INTERPRETATION OF PRONOUNS IN PROXY COUNTERFACTUALS

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Abstract

This thesis focuses on the interpretation of pronouns, in particular as subjects of the consequent clauses of counterfactual conditionals. More specifically, the constructions under consideration have been termed proxy counterfactuals. They are characterized as identifying two individual-denoting expressions in such a way that a new, composite individual is hypothesized. This hypothetical individual shares certain properties with both of the individuals denoted in the antecedent clause. Pronouns in the consequent clause referring back to this composite individual exhibit unusual binding properties. Their morpho-syntactic realization is uniquely determined by the subject of the antecedent clause, while their semantic interpretation is bound to both individuals denoted in the antecedent clause. I will examine cases involving first and second person pronouns, and adopt a previously put forth analysis which treats them as rigidly designating (Thomas, 2009). Cases involving the third person will require additional attention. The proposed analysis makes use of the Formal Link condition on e-type anaphora (Kadmon, 1987; Heim, 1990) in combination with a constraint on the use of gender features (Yanovich, 2012) in order to account for the observed constraints.

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just as I began this program.

Contents

Chapter 1

Introduction

The present thesis is concerned with the interpretation of pronouns, and specifically how they are interpreted in the context of counterfactual conditionals. The particular constructions under consideration have been termed *proxy counterfactuals* (Safir, 2004). Such constructions contain two individual-denoting expressions in the antecedent clause (also called the protasis, or *if*-clause), joined by a past tense copula. This is illustrated by the example in (1). In this example, the antecedent clause contains a past tense copula, and a singular pronoun in both the pre- and post-copular positions. The antecedent clause hypothesizes the existence of a composite individual. This individual is "composite" in that it intuitively shares properties with the individuals denoted by both DPs. Presumably, this hypothetical individual shares the desires/opinions/psychological state of the speaker, while having the same physical circumstances as the addressee.

(1)   If I were you, I would go to Cuba.

The subject of the consequent clause (or apodosis, main clause) refers back to this composite individual. However, it has been noted in the literature that some restrictions are imposed on pronouns appearing as subjects in this position (Lakoff, 1996; Thomas, 2009). A pronominal subject of the main clause is constrained such that, if it is to receive a "composite individual" interpretation, it generally cannot share phi-features with the complement of the antecedent clause, and must instead match the subject in phi-features (Lakoff, 1996; Thomas, 2009). This is illustrated by the contrast in (2), which shows that the use of a pronoun as the consequent-subject which matches the complement of the antecedent

clause in phi-features is infelicitous.

(2) a. If I were you, I would go to Cuba.
     b. #If I were you, you would go to Cuba.

In comparison with indicative conditionals, such as the sentence in (3), we can see that these constraints on the main clause subject are particular to (proxy) counterfactuals. In (3), the subject of the consequent clause can unproblematically match in phi-features with the object of the antecedent clause.

(3) If Paul is actually Susan, she/he has played a nice trick on us.

The puzzling fact here is that the rules determining the morphosyntactic realization of pronouns in proxy counterfactuals do not straightforwardly correspond to the rules of their semantic interpretation. The fact that the form of the main clause subject is tied to only one of the DPs in the antecedent clause is evident from the requirement that its phi-features obligatorily match with only those of the antecedent-subject, as illustrated in (2). The intuition that it is interpretively bound to both DPs of the antecedent clause can be made explicit with the use of a definite description as the complement of the copula. If a relative clause is added to the definite description, its tense must be matched in the main clause.[1] This is shown in (4). While the form of the subject matches in phi-features with the subject of the antecedent clause, the tense of the consequent clause clearly reflects the tense of the relative clause adjoined to the object of the antecedent clause.

(4) a. If I were the girl Paul is dating, I would leave him.
     b. If I were the girl Paul used to date, I would have left him.

After discussing cases involving first and second person pronouns in Chapter 2, I will extend the problem to third person pronouns in Chapter 3. As illustrated by (5), third person pronouns in the subject of the consequent clause are also restricted in that they must match the subject of the antecedent in phi-features. In such cases, it is in particular the gender feature of the antecedent-subject which must be respected. [2]

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[1] I thank Ivona Kučerová for this suggestion.

[2] I focus on cases involving singular pronouns, as they allow us to examine the contribution of gender

(5)   a.   If John were the queen, he would abdicate.

        b.   #If John were the queen, she would abdicate.

It is puzzling that a pronoun is able to be semantically bound by multiple antecedents in this way, neither of which c-command it, while obligatorily surfacing with a singular morphological form, and sharing phi-features with only one of these antecedent DPs. The primary aim of this thesis is to examine factors which may help to explain the nature of the constraints introduced in this chapter. Proposals from Arregui (2007) and Thomas (2009) will be discussed, and the puzzle will be examined in terms of the contribution of phi-features, restrictions on the use of gender features in particular, and the e-type analysis of pronouns.

In Chapter 2, I will introduce issues involving first and second person subjects in proxy counterfactuals, as well as previous accounts of the constraint outlined in this chapter. Chapter 3 will extend the problem to include cases involving third person pronouns. In Chapter 4, I will suggest an alternative analysis which utilizes the Formal Link condition on e-type pronouns (Kadmon, 1987; Heim, 1990) in combination with Yanovich (2012)'s Real Gender constraint. Chapter 5 will summarize the thesis and outline a remaining question.

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features. Issues specific to number features are not explored in this thesis.

Chapter 2

First and second person subjects

2.1   Semantics of first and second person

In order to understand how first and second person pronouns are interpreted in proxy coun-
terfactual constructions, I will first review how they have traditionally been modelled. In-
tuitively, and indeed in most cases, first and second person pronouns make reference to the
speaker and the hearer in the context of utterance. This seems to imply that their reference
should be stable. Indeed, they have been modelled by many theorists as *rigidly designat-
ing* (e.g., Kripke, 1980; Kaplan, 1977), or referring uniquely to one referent in all possible
worlds. In (1), a standard definition of rigid designation is given, originally found in a let-
ter from Saul Kripke to David Kaplan (as cited in Kaplan (1989a)). According to Kaplan
(1989b), this definition tells us that, in order to determine the truth value of a sentence con-
taining an individual-denoting expression in a possible world, it is first necessary to know
the semantic value of the individual-denoting expression in the actual world.

(1)   A designator D of an object x is rigid if it designates x with respect to all possible
         worlds where x exists, and never designates an object other than x with respect to
         any possible world.

The intension of an expression is the function which assigns a referent to the expression in
each possible world (Carnap, 1947). The intension of a rigid designator, then, is a constant
function, in that a given input invariably returns the same output. The concept of rigid

designation can be further nuanced, and a distinction between *circumstances of evaluation* and *context of use* can be helpful in this regard (Kaplan, 1989b). The context of use refers to the time and place in which a sentence or discourse is uttered. Any indexicals involved in the utterance, for example, will be determined by the context. The circumstances of evaluation may coincide with the context of use, or may be a later time and/or different place. An utterance context can be modelled as a triplet consisting of two individuals (speaker and hearer) and a possible world: <a_c, h_c, w_c> (Kaplan, 1977). This means that the interpretation function can be relativized to a context c, in addition to a possible world w and an assignment function g (Sudo, 2012). The following denotations show the reference of first and second person pronouns as indexical expressions. In a particular context of use, a rigid designator denotes the same object across worlds, regardless of the circumstances of evaluation (Pilatova, 2005).

(2)   a. $[\![me]\!]^{c,w,g} = a_c$
       b. $[\![you]\!]^{c,w,g} = h_c$

As rigid designators, then, a first person pronoun will invariably refer to the speaker in the context of utterance, while a second person pronoun will invariably refer to the hearer. In many languages, including English, this is the case even in instances of reported speech, as exemplified in (3). Here, the first and second person pronouns embedded in reported speech still must refer to the speaker and hearer in the context of utterance, rather than the individual whose speech is being reported.

(3)   a.   John said I bought the ticket.
       b.   John said you missed the flight.

