intensions of eternal iota and eternalised epsilon terms later. Note also that the definition guarantees that each content only denotes denotata of its type (where it denotes anything at all). Finally, note that (5) and (6) are fully determined by the type system.

A.2.3 The Different Kinds of Content

In this section I will detail each kind of content. For each kind of content, I will discuss the role contents of that kind play. I will also discuss some of the major properties that contents of that kind have. In particular, I will discuss whether contents of a given kind are partial and/or eternal. Contents are *partial* when they do not have denotations in certain worlds of evaluation (otherwise they are *total*). Some complex contents are only *conditionally partial*, in the sense that they are partial only if they contain partial constituents. In Chapter 1, I held that a complex expression-use which contained a constituent expression-use without a denotation would itself have no denotation. As a result of this, all complex contents which contain partial constituents must be at least conditionally partial. Contents are *eternal* where they denote the same thing at every time (in a given world).²⁰⁵ Finally, for each kind of content, I will discuss whether that kind is fine-grained (either by type or by kind).²⁰⁶

Entities Entities are simple contents of type \mathbf{e} . Entities are used to represent themselves within singular propositions about themselves. Entities denote themselves in every world of evaluation.

Partial?: Entities are total, as they always denote something, namely themselves.

Eternal?: Entities are eternal, as they denote the same thing at all times, namely themselves.

$\forall y \in S(x \geq y)$.

²⁰⁵As I said above, having the same denotation at every time of evaluation is necessary, but insufficient, for being the same in every way at every time of evaluation. I will then make the further claim that having the same denotation at every time of evaluation is sufficient for being the same in every way at every time of evaluation.

²⁰⁶Note that I will not discuss eternal iota and eternalised epsilon operators directly. Instead, I will discuss these operators only in terms of the complex contents they form (together with eternalised properties), namely eternal iota and eternalised epsilon terms.

Fine-grained?: Entities are coarse-grained by kind, as any two different entities A and B will determine different intensions (i.e. constant functions which return A and B respectively). However, they are fine-grained by type, as an entity may determine the same intension as an eternal iota or eternalised epsilon term.

Uses of directly referential expressions have entities as their contents (when they have any contents). As I discussed in Chapter 2, I will hold that indexicals are directly referential, and therefore they have entities as their contents (when they have any contents). Strongly directly referential expression-uses are also directly referential. As I discussed in Chapter 3, I will hold that proper names are strongly directly referential, and therefore they have entities as their contents (when they have any contents).

Eternalised Properties Eternalised properties are simple contents of type $(\mathbf{e} \rightarrow \mathbf{t})$. Eternalised properties are used in propositions either to make the claim that a given entity has that property, or to make a claim about an entity with that property. Eternalised properties denote different predicates relative to different worlds of evaluation. I take the notion of eternalised properties from Salmon. They are a specific case of what Salmon (1986, p. 40) calls “a *temporally indexed attribute*”.

Partial?: Eternalised properties are total. For any eternalised property \mathcal{P}^t and world of evaluation w , there will exist a predicate \mathcal{P}_w^t which will be the denotation of \mathcal{P}^t in w .

Eternal?: As the name suggests, and as I established earlier, eternalised properties are eternal. By contrast, (non-eternalised) properties are not (in general) eternal. I will make clear the importance of this point later.

Fine-grained?: Eternalised properties will be fine-grained by kind if and only if some necessarily and eternally coextensive properties are not identical. I will remain open on the question of whether all necessarily and eternally coextensive properties are identical, and as such I will remain open on the question of whether eternalised properties are fine-grained by kind. As eternalised properties are the only contents of type $(\mathbf{e} \rightarrow \mathbf{t})$ I will discuss, I will hold that they are fine-grained by type if and only if they are fine-grained by kind.

My presentation of eternalised properties within my theory of content is somewhat simplified from what would be necessary for a full explanation of the contents of definite descriptions. To begin with, I have only discussed *simple (eternalised) properties* here. A full explanation of the contents of definite descriptions would require *complex (eternalised) properties*: properties that contain other contents as constituents.²⁰⁷ Furthermore, I have only discussed (one-place) eternalised properties, while a full explanation of the contents of definite descriptions would require (many-place) *eternalised relations*. I will leave these kinds of content out of my discussion for reasons of space, as neither is absolutely essential to the major arguments I intend to make.

Eternal Iota Terms Eternal iota terms are complex contents of type \mathbf{e} . An eternal iota term $\iota\langle\mathcal{P}^t\rangle$ is composed of the iota operator ι and an eternalised property \mathcal{P}^t .

²⁰⁷Supposing that complex properties exist, I would hold that a necessary condition for two properties to be identical is that they have the same constituents related in the same manner. As such, if complex properties existed then it would not be the case that all necessarily and eternally coextensive properties were identical. The question would still remain whether all *simple* necessarily and eternally coextensive properties were identical.

I will call the property constituent of an iota term the *restrictor content* of the term. Eternal iota terms are used in propositions to make claims about entities which uniquely satisfy their restrictor contents. Eternal iota terms will denote the entity which uniquely satisfies their restrictor contents in a given world of evaluation, if there is any such entity, and nothing otherwise.

Partial?: Eternal iota terms are partial. In a given world w where no entities or many entities possess \mathcal{P}^t , $\downarrow(\iota\langle\mathcal{P}^t\rangle)(w)$ will have no value. An expression which has $\iota\langle\mathcal{P}^t\rangle$ as its content will then trigger the presupposition that \mathcal{P}^t has a unique satisfier. Note that eternal iota terms are unconditionally partial, as neither of their constituents are partial.

Eternal?: As the name suggests, eternal iota terms are eternal. This is the case because eternalised properties are eternal, which means that if an entity has an eternalised property uniquely at one time (in a given world) it must have that property uniquely at every time (in that world).

Fine-grained?: Two eternal iota terms $\iota\langle\mathcal{P}^t\rangle$ and $\iota\langle\mathcal{Q}^{t'}\rangle$ are identical if and only if the eternalised properties \mathcal{P}^t and $\mathcal{Q}^{t'}$ are identical. Note, however, that if \mathcal{P}^t and $\mathcal{Q}^{t'}$ are necessarily and eternally co-extensional, then $\iota\langle\mathcal{P}^t\rangle$ and $\iota\langle\mathcal{Q}^{t'}\rangle$ will determine the same intension. Whether eternal iota terms are fine-grained by type is then dependent on whether different properties can be necessarily and eternally co-extensional, an issue on which I remain open. Even if eternal iota terms are not fine-grained by kind, they will still be fine-grained by type, as an eternal iota term may determine the same intension as an entity or eternalised epsilon term.

The definition I gave above of the intensions of eternal iota terms is quite complicated. However, it is logically equivalent to the following simpler definition:

$$\downarrow(\iota\langle\mathcal{P}^t\rangle)(w) = \begin{cases} x & \text{if } [\mathcal{P}^t]_w^t = \{x\} \text{ (for some } x) \\ \text{nothing} & \text{otherwise} \end{cases}$$

This definition is also in accordance with the type system (necessarily, as it is logically equivalent to the definition given above), however unlike the original definition it does not wear this fact on its sleeve, which is why I did not just employ it to begin with.

Iota terms and the iota operator come from Russell and Whitehead (1910, p. 30). However, although the intuitive understanding of iota terms is the same for me as for Russell & Whitehead, the formal definition I present here is completely alien to the quantificational definition they present. There are several differences between my iota terms and those of Russell & Whitehead, which I will detail here. To begin with, Russell & Whitehead's iota terms were defined in terms of a variable and a propositional formula (e.g. $\iota x\phi(x)$). In my iota terms, I have replaced the variable and propositional formula with the property of, more or less, being able to satisfy $\phi(x)$ by serving as the value of x . In other words, $\iota x\phi(x)$ in Russell & Whitehead's system is roughly the same as $\iota\langle\phi\rangle$ in mine. Because my approach to iota terms does not involve variables, my iota terms do not need any device to represent operator bindings. Secondly, and more importantly, Russell and Whitehead (1910, p. 68) see their iota terms as, roughly, abbreviations of unique existential claims. Roughly speaking, Russell & Whitehead see $P\iota x\phi(x)$ as an abbreviation of $\exists x(\phi(x) \wedge \forall y(\phi(y) \supset y = x) \wedge Px)$. In my notation, iota terms do not make any such existential claims. A consequence of Russell & Whitehead's view is that iota terms can introduce *scope ambiguity*. For instance, $\neg P\iota x\phi(x)$ could

abbreviate $\exists x(\phi(x) \wedge \forall y(\phi(y) \supset y = x) \wedge \neg Px)$ or $\neg\exists x(\phi(x) \wedge \forall y(\phi(y) \supset y = x) \wedge Px)$ (Russell and Whitehead 1910, p. 69). In the first case the iota term is said to have a *primary occurrence*, or is said to take *wide scope*, while in the second case the iota term is said to have a *secondary occurrence*, or is said to take *narrow scope*. This ambiguity means that Russell & Whitehead need to note the scope of their iota terms. As my iota terms don't make any existential claims, there is no possibility of scope ambiguity.

Eternalised Epsilon Terms Eternalised epsilon terms are complex contents of type **e**. An eternalised epsilon term $\varepsilon^t\langle\mathcal{P}^t\rangle$ is composed of an *eternalised epsilon operator* ε^t and an eternalised property \mathcal{P}^t . Eternalised epsilon operators are formed by eternalising the epsilon operator ε to a given time t . I will call the property constituent of an eternalised epsilon term the restrictor content of that term. Eternalised epsilon terms are used in propositions to make claims about entities which are the uniquely maximal satisfiers of their restrictor contents, relative to a particular order. Eternalised epsilon terms will denote the entity which is the uniquely maximal entity which satisfies their restrictor contents in a given world of evaluation, relative to the ordering of the time of the eternalised epsilon operator and that world of evaluation, if there is any such entity, and nothing otherwise.

Partial?: Eternalised epsilon terms are partial. In a given world w where there is no uniquely \geq_w^t -maximal member of $[\mathcal{P}^t]_w^t$, $\downarrow(\varepsilon^t\langle\mathcal{P}^t\rangle)(w)$ will have no value. An expression which has $\varepsilon^t\langle\mathcal{P}^t\rangle$ as its content will then trigger the presupposition that \mathcal{P}^t has a uniquely \geq_w^t -maximal satisfier. Note that eternalised epsilon terms are unconditionally partial, as neither of their constituents are partial.

Eternal?: As the name suggests, eternalised epsilon terms are eternal. An eternalised epsilon term $\varepsilon^t\langle\mathcal{P}^t\rangle$ relative to a given world will denote the same entity at every time (or denote no entity at any time). This is because $\varepsilon^t\langle\mathcal{P}^t\rangle$ in a world w will denote the uniquely \geq_w^t -maximal member of $[\mathcal{P}^t]_w^t$ (if there is such an entity), and both the order \geq_w^t and the extension $[\mathcal{P}^t]_w^t$ remain constant over all times. Note that, for this to be the case, it is necessary for the epsilon term to be eternalised. This is because, given two different times t and t' , the two orders \geq_w^t and $\geq_w^{t'}$ may be different, and therefore a non-eternalised epsilon term would not be eternal.

Fine-grained?: Two eternalised epsilon terms $\varepsilon^t\langle\mathcal{P}^t\rangle$ and $\varepsilon^{t'}\langle\mathcal{Q}^{t'}\rangle$ are identical if and only if the times t and t' are identical and the eternalised properties \mathcal{P}^t and $\mathcal{Q}^{t'}$ are identical. Note, however, that if \mathcal{P}^t and $\mathcal{Q}^{t'}$ are necessarily and eternally co-extensional and \geq_w^t and $\geq_w^{t'}$ are the same for all worlds w , then $\varepsilon^t\langle\mathcal{P}^t\rangle$ and $\varepsilon^{t'}\langle\mathcal{Q}^{t'}\rangle$ will determine the same intension. Whether eternalised epsilon terms are fine-grained by type is then dependent on whether different properties can be necessarily and eternally co-extensional, an issue on which I remain open. Even if eternalised epsilon terms are not fine-grained by kind, they will still be fine-grained by type, as an eternalised epsilon term may determine the same intension as an entity or eternal iota term.