2.1.1   Proxy counterfactuals

While, in English, singular first and second person pronouns generally do refer exclusively to the speaker or hearer, exceptions to this can be found. One class of such exceptions is that introduced in Chapter 1 - the subjects of the consequent clauses of proxy counterfactual statements, like those in (4). In the sentences in (4), the subjects of the consequent clauses do not refer straightforwardly to either the speaker or hearer of the utterance. Instead,

they seem to refer to a hypothetical individual which shares certain properties with both DPs in the antecedent clause. For instance, in (4-a), the consequent-subject seems to share the psychological state or desire of the speaker to go to Cuba, while sharing the physical circumstances of the addressee.

(4)   a.   If I were you, I would go to Cuba.

        b.   If you were me, you would stay home.

As mentioned in Chapter 1, proxy counterfactual constructions can be characterized as having two individual-denoting DPs in the antecedent, joined by a past tense copula. This has the interpretive consequence, noted above, that the subject of the consequent is at least partially semantically bound to both. This is the case despite it not being c-commanded by either DP. In contrast, the subject of the consequent shares the phi-features of only one of these DPs to which it is semantically bound (namely, the subject of the antecedent).

2.2   Counterpart relations

In this section, I will introduce an early and influential work on the semantics of counterfactual conditionals (Lewis, 1973), and assess its ability to account for the constraint described in the introductory chapter and Section 2.1.1. A strength of Lewis' theory for the problem at hand is that it allows for first and second person pronouns to refer non-rigidly. However, it will be shown that the theory does not correctly predict the infelicity of consequent-subjects which match antecedent-objects in phi-features.

According to Lewis (1973)'s view, a conditional statement quantifies over possible worlds. The antecedent clause restricts the possible worlds in which the truth of the consequent is evaluated. Possible worlds have been used as a tool to derive truth-conditions for counterfactual and other modal propositions. Implementations range from the metaphysically realist (Lewis, 1973) to epistemological models of the information states of conversation participants (e.g., Kripke, 1980; Stalnaker, 1979). The manner in which individuals are or are not identified across worlds is of critical importance for the interpretation of pronouns in the counterfactual conditional under examination in this thesis. Rigid designation requires a conception of possible worlds which allows for transworld individuals, i.e.: individuals which exist in more than one possible world. A realist approach like that of Lewis

(1973), on the other hand, entails that any change in an individual's properties results in a new individual. Individuals are therefore world-bound in Lewis' framework.

In order to eliminate transworld individuals from his ontology, Lewis (1973) employs the notions of counterparts and counterpart relations. A counterpart relation is a means of identifying individuals across worlds. Such a relation takes an individual of the actual world and picks out a maximally similar individual in a given possible world. The relation of similarity employed here is understood informally, and has the property of being non-symmetric. In this way, it is possible for an individual to have more than one counterpart in a given possible world, and conversely for two actual individuals to share a common counterpart in some possible world. In particular, Lewis (1973) discusses a contrast between counterpart relations emphasizing similarity of *ideas* and those emphasizing similarity of *predicaments*. Lakoff (1972) describes a similar dichotomy of properties that may be attributed to an individual: a *body-counterpart* shares characteristics of the physical existence of an entity (Lewis' *predicaments*), while an *individual-counterpart* shares characteristics of its psychological state (Lewis' *ideas*). In a given possible world, a single counterpart may be shared by multiple actual-world entities, via distinct counterpart relations.

2.2.1   Counterparts in proxy counterfactuals

As mentioned in Section 2.2, the theory of counterparts provides a means of identifying entities across possible worlds. In this section, I will examine how this tool can be used in application to proxy counterfactuals. Lewis (1973) gives an outline of how counterparts can be used to account for these constructions, providing a means of referring to a composite individual which shares properties with two different individuals. As noted by Thomas (2009), however, this analysis falls short of explaining the restriction on the realization of phi-features on the consequent-subject.

In order to evaluate the truth of a counterfactual, counterpart relations can be used to identify the correlates of actual world entities in counterfactual worlds. For a given entity of the actual world, a counterpart relation picks out a maximally similar entity in a possible or counterfactual world. In a framework like Lewis', which treats counterfactuals as quantifying over possible worlds, with the antecedent clause restricting the domain of quantification, a proxy counterfactual such as (5) holds in those worlds in which distinct

counterpart relations pick out a shared counterpart of the individuals denoted by *I* and *you* in the antecedent. This is the approach employed by both Lewis (1973) and Lakoff (1968).

(5)   If I were you, I would go to Cuba.

This common counterpart is arrived at via two separate relations. In Lewis' terms, it is the counterpart of the individual denoted by *I* by means of a relation of similarity of *ideas*, and the counterpart of the individual denoted by *you* by means of a relation of similarity of *predicaments*. Thomas (2009) provides a Lewisian formalization of a proxy counterfactual, given in (6). Here, Thomas uses counterpart functions in place of relations, where the counterpart function f' selects counterparts based on a similarity of ideas, and f'' selects counterparts by similarity of predicaments.

(6) $[\![$If I were you, I would VP$]\!]^g = \lambda$w. for all w' such that w' is minimally different from w and f'(speaker)(w') is identical to f''(addressee)(w'), $[\![$VP$]\!]^g$ (f'(speaker)) is true in w'

This analysis can thus describe the attested sentences, such as the one in (5), providing a way to link the interpretation of the consequent-subject with the individuals denoted by both DPs of the antecedent clause. It allows this composite individual in the consequent clause to share the psychological properties of the antecedent-subject as well as the physical circumstances of the antecedent-object. However, as Thomas (2009) points out, it does not account for the asymmetry noted between the subject and object of the antecedent clause and incorrectly predicts that the sentence below, in (7), should be felicitous. Specifically, the analysis is unable to block generation of a structure in which the subject of the consequent matches the subject of the antecedent in phi-features. The Lewisian analysis generates a reading of (7) which is synonymous with (5), and therefore predicts it to be grammatical, but such a reading is unavailable for native speakers of English.

(7)   #If I were you, you would go to Cuba.

In this synonymous reading, the same individual denoted by the subject of the consequent is also denoted by the subject of the antecedent. In this way, (7) is synonymous with (5), counter to the judgments of native speakers. Using the Lewisian formalism, Thomas (2009)

formally derives this interpretation as in (8). We can see here that the synonymy reading is predicted to be admissible, in contrast with the judgments of native English speakers. If, as in (8), the output of the counterpart function f' applied to sp_c is identical to the output of the counterpart function f" applied to ad_c in a given world ($f'(sp_c)(w') = f"(ad_c)(w')$), then *I* and *you* should be substitutable *salva veritate,* allowing for a reading of (7) which is synonymous with (5).

(8)   *Synonymy reading*:
        λw. $\forall$w' [w' is minimally different from w and $f'(sp_c)(w') = f"(ad_c)(w')$] [$f"(ad_c)(w')$ goes to Cuba]

Under a Lewisian analysis, employing counterparts, we are unable to account for the constraint that the consequent-subject match the antecedent-subject in phi-features.

2.3   Arregui 2007

Another theory designed to account for related data is proposed by Arregui (2007). The main focus of Arregui (2007) is an analysis of dream reports. Sentences which report the dreams of the subject share several properties with proxy counterfactuals. Both constructions allow embedded clauses which would violate binding conditions if uttered in isolation as main clauses. As a result, both constructions exhibit unusual semantic binding patterns of singular pronouns. In addition, both constructions allow first and second person pronouns to receive interpretations that are not necessarily tied to the speaker or the hearer in the context of utterance. To address these constructions, a central concern is once again the manner in which individuals in the actual world are identified in counterfactual worlds. Arregui (2007) proposes that the necessary information is encoded in pronouns. Arregui's analysis utilizes Heim (1998)'s notion of guises, and elements of the *de se* LFs of both Percus and Sauerland (2003) and Anand (2006).

Arregui (2007) suggests that proxy counterfactuals can be analyzed in the same manner as her proposed LFs for "Brigitte Bardot" dream-reports (as in (9-a)). As we shall see, the analysis provides a means of introducing a new discourse referent for the composite individual denoted by the subject of the consequent of a proxy counterfactual. However, the analysis is limited to first person pronouns, and is also unable to predict the phi-feature

constraint on the pronominal subject and block overgeneration.

(9)   a.   I dreamed I was Brigitte Bardot and I kissed me.

        b.   If I were Brigitte Bardot, I would kiss me.

The next two sections will provide more detail of Arregui's analysis.

2.3.1   Individual concepts

In this section, we will see some data from Heim (1998) which seems to share binding properties with the dream reports and corresponding proxy counterfactuals seen in Section 2.3. We will see that Arregui adopts Heim's treatment of these pronouns in application to the Brigitte Bardot dream reports, allowing her to account for the apparent binding violation.

The sentences in (9-a) and (9-b) both contain an embedded clause which, if uttered in isolation as a main clause, would violate Condition B of Binding Theory (e.g., Chomsky, 1982). That is, a pronoun cannot be bound in its local domain. However, in both of these sentences the pronoun *me* appears to be locally bound by *I*. The example in (10), in which two third person, feminine pronouns are used to refer to the same individual, Zelda, also appears to be a violation of Binding Condition B.

Heim proposes that each pronoun in (10) makes use of a different *guise*. A guise is an individual concept, which is a function from worlds to individuals. A guise can be thought of as a means of accessing an individual, in this case Zelda. For Heim (1998), an expressed proposition can be distinguished from its cognitive value. This distinction is not always necessary, but is needed, for instance, to make sense of the grammaticality of (10), which, on the surface, would appear to violate Condition B. In this example, one guise assigns to each possible world *w* an individual with the physical appearance of Zelda, while the other guise accesses the individuals sharing a "memory entry" that the speaker and/or hearer have of Zelda.

(10)   A: Is the speaker Zelda?

         B: It must be, she praises her to the sky.

Rather than treating the first person pronouns in (9-a) as rigidly designating, Arregui (2007) makes use of Heim (1998)'s notion of guise, treating the pronouns as individual concepts.

However, Arregui (2007) emphasizes the importance of Heim (1998)'s observation that context generally makes available a single guise per entity. The antecedent and consequent clauses of a conditional are thought to allow different counterpart relations (or guises) for accessing the individual who is the speaker, but only one guise per entity should be available within the same clause. To account for the apparent availability of two guises of first person pronouns in the sequence *I kissed me* in (9-a), Arregui (2007) uses Percus and Sauerland (2003)'s analysis of dream reports, in which pronouns are taken to contain both a variable element and a special pro* element, as well as a silent self-ascription structure based on Anand (2006)'s SELF descriptions. These elements of Arregui's analysis will be discussed in detail in the next section.

2.3.2   First person binding

Pro*, like a relative pronoun, has no interpretation on its own, but acts as an abstractor. It is able to move and adjoin to IP. A coindexed trace is left in its original position, and a lambda abstractor created immediately below its landing site (Percus and Sauerland, 2003). This is shown in (11). Arregui (2007) makes use of these special binding structures involving pro* to explain dream reports such as (9-a).

(11)   I*[λi .... i ....]

In addition to special variables which can act as abstractors, Arregui follows Anand (2006)'s proposal that there are other means by which *de se* readings can arise. The one which Arregui (2007) employs in her analysis is the proposal that *de se* readings are in fact a special case of *de re* readings, in which an individual is identified across worlds by means of a SELF description, which picks out its *de se* counterparts. That is to say, it picks out possible world entities with which the actual world individual self-identifies. Citing the special status of the speaker, however, Arregui (2007) limits her treatment to first person pronouns. Making this distinction explicit, she calls the SELF description "ME". A silent self-ascription structure is posited, consisting of the silent referential ME and a "self-ascribe" function. Arregui does not provide a full formalization of "self-ascribe," but one is proposed by Thomas (2009). Thomas (2009)'s denotation is a relation between properties of individual concepts and individuals. The self-ascription function combines with

its sister property, which is created by the movement of pro*. This function holds if the individual identified by the individual concept (i.e., the individual with which the speaker identifies) self-ascribes the property with which the function combines. It returns that individual with which the speaker identifies in a given world, and which self-ascribes the property. A schema is given in (12-b). The referential element, ME, refers to the speaker in the context of utterance, ensuring that *de se* LFs can only be generated for the first person. In agreement with ME, pro* surfaces with first person singular morphology.

(12)   a. $[\![\text{self-ascribe}]\!] = \lambda P{<}{<}s,e{>},t{>}\,\lambda x.\ \exists f$ such that $P(f(x)) = 1$
        b.   [ME [self-ascribe I* [λi .... i ....]]]

The dream-report in (13-a) is thus given the LF and truth conditions of (13-b)(Thomas, 2009). Here, *I** effectively generates a new discourse referent. Under the predicate *dream*, this individual can be understood as the dream-self. In this way, the above LF is interpreted as: "In my dream, my dream-self kissed me", and is true in the dream worlds of the speaker if the property of "kissing me" is self-ascribed by the individual with whom the speaker (the actual world individual) identifies in the given dream world.

(13)   a.   I dreamed I was Brigitte Bardot and I kissed me.
        b.   [[(I dreamed I was Brigitte Bardot and) [ME [self-ascribe I* [λ_1 t_1 kissed me$_2$]]]$]\!]^{g,c}$(w*) = 1 iff $\forall$w': w' is compatible with the dreams of sp$_c$. self-ascribe-in-sleep (λC. C(w') kissed $[\![$me$_2]\!]^{g,c}$ in w')(sp$_c$)

The apparent violation of Binding Condition B is avoided, by allowing the two first person pronouns to pick out different referents (the dream-self in a given world and the speaker). The applicability of this analysis to proxy counterfactuals is examined in Section 2.4.

2.4 Thomas 2009

Thomas (2009) further explores Arregui (2007)'s suggestion that her dream-report analysis can account for the corresponding counterfactual sentences. To account for the constraints on the subject of the consequent, and avoid the overgeneration of analyses like those of Lewis and Lakoff, Thomas (2009) proposes to employ transworld individuals rather than

counterparts. In this way, he analyzes first and second person pronouns as rigid designators. If these pronouns are taken to each rigidly designate a single individual across worlds, it is impossible to identify the individuals denoted by two different (first or second person) pronouns by means of an equative or identificational copula. For this reason, Thomas (2009) proposes that the copula of the antecedent in sentences like (5) must be analyzed as predicational. This can be implemented by means of an operator (either the copula itself, or a silent operator) which takes an individual and returns the set of properties that characterize that individual in the utterance world w_c. In this way, be_{pred} acts as a type-shifting function, taking arguments of type e and outputting elements of type <e,t>. In addition, this operator extracts certain properties from its complement and attributes them to the subject of the clause in which it appears. Thomas (2009) suggests that these properties are the *predicaments* of Lewis (1973), or the *body properties* of Lakoff (1972). One difficulty for this analysis is finding a means of ensuring formally that only the relevant properties of the object are attributed to the subject by the predicational operator.

(14) $[\![be_{pred}]\!] = \lambda x.$ the conjunction of properties that characterize x in w_c

If a proxy counterfactual is analyzed in the same manner as the dream-reports discussed in the previous section, with the addition of be_{pred}, and rigidly designating first and second person pronouns, we would have the truth conditions in (15) (Thomas, 2009). In other words, (15) is true if, for all worlds *w'* minimally different from the actual world *w*, the unique individual with whom the speaker identifies in a given world kisses the speaker in that world. The discourse referent introduced by pro* in (13-b) was interpreted as the dream-self. In (15), it is interpreted as a composite individual referring to the speaker and also attributed certain properties of the addressee.

(15) a. If I were you, I would kiss me.
   b. $\lambda w. \forall w'$ [w' is minimally different from w and (ιy such that y is in w' and sp_c identifies herself with y) $\in [\![be_{pred}]\!](ad_c)][(\iota y$ such that y is in w' and sp_c identifies herself with y) kisses sp_c in w']

A rigid designation treatment of first and second person pronouns is able to successfully eliminate the synonymy reading discussed in Section 2.2.1. Each pronoun must denote

different individuals, and so the two are never expected to be substitutable *salva veritate*. *I* and *you* cannot denote the same individual, so it is not possible for the two sentences in (16) to be synonymous. Unlike previous accounts, then, this treatment allows us to successfully predict the constraint on pronominal subjects of the consequent, and therefore block overgeneration, of the sort in (16-b).