The definition I gave above of the intensions of eternalised epsilon terms is quite complicated. However, it is logically equivalent to the following simpler definition:

$$\downarrow(\varepsilon^t\langle\mathcal{P}^t\rangle)(w) = \begin{cases} x & \text{if } \max([\mathcal{P}^t]_w^t, \geq_w^t) = \{x\} \text{ (for some } x) \\ \text{nothing} & \text{otherwise} \end{cases}$$

This definition is also in accordance with the type system (necessarily, as it is logically equivalent to the definition given above), however unlike the original definition

it does not wear this fact on its sleeve, which is why I did not just employ it to begin with.

Other than being an ordering over the entities which exist in a world w at a time t , I have said nothing more about what sort of order \geq_w^t has to be. However, the minimum requirements, if an eternalised epsilon term $\varepsilon^t\langle\mathcal{P}^t\rangle$ is to have a denotation in a world w , is for \geq_w^t to be neither anti-reflexive nor unbounded from above nor symmetric.²⁰⁸ Note, however, that I am not listing these requirements as conditions that such orders *must* fulfil, as there is no overriding requirement that eternalised epsilon terms have denotations. As I discussed in Chapter 7, the role these orders is to represent salience. Given that definite description-uses do not always have denotations, salience orders need not always fulfil these conditions. However, definite description-uses do have denotations in certain cases, and as such salience orders need to fulfil at least these conditions in those cases. As all salience orders are total preorders, they are never anti-reflexive nor symmetric, so those conditions aren't a problem. However, I have said nothing here about salience orders having upper bounds, so that may seem like a problem. If we suppose that a set S is not bounded from above by \geq , then $\max(S, \geq) = \emptyset$. If a definite description-use had a salience order \geq and a restrictor set S which was not bounded from above by \geq *and* intuitively had a denotation, this would create a problem for the analysis. However, I will argue that any definite description-use with such a salience order and restrictor set would not be expected to have a denotation, and as such there is no problem for the analysis. It is hard to think of any example of such a definite description-use that is not completely *recherché* (which is why, even if there was a problem here, it would not be a very large one), but we can consider the following example: suppose we were in a context where the natural numbers were salient and, in particular, numbers were more salient the larger they got. If someone were to use the definite description **the natural number**, this definite description-use would have the salience order \geq (i.e. the standard \geq from arithmetic) and the restrictor set \mathbb{N} (which is not bounded from above by \geq). Such a use would, to my mind, lack a denotation. For any given number n the use may refer to, $n + 1$ would seem a better candidate, and so on. That salience orders do not (in general) have upper bounds is therefore not a problem. Salience orders *usually* have lower bounds, as (for the vast majority of expression-uses) the vast majority of entities have minimal salience (as the speakers and listeners are unaware of those entities). Still we might consider cases where salience orders don't have lower bounds. Suppose we took the last example, but changed it so that numbers were *less* salient the larger they got. Such a salience order will not be bounded from below. Given that we are only concerned with maximally, and not minimally, salient entities here, this will not be a problem.

Note that whenever \geq_w^t is the trivial order²⁰⁹ $\downarrow(\varepsilon^t\langle\mathcal{P}^t\rangle)(w) = \downarrow(\iota\langle\mathcal{P}^t\rangle)(w)$. In this sense we can see epsilon terms as a generalisation (of sorts) of iota terms. Furthermore, we can see why the iota operator does not need to be eternalised (roughly, because it considers \geq_w^t to be the same (trivial) order at all times).

“Epsilon terms were introduced by the German mathematician David Hilbert” (Slater 2005, sec. 1).²¹⁰ My use of epsilon terms is somewhat different from Hilbert's.

²⁰⁸Non-symmetry is not necessary where $[\mathcal{P}^t]_w^t$ is a singleton.

²⁰⁹i.e. $x \geq_w^t y$ for all x and y .

²¹⁰Slater (2005, sec. 1) cites Hilbert (1923).

To begin with, Hilbert’s epsilon terms were defined in terms of a variable and a propositional formula (e.g. $\varepsilon x\phi$). Here I have replaced the variable and propositional formula for the property of, more or less, being able to satisfy ϕ by serving as the value of x . In other words, $\varepsilon x\phi$ for Hilbert is roughly the same as $\varepsilon^t\langle\phi\rangle$ for me. Because my approach to epsilon terms does not involve variables, my epsilon terms do not need any device to represent operator bindings.²¹¹ Secondly, “the first interpretations of epsilon terms were restricted to arithmetical cases, and specifically took epsilon to be the least number operator” (Slater 2005, sec. 5). Thus, my interpretation of epsilon terms will differ from Hilbert’s in both of these ways, as I will not be restricting my epsilon terms to arithmetic, and I will have my epsilon terms range over many different orders.²¹² Thirdly, note that the less-than relation defines a linear order over the numbers. As such, any (non-empty) subset of the numbers will have a single least element. In contrast, I have not required my epsilon terms to range over only anti-symmetric orders, and as such certain sets of entities may have many greatest elements (relative to whatever the relevant order is). Finally, normally an epsilon term with a restrictor F “denotes a chosen F, if there are any F’s, and has an arbitrary reference otherwise” (Slater 2005). As such, epsilon terms are normally total. In contrast, I have defined epsilon terms so that they will have no denotation (at a time t in a world w) when there is either nothing which possesses their restrictor or there are multiple \geq_w^t -greatest entities which possess their restrictor. As such, I hold that epsilon terms are partial.

Predicative Propositions Predicative propositions are complex contents of type **t**. Predicative propositions $\mathcal{P}^t\langle\mathbf{x}\rangle$ are composed of an eternalised property \mathcal{P}^t and a content \mathbf{x} of type **e** (i.e. either an entity, eternal iota term or eternalised epsilon term). Like all contents of type **t**, predicative propositions are propositions. I call them ‘predicative’ because there are other kinds of proposition which are formed from different kinds of content and which play different roles in the theory of content. Predicative propositions are used to claim that a certain entity has a certain property and denote TRUE in a world of evaluation if that entity has that property in that world.

Partial?: Predicative propositions can have partial contents, such as eternal iota and eternalised epsilon terms, as constituents. As such, predicative propositions are conditionally partial. Note, however, that predicative propositions are *only* conditionally partial and any predicative proposition that does not contain any partial constituents (e.g. one that contains an entity) will be total.

Eternal?: Predicative propositions are eternal. Entities, eternal iota terms and eternalised epsilon terms are all eternal, so they will denote the same entity at every time (in a given world) if they denote anything. Eternalised properties are eternal, so they will denote the same predicate at every time (in a given world). Applying the

²¹¹Given that Hilbert’s notation makes epsilon terms look like quantifiers, one might think that (like Russell & Whitehead’s iota terms) Hilbert’s epsilon terms are some sort of quantifier. This would, however, be a mistake. The resemblance between Hilbert’s epsilon terms and quantifiers is merely incidental.

²¹²A further difference is that I have defined my epsilon terms in terms of a greater-than, rather than a less-than, order. This was important to Hilbert, as natural numbers are not bounded from above (although they are from below), and as such unless the restrictor is bounded from above the epsilon term will have no value. The orders I will be interested in are bounded from above (in the relevant cases) and as such use of the greater than order is permissible.

same predicate to the same entity will always result in the same truth-value (or no truth-value, if no entity is denoted). As such predicative propositions are eternal. This conforms to the claim made above that all propositions are eternal. Note that this would not be the case if (non-eternalised) properties and epsilon terms were constituents of predicative propositions. This is why properties and epsilon terms must be eternalised to serve as contents. Note also that predicative propositions, though eternal, do not directly possess a specified time of evaluation, but rather do so indirectly through their constituents. The approach of eternalising propositions indirectly through their constituents comes from Salmon (1986, p. 41).

Fine-grained?: Predicative propositions are fine-grained by kind. Two predicative propositions are identical only if their constituents are identical. However, it is possible to have two predicative propositions with different constituents but the same propositional intension. For instance, $\text{EVEN}^t\langle 2 \rangle$ and $\text{ODD}^t\langle 3 \rangle$ are both true in all possible worlds (for any time t) but are different propositions. This conforms to the claim above that propositional intensions are too coarse-grained to fill the role that propositions play. Predicative propositions are therefore also fine-grained by type. However, even if predicative propositions were not fine-grained by kind, they would still be fine-grained by type, as there are other kinds of proposition which may determine the same propositional intension as a predicative proposition. I will discuss some of these propositions below.

A.2.4 Non-Extensional Operators and Non-Standard Denotations

The contents of statements containing non-extensional operators and non-standard denotations will not fit the type system. As such they must be treated separately. I will give one example of a non-extensional operator here, and others can be treated analogously. The non-extensional operator *necessarily* has the content \mathcal{N} , where \mathcal{N} is the *necessity operator*. For all worlds w , $\downarrow(\mathcal{N})(w) = \square$, where \square is the *necessity function*. \square is a function from propositions to truth-values which is defined as follows: for all propositions p , $\square(p) = \text{TRUE}$ if and only if $\downarrow(p)(w) = \text{TRUE}$ for all w . \square is not a denotatum within the type system, as the type system does not include functions which take propositions as arguments.

Necessarily can combine with any sentence S to form the *modal claim Necessarily S*. The content of a use of *Necessarily S*, where the use of S has the content p , will be $\mathcal{N}\langle p \rangle$. The denotation of such a *modal proposition* is defined as follows: $\downarrow(\mathcal{N}\langle p \rangle)(w) = \downarrow(\mathcal{N})(w)(p)$. Note that this definition is *not* in accordance with the type system, as the (non-standard) denotation of S (in this sentential context) is p and not $\downarrow(p)(w)$. In other words, modal propositions do not have standardly defined denotations. We might think that there is a contradiction here, as I defined the \downarrow function so that $\downarrow(X)(w)$ is the denotation of X in w . However, we can see that there is no contradiction here if we note that the denotation of an expression-use need not be the same as the denotation of *the content of* that expression-use. This identity will hold only in standard cases.

A.3 A Formal System of Constitutions

The type system tells us what types of constitution can and cannot be combined, and what type the resulting complex constitution will have (at least in standard cases).

However, the type system tells us nothing about what kinds of constitution there are, nor does it say anything about what kinds of constitution result from combining other constitutions. I will therefore present a *formal system of constitutions* here. I will list all of the simple constitutions, and then provide all the ways in which constitutions can combine into complex constitutions. I will provide the types of the simple constitutions, and then the type system will determine the types of all the complex constitutions. I will present the system here before looking in more detail at each kind of constitution later. Note that, for reasons of space, this system will not cover every kind of constitution needed to describe the entirety of the English language, but rather only those kinds necessary for describing my analysis of definite descriptions and the rival analyses to which I want to compare it. Indeed, the system will not even cover every kind of constitution needed to fully describe definite descriptions, but it will be sufficient for the major points I want to make. I will note below what further constitutions would be needed for a full analysis of definite descriptions. Finally, this system will not cover those constitutions that have non-standard denotations, as they do not obey the rules of the type system. Such constitutions will be central to my discussion of the meaning of definite descriptions, so I will return to discuss them after presenting this system.

As before, I will take for granted the set \mathbb{E} of entities and \mathbb{P} of properties, as well as the extensions and eternalisations of properties. For a given context c , I will call the possible world parameter of c c_w and the time parameter of c c_t . Furthermore, in addition to the other parameters of a context, I will hold that each context c has an *ordering parameter* \geq^c , such that \geq^c is an ordering of the set of entities which exist at c_w and c_t . As I discussed in Chapter 5, this ordering represents salience under the context-level salience view of definite description denotation.

This formal system of constitutions will then be defined as follows:

1. If $x \in \mathbb{E}$ is an entity then x is a constitution of type \mathbf{e} .
2. If $\mathcal{P} \in \mathbb{P}$ is a property then \mathcal{P} is a constitution of type $(\mathbf{e} \rightarrow \mathbf{t})$.
3. ι^2 is a constitution of type $((\mathbf{e} \rightarrow \mathbf{t}) \rightarrow \mathbf{e})$.
4. ε^2 is a constitution of type $((\mathbf{e} \rightarrow \mathbf{t}) \rightarrow \mathbf{e})$.
5. If \mathbf{P} is a constitution of type $(\mathbf{e} \rightarrow \mathbf{t})$ and o is a constitution of type $((\mathbf{e} \rightarrow \mathbf{t}) \rightarrow \mathbf{e})$ then $o\langle\mathbf{P}\rangle$ is a constitution of type \mathbf{e} .
6. If \mathbf{P} is a constitution of type $(\mathbf{e} \rightarrow \mathbf{t})$ and \mathbf{x} is a constitution of type \mathbf{e} then $\mathbf{P}\langle\mathbf{x}\rangle$ is a constitution of type \mathbf{t} .