(16)   a.   If I were you, I would go to Cuba.
        b.   #If I were you, you would go to Cuba.

A limitation of both Arregui (2007) and Thomas (2009)'s analyses is that they do not extend to cases involving third person pronouns. This will be discussed in Section 2.4.1, with problems specific to third person pronouns being the focus of Chapters 3 and 4.

2.4.1   Extension to second and third person

As noted in the above discussion of Arregui's analysis, her account is intentionally limited to first person pronouns. This is motivated by the "special status" of the role of the speaker, as well as the unacceptability of using second or third person pronouns in "Brigitte Bardot" sentences, as shown in (17). This poses a problem for extending the analysis to proxy counterfactuals, as the constraint on phi-features is seen with second person pronouns as well. Third person pronouns pattern similarly, with an additional constraint on gender features. Such cases will be considered in Chapter 3.

As seen in (17), this restriction to the first person does seem to hold in cases of dream reports. As shown by the judgments in (18), however, this restriction does not extend to the corresponding counterfactual statements. An analysis of the first person cases should extend to at least the second person, and perhaps the third.

(17)   a.   I dreamed I was Brigitte Bardot and I kissed me.
        b.   *You dreamed you were Brigitte Bardot and you kissed you.
        c.   *He dreamed he was Brigitte Bardot and he kissed him.

(18)   a.   If I were Brigitte Bardot, I would kiss me.
        b.   If you were Brigitte Bardot, you would kiss you.
        c.   ??If he were Brigitte Bardot, he would kiss him.

Thomas' analysis has been shown to be successful in blocking overgeneration for the first and second person, but is also unable to extend to cases involving third person pronouns. These pronouns cannot be thought of as referring to a single entity in all worlds, and so a rigid designation is not applicable to such cases. However, third person pronouns pattern analogously to first and second person pronouns in proxy counterfactual sentences, though the constraint additionally applies to the use of gender features on third person pronouns. Examples will be considered in Chapters 3 and 4.

2.5   Summary

In this chapter, I reviewed the treatment of first and second person pronouns as indexicals which rigidly designate, meaning that they refer to the same, single entity in all possible worlds. I introduced a counterfactual construction (proxy counterfactual), which questions the tenability of treating first and second person pronouns as rigid designators. I also further discussed the constraint on pronominal subjects of the consequent clauses of such counterfactuals. Specifically, the consequent-subject is interpretively bound by both DPs of the antecedent, but obligatorily surfaces with a set of phi-features which match with only those of the antecedent-subject. I reviewed Lewis (1973)'s discussion of these constructions, which uses counterpart relations rather than rigid designation to explain the "double binding." It was shown, however, that this treatment is unable to predict the constraint under consideration. It predicts, rather, that the consequent-subject should be able to surface with the phi-features of either DP of the antecedent, with no change in meaning.

Arregui (2007)'s approach to analyzing these constructions was based on their similarity with dream reports. The account she puts forth employs special binding of the first person in combination with a silent self-ascription structure. This account was equally unable to predict the constraint of interest to the present thesis. Additionally, Arregui's treatment was limited to cases involving first person pronouns only, while second person pronouns pattern the same way in proxy counterfactuals.

Finally, I outlined Thomas (2009)'s analysis of proxy counterfactuals, which maintains that first and second person pronouns do rigidly designate. When appearing as the complement of the antecedent clause, the pronoun's type is shifted by a silent predicational operator (be_{pred}) to type <e,t>, and properties are extracted from it, which are then

attributed to the subject of the clause. This analysis correctly predicts that the consequent-subject cannot share phi-features of the antecedent-object. The rigid designation analysis, however, is not able to extend straightforwardly to cases involving the third person. The focus of Chapter 3 will be an examination of the semantics of third person pronouns, and constraints imposed on them in proxy counterfactual constructions.

Chapter 3

Third person subjects

In this chapter, I will introduce the restrictions on third person pronominal subjects of proxy counterfactual consequent clauses. We will see that third person pronouns pattern analogously to first and second person pronouns, with a key difference being that the constraint applies also to the use of gender features. Before introducing the particular questions that arise with third person pronominal subjects, I will begin by outlining the mainstream treatment of third person pronouns as variables, as well as the e-type treatment of pronouns. The e-type treatment is able to account for semantic binding which does not follow syntactic binding principles. However, it cannot on its own account for the constraint we see in proxy counterfactuals. An e-type analysis would allow the subject of the consequent clause to refer back anaphorically to the object of the antecedent, which is an undesirable result. The questions raised in connection to this will be analyzed in Chapter 4.

3.1 Constraints on third person subjects

As was mentioned briefly in previous chapters, third person pronouns are subject to a constraint very similar to that imposed on pronominal subjects with first and second person features. The key difference with third person pronouns is that gender features are also affected by the constraint. An account cases involving the third person must avoid the generation of sentences like (1-b) and (2-b).

(1)   a.   If John were Elizabeth, he would abdicate.

   b. #If John were Elizabeth, she would abdicate.

(2) a. If John were the queen, he would abdicate.

   b. #If John were the queen, she would abdicate.

As noted in Chapter 2, the analysis proposed by Thomas (2009) for first and second person pronouns does not lend itself to an extension to third person pronouns. In this analysis, first and second person pronouns were taken to be rigid designators, in that their reference is stable. They refer to the same individual in all possible worlds.

  Third person pronouns, on the other hand, allow interpretations which are not ruled out by Thomas (2009)'s analysis. In particular, third person pronouns, as the consequent-subject, could be analyzed as e-type pronouns, or as free variables which corefer with the antecedent-object. In order to better understand the restrictions on third person pronouns in the subject position of proxy counterfactual consequent clauses, and to rule out logical forms which do not conform to the constraint discussed in this thesis, I will first review two mainstream analyses of the semantics of the third person, and suggest where such analyses fall short of explaining the constraint under consideration (Section 3.2). In Section 3.3, I will articulate the specific questions to be explored in Chapter 4.

3.2 Semantics of third person

In the following sections, I will review the mainstream analysis of third person pronouns, as variables, in order to show that it is unable on its own to handle cases in which two (or more) actual-world individuals are represented as a single entity in some possible world (Lakoff, 1972). This is one of the key aspects of the pronominal subjects examined in this thesis. In Section 3.2.3, I will introduce the e-type analysis, which allows for third person pronouns to be semantically bound without respecting the c-command requirement of Binding Theory. It falls short, however, in apparently allowing the consequent-subject to refer anaphorically to the antecedent-object.

3.2.1   Free and bound variables

Like an indexical pronoun, a third person pronoun such as *he,* in (3-a), intuitively refers to an individual made salient in the context of utterance. However, the nature of this salience differs from the case of indexicals. The referent of a third person pronoun will always exclude the speaker and hearer. Additionally, the example in (3-b) demonstrates that a singular third person pronoun does not in all cases refer to a single individual. Here, as in the first example, *he* may also refer to a single, contextually-determined individual (say, Joe). In contrast with (3-a), however, this sentence also has a reading in which *he* refers to each member of a group made relevant by the quantified noun phrase *every boy*.

(3)   a.   Paul thinks he is the best student in the class.
       b.   Every boy thinks he is the best student in the class.

The latter interpretation can be paraphrased as: *for every boy x, x thinks that x is the best student in the class,* where *x* is taken to be a variable, as in the tradition of formal logic. These two uses of pronouns can be referred to as *referential/free* and *bound variable* uses, respectively (e.g., Reinhart, 1983). In both free and bound variable uses, pronouns can be said to obtain their reference via an assignment function (call it *g*). In order for an assignment function to attribute a value to a pronoun, that pronoun must be associated with an index. Indices are represented graphically as numerical subscripts on the pronoun. An assignment function then maps the index of a referential pronoun to an individual (or group) referent which is in some way made salient in the context of utterance. The pronoun takes on the value of its index relative to the assignment function (Heim and Kratzer, 1998). This is formalized in (4), showing that a pronoun, β, bearing index *i*, has the semantic value of the assignment function *g* applied to *i*, if *i* is a member of the domain of *g*. Otherwise, the denotation of β is undefined. In this way, a referential pronoun will always refer to the same individual (or group, in the case of a plural pronoun), under a given assignment function.

(4) $[\![\beta_i]\!]^g$ = g(i) (undefined, where i is not in the domain of g)

In order for a pronoun to receive a bound reading, it must be c-commanded by a quantifier phrase (e.g., *every boy*) or other operator (Reinhart, 1983). In such a case, the pronoun is

coindexed (i.e., it bears an identical index) with its c-commanding binder (antecedent) in the discourse, thus sharing a common referent via the assignment function. Technically speaking, it is the indices themselves which must qualify as variables (Heim, 1998). An index qualifies as a variable only if it occurs on a λ, on a trace bound by a λ, or on an A-bound pronoun or anaphor (Heim, 1998). λ-operators are syntactic objects which are inserted into a structure as a result of movement. They appear directly below the moved element, and are coindexed with the trace of the moved phrase (Heim and Kratzer, 1998). In the course of semantic composition, λ-operators trigger Predicate Abstraction (which enables semantic binding) (Heim and Kratzer, 1998). The following definition of Predicate Abstraction is given by Sudo (2012).

(5)   *Predicate Abstraction*
        If α has a binder index λ_i and β as its daughter constituents, then $[\![\alpha]\!]^{w,g} = \lambda\ x_e.$ $[\![\beta]\!]^{w,g[i\rightarrow x]}$.

The subject of the consequent clause of a proxy counterfactual cannot be appropriately analyzed as a free variable. Its semantic interpretation is tied to two linguistic antecedents. Instances of partial binding, where a pronoun is bound by two antecedents, have been analyzed in the literature (e.g., Rullmann, 2004; Heim, 2008). This phenomenon is illustrated by an example due to Rullmann (2004), in (6). The context of (6-a) is one in which the speaker, John, is addressing a room full of his ex-wives.

(6)   a.   Even in the middle of divorce proceedings, you each pretended that we were a happy couple.
        b.   [2nd-pl$_1$ each] 2[t$_2$ pretended (1st)-(pl)$_{2+3}$ were a happy couple]
               $g_c(3) = s_c$ (=John); $g_c(1)$ = the ex-wives of s_c

A logical form representation of (6-a) is given in (6-b), due to Heim (2008). This representation follows Kratzer (1998)'s assumption that bound pronouns are generated without phi-features, and only free pronouns are born with phi-features. In such a framework, bound pronouns are thought to inherit the features of their binders via a morphophonological operation called Feature Transmission (Heim, 2008). A pronoun bound by multiple antecedents will bear a complex index that can be modelled as a coordinated index (as in

(6-b)). Due to the inherent semantics of: + , a coordinated index will invariably lead to plural morphology in the spell-out of the pronominal form (Heim, 2008). For this reason, a coordinated index is not appropriate for the consequent-subjects in proxy counterfactuals, which may be singular while still bound to two antecedents. In fact, as shown in (7), a plural pronoun may appear as the consequent-subject, but the reading of a (single) composite individual sharing properties with the DPs of the antecedent is not available.

(7)   #If John were the queen, they would abdicate.

While the consequent-subject of a proxy counterfactual is not adequately analyzed as a free variable, neither is it a straightforwardly bound pronoun, as it is not c-commanded by either antecedent DP. In this construction, a singular pronoun is able to be semantically bound by two DPs, without being syntactically bound by either. In Section 3.2.2, I will examine related data, where semantic binding is found without c-command, and Section 3.2.3 will outline an account of this data.

3.2.2   Binding without c-command

A third class of data provides examples of pronouns which are not free in their reference, but also do not satisfy the structural (c-command) requirements of syntactic binding. This is the kind of semantic binding exhibited by pronominal subjects of counterfactual consequent clauses. Pronouns semantically bound in this way are commonly referred to as *donkey pronouns* in the literature, due to a well-known example (given in (8), slightly modified from Geach (1962)'s original sentence).

(8)   Every man who owns a donkey beats it.

In this example, the pronoun *it* clearly refers to the particular donkey owned by each man in question. Similarly to the covarying interpretation of *he* in (3-b), there is no single referent denoted by *it*. Instead, the reference of the pronoun varies. The variation is restricted, however, in that the pronoun covaries with the domain of quantification delimited by the quantified noun phrase *every man*. The pronoun ranges over the group of donkeys owned by each man in this domain and so refers to "the donkey y owned by x, for each man x". The difference here between (8) and (3-b) is that, while the interpretation of both pronouns

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is bound, the pronoun in (8) has no overt antecedent which c-commands it, in apparent violation of Binding Theory (e.g., Chomsky, 1982; Reinhart, 1983). Because they share this property (of semantic binding without c-command), pronouns found in the consequent clauses of conditional sentences may be classed with donkey pronouns. As seen below, in (9), such a pronoun may be bound by a DP in the antecedent clause, without the two expressions standing in the requisite c-command relation to one another.

(9)   If a man owns a donkey, he beats it.

The same is true of the class of counterfactuals which interest us here, repeated below. The pronominal subjects of the consequent clauses are interpretively bound by DPs in the antecedent clause, but they are not c-commanded by these DPs.

(10)   a.   If I were you, I would go to Cuba.
          b.   If you were me, you would stay home.

Section 3.1.3 will introduce the e-type analysis of pronouns. This is a theory meant to account for semantic binding without c-command, of the kind seen in proxy counterfactual constructions.

3.2.3   E-type analysis

E-type analyses are theories of pronouns which have been proposed primarily to deal with cases of semantic binding without c-command and related phenomena (e.g., Evans, 1977; Cooper, 1979; Elbourne, 2005, a.o.). The version which will be focused on in the present thesis is that of Elbourne (2005). This analysis treats third person pronouns as disguised or covert definite descriptions, in both their syntax and their semantics. In this section, I will discuss the theory's applicability to pronominal subjects in counterfactual consequent clauses, and consider its ability to account for the constraint on these pronouns which is the main topic of this thesis. A known restriction on e-type anaphora, the Formal Link condition, will be examined in Chapter 4, in order to help account for the constraint under consideration.

Paul Elbourne, in his influential 2005 book *Situations and Individuals*, puts forth the argument that all individual-denoting expressions (pronouns, proper names, definite

descriptions) have a common syntactic and semantic structure - that of definite descriptions. This structure consists of a definite article which takes two arguments - an index and an NP predicate (Elbourne, 2005). Essentially, e-type pronouns are definite articles, sharing a denotation with *the*, with the addition of phi-features.

Elbourne (2005) cites examples like (11), originally due to Postal (1966), as evidence that pronouns can sometimes occur prenominally as (definite) determiners.

(11)　　You troops will embark but the other troops will remain.

Additionally, pronouns can often be satisfactorily paraphrased as definite descriptions. Take the following example (12), uttered with respect to the Pope, in which *he* could not be replaced by a proper name such as *Pope Francis* and retain the same interpretation. The only adequate paraphrase of the pronoun would be "the pope".

(12)　　He is usually an Italian.

Elbourne (2005)'s proposal is to treat pronouns as having the denotation of *the*, with phonologically-deleted NP descriptive content. Following Sauerland (2000), Elbourne proposes that pronouns, like the overt definite article, take two arguments: an index and an NP, as shown in (13). The NP complement provides the descriptive material by which an e-type pronoun is interpreted. The indexical complement allows bound and free variable readings of a pronoun via an assignment function. The proposed denotation of an e-type pronoun is given in (14), which consists of the Fregean denotation of the definite determiner, plus phi-features (Elbourne, 2005).