Note that this definition includes two kinds of operator: the *two-dimensional iota operator* ι^2 and the *two-dimensional epsilon operator* ε^2 . I will discuss these operators in more detail below. Note also that (5) and (6) are the only methods of combining these constitutions licensed by the type system.

Parallel to this formal system of constitutions I will present a *recursive definition of the \Downarrow function*. This definition will also serve as a theory of the contents of constitutions, as for every constitution \mathbf{X} and context c , $\Downarrow(\mathbf{X})(c)$ is the content of \mathbf{X} in c . This definition is parallel with the definition of constitutions in that they each have the same base cases and recursive cases. This definition too will cover only those kinds of constitution

I need to discuss in this thesis. Note that this definition, together with definition of intensions I provided earlier, will answer the question of what contour each constitution and propositional constitution has. In so doing it will also answer the question of what denotations constitutions have relative to contexts of use (and, thus, what truth-values propositional constitutions have relative to contexts of use).

The \Downarrow function is defined as follows (for the relevant kinds of constitution and given an arbitrary context c):

1. If x is an entity then $\Downarrow(x)(c) = x$.
2. If \mathcal{P} is an property then $\Downarrow(\mathcal{P})(c) = \mathcal{P}^{ct}$.
3. $\Downarrow(\iota^2)(c) = \iota$.
4. $\Downarrow(\varepsilon^2)(c) = \varepsilon^{ct}$.
5. If \mathbf{P} is a constitution of type $(\mathbf{e} \rightarrow \mathbf{t})$ and o is a constitution of type $((\mathbf{e} \rightarrow \mathbf{t}) \rightarrow \mathbf{e})$ then $\Downarrow(o(\mathbf{P}))(c) = \Downarrow(o)(c)(\Downarrow(\mathbf{P})(c))$.
6. If \mathbf{P} is a constitution of type $(\mathbf{e} \rightarrow \mathbf{t})$ and \mathbf{x} is a constitution of type \mathbf{e} then $\Downarrow(\mathbf{P}(\mathbf{x}))(c) = \Downarrow(\mathbf{P})(c)(\Downarrow(\mathbf{x})(c))$.

Note that this is an implicit definition of the \Downarrow function, relative to an arbitrary context c . An explicit definition can be derived by abstracting away from c . Note also that the definition guarantees that each constitution only expresses contents of its type (where it expresses anything at all). Finally, note that (5) and (6) are fully determined by the type system.

As with the \downarrow function, the fact that I have defined \Downarrow as a polymorphic function makes it appear more flexible than it actually is. Like the \downarrow function, the \Downarrow function can be more precisely understood as describing a family of functions, including the functions $\Downarrow_{\mathbf{t}}$ from propositional constitutions to colours which return propositions, $\Downarrow_{(\mathbf{e} \rightarrow \mathbf{t})}$ from constitutions of type $(\mathbf{e} \rightarrow \mathbf{t})$ to colours which return contents of the type $(\mathbf{e} \rightarrow \mathbf{t})$, and $\Downarrow_{\mathbf{e}}$ from constitutions of type \mathbf{e} to colours which return contents of the type \mathbf{e} . Constitutions and the colours they determine are closely related, as I will detail presently. Generally speaking, colours can be seen as coarse-grained versions of fine-grained constitutions, in the sense that the \Downarrow function is a many-to-one relation. Thus I use the down arrow notation, as the \Downarrow function reduces some of the distinctions made between constitutions. Constitutions are only able to play an explanatory role over and above that of colours because they are more fine-grained. Like contents, constitutions can be fine-grained either by kind or type.

A.3.1 The Different Kinds of Constitution

In this section I will detail each kind of constitution that was included in the definition above. I will discuss those constitutions that denote non-extensional operators and non-standard denotations in the next section. For each kind of constitution, I will discuss the role constitutions of that kind play. I will also discuss whether constitutions of each kind are *incomplete*. Constitutions are incomplete when they do not have contents in certain contexts of use (otherwise they are *complete*). Some complex constitutions are only *conditionally incomplete*, in the sense that they are incomplete only if they contain

incomplete constituents. As I discussed earlier, a complex constitution will not have a content in a context c if it contains a substitution which does not express any content in c . As a result of this, all complex constitutions which contain incomplete constituents must be at least conditionally incomplete. Finally, I will discuss whether that kind is fine-grained (either by type or by kind). Recall that the fine-grainedness of constitutions was essential to the explanatory role I hold that they play. Note that I will only discuss two-dimensional iota and epsilon *terms* (i.e. the complex constitutions formed from two-dimensional iota and epsilon operators) and not the operators themselves.

Entities Entities are simple constitutions of type \mathbf{e} . Entities are used in propositional constitutions to make singular propositions about themselves. Entities express themselves in every context of use.

Incomplete?: Entities are complete, as they always denote something, namely themselves.

Fine-grained?: Entities are coarse-grained by kind, as any two different entities A and B will determine different colours (i.e. constant functions which return A and B respectively). However, they are fine-grained by type, as I will discuss when I discuss constitutions with non-standard denotation.

As I discussed in Chapter 3, all strongly directly referential expressions have entities as their constitutions. I hold that proper names are strongly directly referential, and therefore they have entities as their constitutions. All strongly directly referential expressions are directly referential, and therefore all expressions with entities as their constitutions will be directly referential (which can be seen given the content of an entity constitution in any context is an entity, namely itself).

Properties Properties are simple constitutions of type $(\mathbf{e} \rightarrow \mathbf{t})$. Properties are used in propositional constitutions either to make the claim that a given entity has that property, or to make a claim about an entity with that property. In each context, the content of a property will be that property relativised to the time of the context. Only eternalised properties could be contents, as eternalising properties was necessary to guarantee the eternalness of propositions. Propositional constitutions, in contrast, are not necessarily eternal, and as such non-eternal properties may serve as constitutions.