(13)　　a.　　[[the i] NP]
　　　　b.　　[[it i] NP]

(14)　　$\llbracket$ she $\rrbracket = \lambda f : f \in D_{<e,t>}$ & $\exists!x\ f(x) = 1$ & $\forall x\ (f(x) = 1 \rightarrow \text{FEMALE}(x))$. $\iota x\ f(x) = 1$

The complements of pronouns, under this analysis, are subject to NP-deletion. An example of NP-deletion is given in (15) (attributed to Jackendoff (1968); Perlmutter (1970)). NP-deletion is thought to be possible under two conditions. The first condition is one in which there is a deictic reference in the context of utterance (for example, when a speaker gestures

to a shirt, while uttering the sentence *His is just the same*). The other appropriate condition is when there is an overt NP antecedent (*shirt*, in (15)) (Elbourne, 2005). (This second condition will be relevant for the Formal Link condition, to be discussed in Section 4.1.)

(15)   My shirt is the same as his.

Therefore, in Elbourne (2005)'s analysis a third person pronoun is interpreted as a definite determiner, with a complement of phonologically null descriptive content. If the occurrence of *she* in (16) were an e-type pronoun, it would be interpreted as something akin to *she* ~~queen~~, where *queen* is deleted under identity, and so unpronounced. The conditions under which this interpretation is possible are somehow unmet here, as a reading in which *she* is synonymous with *the queen* is unavailable to native speakers of English. Such an identification is a requirement for an e-type analysis of the pronoun, of the sort argued for by Elbourne (2005). The retrieval of the descriptive material of the pronoun (as a covert definite description) is somehow blocked. The nature of this constraint is not readily apparent, but will be explored in the following sections and Chapter 4.

(16)   a.   If John were the queen, he would abdicate.
         b.   #If John were the queen, she would abdicate.

3.3   The problem of gender features

The cases introduced in this chapter, involving third person pronouns, are restricted by a constraint similar to that imposed on constructions involving first and second person pronouns, which were the focus of Chapter 2. In particular, regardless of the person feature it bears, the morpho-syntactic form of a pronominal consequent-subject is determined by the form of the antecedent-subject, while its interpretation is tied to both the subject and the object of the antecedent. Unlike first and second person pronouns, third person pronouns additionally bear a gender feature. The gender feature on the consequent-subject also obligatorily matches the gender feature of the antecedent-subject. This is seen by the unacceptability of (17-b) and (18-b). Though the individual John is hypothesized, in both cases, to be female in counterfactual worlds, it is impossible to refer back to this individual with a pronominal consequent-subject bearing a feminine gender feature. The individual's

actual-world gender must be respected.

(17)   a.   If John were Elizabeth, he would abdicate.
        b.   #If John were Elizabeth, she would abdicate.

(18)   a.   If John were the queen, he would abdicate.
        b.   #If John were the queen, she would abdicate.

The infelicity of these sentences brings up at least two separate questions. The first is what it is that prevents a speaker from using a pronominal consequent-subject with feminine features when the subject of the antecedent is male in the actual world, but female in counterfactual worlds. In the examples in (17-b) and (18-b), John is hypothesized to have feminine gender (being *Elizabeth/the queen*) in counterfactual worlds. Despite this, we see that it is unacceptable to use a pronoun with a feminine feature (*she*) to refer to the individual denoted by *John*. The second pertinent question is why a speaker is unable to use the object of the antecedent clause as an anaphoric antecedent to the subject of the consequent clause, if the pronoun is analyzed as an e-type pronoun. The problem is especially salient in (18-b), where *the queen* presumably supplies sufficient descriptive material for the NP complement of an e-type pronoun (as opposed to, for example, *Elizabeth* in (17-b), where it is less clear what the descriptive material would be). As discussed in Section 3.2.3, an e-type pronoun requires an NP antecedent for its interpretation. The NP appearing in this sentence (*queen*) should provide sufficient descriptive information for the pronoun to be interpreted. If we wish to use the consequent-subject *she* in (17-b) and (18-b) to refer to the queen, the overt NP *queen* should presumably fill the antecedent requirement. However, the judgment is strong that these sentences are infelicitous, and so if the e-type analysis is to be of use for these constructions, the reason for blocking *queen* as the antecedent NP must be explained. This will be examined in Chapter 4.

3.4   Summary

In this chapter, I reviewed the standard treatment of third person pronouns as variables, with both free and bound usages. This conception of pronouns is not amenable to cases in which two (or more) actual-world entities are represented as an atomic individual in a possible

world, as is the case for consequent-subjects in proxy counterfactuals. This would require somehow binding a singular pronoun to multiple antecedents. Current analyses of such so-called partial binding predict that the bound pronoun will surface with plural morphology (e.g., Rullmann, 2004; Heim, 2008). The consequent-subject of a proxy counterfactual is intuitively bound to two antecedents, while bearing a singular person feature. Pronominal consequent-subjects of proxy counterfactuals do seem to be semantically bound, but do not follow syntactic binding principles. For this reason, I introduced the e-type analysis of pronouns, which is designed to account for cases of semantic binding without c-command (Elbourne, 2005). I then discussed the constraint which is the topic of this thesis, and looked briefly at how it restricts the use of third person pronouns. The e-type analysis accounts for the fact that the pronominal consequent-subject is able to be bound without following the syntactic requirements of Binding Theory. However, on its own, it does not account for the constraint that the consequent-subject match the antecedent-subject in phi-features. In Chapter 4, I will use the e-type analysis of pronouns, in combination with independently observed constraints on e-type anaphora and gender features, in order to block the antecedent-object as an anaphoric antecedent of the consequent-subject.

Chapter 4

The third person constraint

In Chapter 3, I outlined the constraint on the subject of the consequent clause of a proxy counterfactual sentence, as it applies to third person pronouns. It was noted that two main questions present themselves. Namely: (a) Why must the gender feature on the consequent-subject match the actual-world gender of the referent of the antecedent-subject? and (b) Why does the complement of the *if*-clause not constitute an appropriate antecedent for the consequent-subject, if the latter is interpreted as an e-type pronoun?

The focus of the present chapter will be a closer examination of the questions brought up in Chapter 3. I will address these questions by introducing two independently motivated constraints. The first is a condition on e-type pronouns called the Formal Link, which requires an overt antecedent for e-type anaphora (e.g., Kadmon, 1987; Heim, 1990). The second concerns the use of gender features, and a requirement that a speaker refer to the actual gender of a referent, called the Real Gender constraint (Yanovich, 2012). I will then propose an analysis of the restrictions on pronominal consequent-subjects which makes use of these two constraints in combination.

4.1   Formal link condition

In Section 3.1.3, I noted that a pre-condition for NP-deletion is that the deleted material have an overt antecedent. One reason for positing that e-type pronouns involve deletion is that they follow this same requirement (Elbourne, 2005). In the context of e-type anaphora, the condition is known as the Formal Link (e.g., Kadmon, 1987; Heim, 1990). The contrast

between (1-a) and (1-b) illustrates the phenomenon.

(1)   a.   Every man who has a wife is sitting next to her.
       b.   #Every married man is sitting next to her.

Both of the sentences in (1) make salient the same *married-to* relation, with the words *wife* and *married*, respectively. The example in (1-b), however, lacks a bound variable interpretation, in which *her* would denote each man's wife ("the unique entity married to x", bound by a lambda abstractor beneath the subject). If an e-type pronoun simply requires a contextually salient relation, in combination with an index, then these sentences should have equivalent readings. Native speaker judgments run counter to this prediction, suggesting that e-type pronouns require an overt NP antecedent, from which the pronoun can be attributed descriptive content (Elbourne, 2005).

As shown in (2), the same constraint is present in conditional structures in which a pronoun in the consequent corefers with a DP in the antecedent. Here, once again, it is only in (2-a) that *she* can refer to the wife of each man in the domain of quantification. This is presumably due to the presence of the overt antecedent, *wife*, which provides descriptive material for the complement of the e-type pronoun. In (2-b), *she* can only be a free variable denoting a particular female referent, and cannot be semantically bound to refer to the wife of each man in the domain of quantification delimited by the *if*-clause.

(2)   a.   If a man has a wife, she is sitting next to him.
       b.   #If a man is married, she is sitting next to him.

These examples illustrate the observation that an e-type pronoun requires an overt antecedent in the preceding linguistic context. As we have seen in the case of proxy counterfactuals, however, even when there is an antecedent-object which seems to provide the proper descriptive material for an e-type pronoun, the interpretation is not available. This is seen in (3).