Incomplete?: Properties are complete. For any property \mathcal{P} and context c , there exists an eternalised property \mathcal{P}^{c_t} which will be the content of \mathcal{P} in c .

Fine-grained?: Properties will be fine-grained by kind if and only if some necessarily and eternally coextensive properties are not identical. I will remain open on the question of whether all necessarily and eternally coextensive properties are identical, and as such I will remain open on the question of whether properties are fine-grained by kind. As properties are the only constitutions of type $(\mathbf{e} \rightarrow \mathbf{t})$ I will discuss, I will hold that they are fine-grained by type if and only if they are fine-grained by kind.

My presentation of properties within my system of constitutions is somewhat simplified from what would be necessary for a full explanation of the constitutions of definite descriptions. To begin with, I have only discussed simple properties here. A full explanation of the constitutions of definite descriptions would require complex properties: properties that contain other constitutions as constituents. Furthermore, I have only discussed (one-place) properties, while a full explanation of the constitutions of definite

descriptions would require (many-place) relations. I will leave these kinds of constitutions out of my discussion for reasons of space, as neither is absolutely essential to the major arguments I intend to make.

Two-dimensional Iota Terms Two-dimensional iota terms are complex constitutions of type **e**. A two-dimensional iota term $\iota^2\langle\mathcal{P}\rangle$ is composed of the two-dimensional iota operator ι^2 and a property \mathcal{P} . I will call the property constituent of a two-dimensional iota term the restrictor constitution of the term. Two-dimensional iota terms are used to make claims about entities which uniquely satisfy their restrictor constitutions. Two-dimensional iota terms will express, in a given context, the eternal iota term which has the two-dimensional iota term's restrictor constitution, eternalised to the time of the context, as its restrictor content.

Incomplete?: Two-dimensional iota terms are complete. For any two-dimensional iota term $\iota^2\langle\mathcal{P}\rangle$ and context c , there will exist an eternal iota term $\iota\langle\mathcal{P}^{ct}\rangle$ which will be the content of $\iota^2\langle\mathcal{P}\rangle$ in c .

Fine-grained?: Two-dimensional iota terms are coarse-grained by kind. Suppose two two-dimensional iota terms $\iota^2\langle\mathcal{P}\rangle$ and $\iota^2\langle\mathcal{Q}\rangle$ determined the same colour. As such, it must be the case that $\iota\langle\mathcal{P}^t\rangle$ is identical to $\iota\langle\mathcal{Q}^t\rangle$ for all times t . However, if $\iota\langle\mathcal{P}^t\rangle$ is identical to $\iota\langle\mathcal{Q}^t\rangle$ then \mathcal{P} must be identical to \mathcal{Q} , but if \mathcal{P} is identical to \mathcal{Q} then $\iota^2\langle\mathcal{P}\rangle$ must be identical to $\iota^2\langle\mathcal{Q}\rangle$. Thus two two-dimensional iota terms will determine the same colour if and only if they are identical, which means that two-dimensional iota terms are coarse-grained by kind. Two-dimensional iota terms are also coarse-grained by type, as no other **e**-type constitution will have an eternal iota term as its content.

Two-dimensional Epsilon Terms Two-dimensional epsilon terms are complex constitutions of type **e**. A two-dimensional epsilon term $\varepsilon^2\langle\mathcal{P}\rangle$ is composed of the two-dimensional epsilon operator ε^2 and a property \mathcal{P} . I will call the property constituent of a two-dimensional epsilon term the restrictor constitution of the term. Two-dimensional epsilon terms are used to make claims about entities which are the uniquely maximal satisfiers of their restrictor constitutions, relative to a particular order. Two-dimensional epsilon terms will express, in a given context, the eternalised epsilon term which has the two-dimensional epsilon term's restrictor constitution, eternalised to the time of the context, as its restrictor content and the epsilon operator eternalised to the time of the context as its eternalised epsilon operator.

Incomplete?: Two-dimensional epsilon terms are complete. For any two-dimensional epsilon term $\varepsilon^2\langle\mathcal{P}\rangle$ and context c , there will exist an eternal epsilon term $\varepsilon^{ct}\langle\mathcal{P}^{ct}\rangle$ which will be the content of $\varepsilon^2\langle\mathcal{P}\rangle$ in c .

Fine-grained?: Two-dimensional epsilon terms are coarse-grained by kind. Suppose two two-dimensional epsilon terms $\varepsilon^2\langle\mathcal{P}\rangle$ and $\varepsilon^2\langle\mathcal{Q}\rangle$ determined the same colour. As such, it must be the case that $\varepsilon^t\langle\mathcal{P}^t\rangle$ is identical to $\varepsilon^t\langle\mathcal{Q}^t\rangle$ for all times t . However, if $\varepsilon^t\langle\mathcal{P}^t\rangle$ is identical to $\varepsilon^t\langle\mathcal{Q}^t\rangle$ then \mathcal{P} must be identical to \mathcal{Q} , but if \mathcal{P} is identical to \mathcal{Q} then $\varepsilon^2\langle\mathcal{P}\rangle$ must be identical to $\varepsilon^2\langle\mathcal{Q}\rangle$. Thus two two-dimensional epsilon terms will determine the same colour if and only if they are identical, which means that two-dimensional epsilon terms are coarse-grained by kind. Two-dimensional epsilon terms are also coarse-grained by type, as no other **e**-type constitution will have an eternalised epsilon term as its content.

Predicative Propositional Constitutions Predicative propositional constitutions are complex constitutions of type \mathbf{t} . A predicative propositional constitution $\mathcal{P}\langle\mathbf{x}\rangle$ is composed of a property \mathcal{P} and a constitution \mathbf{x} of type \mathbf{e} . Like all constitutions of type \mathbf{t} , predicative propositional constitutions are propositional constitutions. I call them ‘predicative’ because there are other kinds of propositional constitution which are formed from different kinds of constitution and which play different roles in the theory of constitutions. Predicative propositional constitutions are used to claim that a certain entity has a certain property and express the predicative proposition that makes that claim.

Incomplete?: As complex constitutions, predicative propositional constitutions must be conditionally incomplete if they contain incomplete constituents. Yet, all the constituents of predicative propositional constitutions I have discussed so far (i.e. properties, entities and two-dimensional iota and epsilon terms) are all complete. Thus, we could conclude that predicative propositional constitutions are complete. However, I will introduce other kinds of constitution in the next section which are incomplete and can be constituents of predicative propositional constitutions. As such, predicative propositional constitutions are conditionally incomplete. Note, however, that predicative propositional constitutions are *only* conditionally incomplete and any predicative propositional constitution that does not contain any incomplete constituents will be complete.

Fine-grained?: Predicative propositional constitutions will be fine-grained by kind if and only if there exist two predicative propositional constitutions with the same colour but different property or \mathbf{e} -type constituents. For two predicative propositional constitutions to have the same colour, their property and \mathbf{e} -type constituents must each determine the same colours. Thus, for predicative propositional constitutions to be fine-grained by kind either their property or \mathbf{e} -type constituents must be fine-grained (by type). If necessarily and eternally co-extensive properties can differ then properties will be fine-grained (by kind and type) so predicative propositional constitutions will be fine-grained by kind. However, I wish to remain open on whether necessarily and eternally co-extensive properties can differ and therefore will remain open on whether predicative propositional constitutions are fine-grained in this manner. Putting that possibility aside, all the \mathbf{e} -type constituents I have discussed so far appear to be coarse-grained by type. This would seem to rule out predicative propositional constitutions being fine-grained by kind. However, in the next section I will discuss fine-grained by type \mathbf{e} -type constituents. If predicative propositional constitutions were coarse-grained by kind then they would be coarse-grained by type, as no other kind of propositional constitutions would determine predicate propositions.

A.3.2 Constitutions with Non-standard Denotations

Earlier, I put aside constitutions with non-standard denotations, as they do not fit within the type system. I will return to discuss them now. There are three kinds of constitutions with non-standard denotations. The first kind are intensional operators and their operands. These are relatively simple from the point of view of constitutions, as the operands have standard contents and the complex constitutions formed from the operators and operands have standardly defined contents. For example, for any c , $\Downarrow(\llbracket\text{Necessarily S}\rrbracket)(c) = \Downarrow(\llbracket\text{Necessarily}\rrbracket)(c) \Downarrow(\llbracket\text{S}\rrbracket)(c)$, where $\Downarrow(\llbracket\text{Necessarily}\rrbracket)(c) = \mathcal{N}$ and

$\Downarrow(\llbracket \mathbf{S} \rrbracket)(c)$ is the standard content of \mathbf{S} in c . The second kind are temporal operators and their operands. These are more complicated from the point of view of constitutions, as their operands have non-standard contents and the complex constitutions formed from the operators and operands have non-standardly defined contents. However, as temporal claims are not centrally important to this thesis I will leave such cases aside.

The third kind are what I will call *decomplexifying constitutions*. This kind of constitution is centrally important to this thesis. The type system holds that all complex constitutions must have standardly defined contents, i.e. that in each context constitutions must have contents that contain all the contents that their constituent subconstitutions have in that context (if the complex constitution has any content in that context). A consequence of this is that *complex constitutions must always have complex contents*. I will now suggest that there are exceptions to this rule, in the form of complex constitutions which have simple contents.²¹³ These constitutions can then be called *decomplexifying constitutions*, and the contents they express can be called *decomplexified contents*. Note that, as I will establish presently, the constituents of decomplexifying constitutions must have non-standard denotations. Expressions with decomplexifying constitutions are decomplexifying expressions.

There are two kinds of decomplexifying constitutions that will be important for this thesis: (non-eternal) *iota terms* and (non-eternalised) *epsilon terms*. They are defined as follows: if \mathbf{P} is a constitution of type $(\mathbf{e} \rightarrow \mathbf{t})$ then the iota term $\iota\langle \mathbf{P} \rangle$ is a constitution of type \mathbf{e} and the epsilon term $\varepsilon\langle \mathbf{P} \rangle$ is a constitution of type \mathbf{e} . There are two things to note with this definition: Firstly, note that I am suggesting that the iota and epsilon operators are constitutions, as well as contents. That being said, the operators behave differently as constitutions than they do as contents. For instance, iota and epsilon operators as constitutions join with (non-eternalised) properties, rather than eternalised properties, to form (non-eternal) iota and (non-eternalised) epsilon terms, rather than eternal iota and eternalised epsilon terms. This is because propositional constitutions, and therefore constitutions more broadly, need not be eternal. Furthermore, epsilon terms need not be eternalised to serve as constitutions. This is because contexts of use, unlike worlds of evaluation, provide their own times of evaluation.

Secondly, note that I have not provided any type for iota and epsilon operators as constitutions. This fact is consistent with the fact that iota and (eternalised) epsilon operators have the type $((\mathbf{e} \rightarrow \mathbf{t}) \rightarrow \mathbf{e})$ as contents. This is because (as I will presently establish) iota and epsilon operators as constitutions do not express iota and epsilon operators as their contents. Instead, two-dimensional iota and epsilon operators express iota and epsilon operators as their contents, which is why two-dimensional iota and epsilon operators *do* have the type $((\mathbf{e} \rightarrow \mathbf{t}) \rightarrow \mathbf{e})$. Still, we might think that we could *give* iota and epsilon operators as constitutions the type $((\mathbf{e} \rightarrow \mathbf{t}) \rightarrow \mathbf{e})$. This would explain why they join with constitutions of the type $(\mathbf{e} \rightarrow \mathbf{t})$ to form complex constitutions of the type \mathbf{e} . However, I will show below why iota and epsilon operators as constitutions cannot be given that type, or indeed any type.

The contents of iota and epsilon terms are defined as follows (for any property \mathcal{P} and context c):

²¹³Note that there is no equivalent in the case of contents and denotations, as *all* denotations are simple.