(3)   a.   If John were the queen, he would abdicate.
       b.   #If John were the queen, she would abdicate.

What remains to be determined is if there are further requirements on what properties

an antecedent of an e-type pronoun must have. One candidate for such a property is the introduction of a discourse referent, via reference or quantification (G. Thomas, p.c.). This idea will be considered in Section 4.3.2. Before doing so, I will review the other constraint which will be used in my analysis of proxy counterfactuals, Yanovich (2012)'s Real Gender constraint.

4.2   Real gender constraint

It has been noted that the use of third person pronouns as consequent-subjects of proxy counterfactuals is constrained in terms of gender features. In this section, I will first review a mainstream analysis of phi-features as presupposition triggers. I will then look at some examples of irregular projection of presuppositions triggered by gender features, observed by Yanovich (2012). These cases led Yanovich to posit the Real Gender constraint, which will be outlined in this section. In Section 4.3, I will analyze the constraint on third person subjects with the use of the Real Gender constraint in combination with the Formal Link condition on e-type anaphora discussed above (Section 4.1).

4.2.1   Phi-features on pronouns

The phi-features borne by pronouns (which can include: gender, person, number) are a significant element of the problem treated in this thesis. As noted, the subject of the consequent of a proxy counterfactual is constrained in such a way that, if it is to match either DP of the antecedent in phi-features, it must match with the subject and not with the object. In particular, for third person pronouns, it is gender features which are pertinent for the problem. For this reason, it is necessary to consider how features contribute to the interpretation of a pronoun, as well as to the sentence in which the pronoun occurs.

Phi-features can be modelled as structurally adjoined to an indexed variable. According to many mainstream analyses, their interpretation is presuppositional, resulting in restrictions on the domain of the variable (Cooper, 1979; Heim, 2008). Pronouns can be thought of as partial identity functions, with their domain constrained by the phi-features they bear (Heim, 2008). A phi-feature's denotation is a partial function, as shown in (4).

(4)   a. $[\![\text{masculine}]\!] = \lambda x : x$ is male. x

   b. $[\![\text{feminine}]\!] = \lambda x : x$ is female. x

  These functions take an individual as input and return that same individual, provided that the presupposition triggered (*x is male/female*, in the case of gender features) is satisfied by the intended referent (Heim, 2008). Put differently, the referent is presupposed to be male or female, depending on which gender feature is adjoined to the pronoun. Bound variable pronouns can be analyzed in much the same way as referential (free) pronouns. The phi-features that they bear serve to restrict the range of antecedents by which they can be bound.

  Features combine with the pronoun to which they are adjoined via the compositional operation of Functional Application (Heim, 2008). The restrictions they impose are inherited up through the sentential structure, resulting in potential truth value gaps for sentences. If the intended referent of a pronoun does not satisfy the pronoun's presuppositional requirements, then the sentence can be judged neither true nor false, resulting in presupposition failure (Heim, 2008).

4.2.2 Restrictions on gender features

Yanovich (2012) discusses examples of irregular projection behaviour of pronominal presuppositions. Presuppositions triggered in the antecedent clause of conditionals and counterfactuals generally project to become inferences of the entire sentence (Karttunen, 1973). In contrast, antecedent clauses normally act as presupposition filters, in the sense that any presuppositions triggered in the consequent clause which are also entailed by the antecedent clause will be filtered out (i.e., not survive as inferences of the entire sentence) (Karttunen, 1973). Yanovich notes that this is not always the case with gender features, citing the following example in (5-a).

(5) a. *If [the queen's son]$_2$ were female, then she$_2$ would be smart.
   b. If [the queen's son]$_2$ were female, then he$_2$ would be smart.

According to a presuppositional analysis of gender features, *she$_2$* should trigger the presupposition that the pronoun's referent (the output of the assignment function *g* applied to the index 2) is female. The antecedent asserts the proposition that *g*(2) is female, and so

the sentence as a whole should not inherit the gender presupposition from the consequent. The sentence should therefore be acceptable, which is not the case. In fact, the sentence only works if the feminine pronoun is replaced with a masculine pronoun, as in (5-a). This demonstrates clearly that the gender feature on the pronoun matters, but also that the semantic conditions associated with gender features do not always behave as predicted under a presuppositional analysis.

Following Cooper (1983), Yanovich calls the presuppositions associated with gender features *indexical presuppositions*. In Cooper's influential 1983 paper, he asserts that bound pronouns have "regular" presuppositions while free pronouns invoke different kinds of semantic constraints. These constraints do not behave like entailments or presuppositions.

(6) $[\![$ she$_i$ $]\!]^{g,c}$ = female (g(i))(world(c)).g(i)

In Cooper's formalization (6), the presupposition triggered by a gender feature involves an explicit index at which the presupposition (female(g(i))) is evaluated. This index represents the world of the context c, which is the actual world. In this way, no matter where in the sentence the expression occurs, it is evaluated in the actual world. This is in contrast to bound pronouns, for which the index at which they will be evaluated is provided higher in the structure by rules of semantic composition. Yanovich deviates from Cooper's analysis in asserting that presuppositions arising with bound pronouns can be indexical as well. To argue for this, he cites examples (like the following in (7-a)), in which a gendered pronoun may be used to refer to an object that doesn't exist in the actual world, while at the same time imposing a non-vacuous semantic constraint (as evinced by the unacceptability of (7-b)) (Yanovich, 2012).

(7)   a.   If the queen had a female child, she would be smart.
        b.   *If the queen had a female child, he would be smart.

Since the referent introduced in the antecedent clauses of these sentences is presumed not to exist in the actual world, the traditional presuppositional analysis of gender features suggests that either sentence should be fine, or neither. However, there is a clear judgment that the pronoun in the consequent must bear a feature matching the gender of the hypothetical

individual introduced in the antecedent. From such examples, Yanovich concludes that a gendered pronoun must match the gender of the referent in the actual world, or in a world closest to the actual world, if the referent does not exist in the actual world (Yanovich, 2012).

One type of presuppositional filter does interact with indexical presuppositions. This is the case of indicative conditionals. In the example in (8-a), the sentence is evaluated with respect to counterfactual worlds. In a situation in which one gender possibility is "more actual" and another "less actual" - as is the case in (8-a), where the queen's son is male in the actual world, but female in counterfactual worlds - the "more actual" gender will prevail. This is shown by the unacceptability of a feminine pronoun referring back to the queen's son, even though the speaker is explicitly entertaining counterfactual worlds in which the queen's son is female. It is the gender of the referent in the actual world which must be respected. The name *Sasha* is androgynous, and in (8-b), the speaker asserts uncertainty regarding the gender of its referent. Therefore, possible worlds in which Sasha is female and those in which Sasha is male are equally plausible.

(8) a. *If [the queen's son]$_2$ were female, then she$_2$ would be smart.
     b. If Sasha$_3$ is female, I should buy her$_3$ a toy train.

If there are two equally "actual" genders (as in (8-b)), and the domain of evaluation is restricted by the *if*-clause, then it is possible to use a gendered pronoun matching the gender of the referent in those possible worlds under evaluation. Data from Russian shows the same patterns as English, but only for pronouns that refer to humans (Yanovich, 2012). From these observations, Yanovich (2012) derives the "real gender" constraint, stated below.

(9) *The real gender constraint*
     The gender feature on a gendered anaphoric pronoun (referring to a human) corresponds to the real gender of the pronoun's referent [or to each individual in the domain of quantification].

The real gender constraint not only explains the projection behaviour of indexical presuppositions, as outlined above, but it is also able to account for the variability of judgments

in such sentences. As Yanovich states, because "real gender" is a vague concept, and also inherently extra-linguistic, it seems natural that sometimes the gender of a referent will require a "judgment call," and therefore may result in speaker variation. In case of hesitation over which pronoun to use to refer to a transgender individual, for example, the uncertainty does not seem to be due to judgments of proper grammar, but rather judgments of what actually constitutes the "real gender" of an individual.