1. $\Downarrow(\iota\langle\mathcal{P}\rangle)(c) = \begin{cases} x & \text{if } [\mathcal{P}]_{c_w}^{c_t} = \{x\} \text{ (for some } x) \\ \text{nothing} & \text{otherwise} \end{cases}$
2. $\Downarrow(\varepsilon\langle\mathcal{P}\rangle)(c) = \begin{cases} x & \text{if } \max([\mathcal{P}]_{c_w}^{c_t}, \geq^c) = \{x\} \text{ (for some } x) \\ \text{nothing} & \text{otherwise} \end{cases}$

There are several things to note about these definitions. Firstly, note that they are just like the definitions of the denotations of eternal iota and eternalised epsilon terms, except that the world of evaluation has been replaced by the context of use. This similarity is the reason why I have used the same operators to play these slightly different roles (i.e. as constitutions and as contents). Secondly, note that it is not necessary to eternalise epsilon operators serving as constitutions, as contents of use only have one ordering (at the time of the context), unlike worlds of evaluation which have many (one at every point in time). Thirdly, note that under this definition iota and epsilon terms will have simple contents (when they have any contents). Iota and epsilon terms are therefore decomplexifying constitutions, as they have decomplexified contents.

Fourthly, note that the iota and epsilon operators as constitutions, as well as their operands, do not *by themselves* express any contents. We can see this given that *together* these operators and operands have a single entity as their content. This entity, as a simple content, has no constituent subcontents which could serve as the separate contents of the operator and the operand. This is why the iota and epsilon operators as constitutions cannot be given a type, as the type of a constitution is given by the type of content it expresses, but iota and epsilon operators do not express any contents of any type.²¹⁴ Fifthly, iota and epsilon operators as constitutions, as well as their operands, do not *by themselves* denote anything. The denotation of a constitution is the denotation of that constitution's content, but as these operators and operands have no contents by themselves, they therefore have no denotations by themselves either. This means that the operators and their operands have non-standard denotation (as no denotation is not their standard denotation in all contexts).

Iota Terms Iota terms are complex constitutions of type **e**. An iota term $\iota\langle\mathcal{P}\rangle$ is composed of the iota operator ι and a property \mathcal{P} . I will call the property constituent of an iota term the restrictor constitution of the term. Iota terms are used to make claims about the entities which uniquely satisfy their restrictor constitutions. Note that this is the same role I outlined for two-dimensional iota terms. I discuss the subtle differences in how iota and two-dimensional iota terms fulfil this role in Chapter 6. Iota terms will express, in a given context, the entity which uniquely satisfies their restrictor contents in that context, if there is any such entity, and nothing otherwise.

Incomplete?: Iota terms are incomplete. In a given context c where no entities or many entities possess \mathcal{P} , $\Downarrow(\iota\langle\mathcal{P}\rangle)(c)$ will have no value. An expression which has $\iota\langle\mathcal{P}\rangle$ as its constitution will then trigger a presupposition of the form ' \mathcal{P} has a unique satisfier'. Note that iota terms are unconditionally incomplete, as neither of their constituents are incomplete.

²¹⁴Properties serving as the operands of iota and epsilon operators also do not express any contents of any type, however they can be allocated a type as they express contents of type (**e** \rightarrow **t**) in standard cases.

Fine-grained?: Two iota terms $\iota\langle\mathcal{P}\rangle$ and $\iota\langle\mathcal{Q}\rangle$ are identical if and only if the properties \mathcal{P} and \mathcal{Q} are identical. Note, however, that if \mathcal{P} and \mathcal{Q} are necessarily and eternally co-extensional, then $\iota\langle\mathcal{P}\rangle$ and $\iota\langle\mathcal{Q}\rangle$ will determine the same colour. Whether iota terms are fine-grained by kind is then dependent on whether different properties can be necessarily and eternally co-extensional, an issue on which I remain open. Even if iota terms are not fine-grained by kind, they will still be fine-grained by type, as an iota term may determine the same colour as an entity or epsilon term.

Epsilon Terms Epsilon terms are complex constitutions of type **e**. An epsilon term $\varepsilon\langle\mathcal{P}\rangle$ is composed of the epsilon operator ε and a property \mathcal{P} . I will call the property constituent of an epsilon term the restrictor constitution of the term. Epsilon terms are used to make claims about the entities which are the uniquely maximal satisfiers of their restrictor constitutions, relative to a particular order. Note that this is the same role I outlined for two-dimensional epsilon terms. I discuss the subtle differences in how epsilon and two-dimensional epsilon terms fulfil this role in Chapter 6. Epsilon terms will express, in a given context, the entity which is the uniquely maximal entity which satisfies their restrictor constitutions in a given context, relative to the ordering of the context, if there is any such entity, and nothing otherwise.

Incomplete?: Epsilon terms are incomplete. In a given context c where there is no uniquely \geq^c -maximal member of $[\mathcal{P}]_{c_w}^{c_t}$, $\Downarrow(\varepsilon\langle\mathcal{P}\rangle)(c)$ will have no value. An expression which has $\varepsilon\langle\mathcal{P}\rangle$ as its constitution will then trigger a presupposition of the form ‘ \mathcal{P} has a uniquely \geq^c -maximal satisfier’. Note that epsilon terms are unconditionally incomplete, as neither of their constituents are incomplete.

Fine-grained?: Two epsilon terms $\varepsilon\langle\mathcal{P}\rangle$ and $\varepsilon\langle\mathcal{Q}\rangle$ are identical if and only if the properties \mathcal{P} and \mathcal{Q} are identical. Note, however, that if \mathcal{P} and \mathcal{Q} are necessarily and eternally co-extensional, then $\varepsilon\langle\mathcal{P}\rangle$ and $\varepsilon\langle\mathcal{Q}\rangle$ will determine the same colour. Whether epsilon terms are fine-grained by kind is then dependent on whether different properties can be necessarily and eternally co-extensional, an issue on which I remain open. Even if epsilon terms are not fine-grained by kind, they will still be fine-grained by type, as an epsilon term may determine the same colour as an entity or iota term.

Finally, note that iota and epsilon terms, as **e**-type constitutions, may be constituents of predicative propositional constitutions. This has two important consequences. Firstly, as iota and epsilon terms (and now entities) are fine-grained by type, this means that predicative propositional constitutions are fine-grained by kind. $\text{EVEN}\langle 2 \rangle$ and $\text{EVEN}\langle \iota\langle \text{SMALLEST-PRIME} \rangle \rangle$ are different propositional constitutions which have the same colour. Secondly, given that iota and epsilon terms are incomplete, propositional constitutions are thereby also (conditionally) incomplete.

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