4.3   Application to proxy counterfactuals

We have seen that in examples like (10) and (11) it is not possible to use feminine features on the consequent-subject when the antecedent-subject is male, even if the individual is female in counterfactual worlds. Nor is it possible for the consequent-subject to be a covert definite description (e-type pronoun) that refers back to the object of the antecedent. This is the case whether the object is interpreted referentially, either *de dicto* or *de re*, or predicationally.

(10)   a.   If John were Elizabeth, he would abdicate.
        b.   #If John were Elizabeth, she would abdicate.

(11)   a.   If John were the queen, he would abdicate.
        b.   #If John were the queen, she would abdicate.

In this section, I will address these problems using the Formal Link condition and the Real Gender constraint discussed in preceding sections.

4.3.1   Gender features on the consequent-subject

In both (10) and (11), the subject of the antecedent refers to an individual that is male in the actual world. The *if*-clause of both sentences restricts the worlds quantified over by the conditional to counterfactual worlds in which the referent is female. In both cases, it is impossible to refer anaphorically to this individual in the consequent clause with a pronoun bearing a feminine gender feature. What is it, then, that prevents the use of feminine features on this pronominal subject?

Let's focus on (11) for the moment. If we interpret the definite description *de dicto*, then the discourse referent it introduces does not refer to an existing individual in the actual world. Under this interpretation, John is the only actual-world individual appearing in the antecedent clause. Applying Yanovich (2012)'s Real Gender constraint here, we can straightforwardly block (13). The constraint, discussed in Section 4.2.2, tells us that if an individual has two different gender properties at different indices, a speaker is obliged to choose what is considered to be the "most actual" gender of the referent. As seen in examples in Section 4.2.2, if a referent is male in the actual world of utterance, and female in possible or counterfactual worlds, then it is the actual-world gender which must be morphologically realized on the pronoun.

I will consider a *de dicto* interpretation of the definite description in this section, and a *de re* interpretation in Section 4.3.2. In (11), if the definite description is interpreted *de dicto*, we have only one actual-world individual in the antecedent clause. In this way, the composite individual denoted by the consequent-subject must be referred to as matching with this actual individual, John, and cannot match with the antecedent-object in phi-features. The individual denoted by *John* has a masculine actual-world gender and a feminine counterfactual-world gender. The Real Gender constraint requires that his actual-world gender is respected, and thus the contrast in (11) is explained. A pronominal consequent-subject referring back to this individual must bear the gender feature which matches the referent's actual-world gender, and so only (11-a) is felicitous.

4.3.2   Blocking the object as e-type antecedent

In Section 4.3.1, I suggested that the Real Gender constraint of Yanovich (2012) is useful in explaining why the consequent-subject of a proxy counterfactual must bear the gender feature matching that of the actual-world referent of the antecedent-subject. It still remains to be shown why the complement of the *if*-clause cannot serve as an antecedent of an e-type consequent-subject. If the consequent-subject is interpreted as an e-type pronoun, then it requires an overt linguistic antecedent which provides it with descriptive material. What is it that prevents the NP *queen* from being that antecedent? There are at least two potential interpretations of a feminine consequent-subject which should be blocked. Firstly, it could be interpreted as a free variable, referring to the actual queen. Secondly, it might be interpreted as a covert definite description (e-type pronoun) which has the null NP complement

queen, as its descriptive content.

In Section 4.3.1, I discussed issues surrounding a *de dicto* interpretation of the copular complement. The problem is framed rather differently if the definite description is interpreted *de re*, which presumably entails a predicational copular clause. In such a case, the definite description is interpreted like a proper name, and the sentences in (12) and (13) should be, in this regard, interpretively equivalent. In (12), the proper name *Elizabeth* has an actual world referent which we must relate to John. Similarly, a *de re* reading of the definite description in (13) introduces a discourse referent existing in the actual world. Unlike the *de dicto* reading, if the definite description is understood *de re,* it becomes impossible to identify John and the actual queen. This takes us back to the analysis of Thomas (2009), discussed in Chapter 2, where the antecedent is interpreted as a predicational copular clause.

Recall that in accounting for the constraint on first and second person consequent-subjects, Thomas (2009) employed a rigid designation analysis of these pronouns. This entailed that the copular clause in which they appeared could not be equative or identificational, but must be predicational. To this end, Thomas proposed a type-shifting operator (be_{pred}) which shifts objects of type e to type <e,t>, and also extracts properties from the object and attributes them to the subject. If this analysis is extended to the cases discussed in the present chapter, then perhaps the antecedent-object does not contribute a discourse referent, but is predicational. In this way, even if interpreted *de re*, *the queen* (or any other object) is not actually referential. This would block the first potential reading of a feminine consequent-subject, in which it is a free variable referring to the actual queen.

(12)   a.   If John were Elizabeth, he would abdicate.

        b.   #If John were Elizabeth, she would abdicate.

(13)   a.   If John were the queen, he would abdicate.

        b.   #If John were the queen, she would abdicate.

A bit more work is required in order to block the second potential reading of a feminine consequent-subject, as a covert definite description. An antecedent-object that contributes an actual-world discourse referent should presumably satisfy the Formal Link condition on e-type pronoun antecedents. A discourse referent is indeed introduced if the definite

description in (13) is interpreted *de re*. If the Formal Link condition is strengthened to require that the antecedent of an e-type pronoun not only be overt, but also introduce a discourse referent, then we are on our way to accounting for the constraint on third person consequent-subjects. To this end, I propose the revision of the Formal Link condition in (14).

(14)   *Revised Formal Link Condition*
         An e-type pronoun requires an overt NP antecedent which introduces a discourse referent.

If the copular antecedent clause is predicational, as noted, its complement does not introduce a discourse referent referring to an actual-world individual. With the revised Formal Link condition in (14), combined with the Real Gender constraint which describes the preference of speakers to refer to the "most actual" gender of a referent, a non-referential object of the *if*-clause cannot serve as an antecedent for an e-type pronoun. This blocks the generation of the sentence in (13), and, for that matter, blocks the interpretation of *he* as an e-type pronoun with the object of the *if*-clause as its antecedent. In this case, as well as in the case that the definite description is interpreted *de dicto*, the consequent-subject is required to match the actual-world gender of the referent denoted by the antecedent-subject, as per the Real Gender constraint. Hence, the infelicity of (13).

4.4   Summary

This chapter has focused on answering questions raised by the constraint on third person pronouns as consequent-subjects of proxy counterfactuals. The two central concerns are: (a) determining what prevents using a pronoun with feminine features in the consequent-subject to refer to an antecedent-subject that denotes a male individual in the actual world, even when that individual has a feminine gender in counterfactual worlds, and (b) accounting for the impossibility of the consequent-subject to be interpreted as an e-type pronoun which obtains its descriptive material from the antecedent-object.

An analysis of the constructions was proposed which makes use of the Formal Link condition on e-type anaphora and the Real Gender constraint. The Formal Link condition is the requirement that an e-type pronoun have an overt linguistic antecedent, from which it

derives its descriptive material (Kadmon, 1987; Heim, 1990). I have proposed to strengthen this requirement to ensure that the antecedent also introduces a discourse referent. The Real Gender constraint describes the strong preference of speakers to use the gender feature which matches with the "most actual" gender of a referent in question (Yanovich, 2012). In combination with a predicational analysis of the copular clause in the antecedent, these two constraints explain why the consequent-subject cannot obtain its descriptive material from the object of the antecedent. The antecedent-object does not fulfill the requirement of referentiality of the Revised Formal Link Condition proposed in 4.3.2. The analysis also explains why the gender feature of the consequent-subject must match that of the antecedent-subject. The Real Gender constraint requires that the "most actual" gender of a referent must be respected. In Chapter 5, I will summarize the analysis, and outline a related open question.

Chapter 5

Conclusions

5.1 The present proposal

In the present section, I will review the constraint which is the focus of this thesis, as it applies to first, second, and third person pronouns. I will also summarize the analyses proposed for both the first and second person, and the third person.

5.1.1 First and second person subjects

The present thesis has focused on a constraint on pronominal subjects in the consequent clause of proxy counterfactual statements. We first examined cases in which the consequent-subjects were first and second person pronouns. Pronouns in this position exhibit unusual binding patterns, in that they receive a semantic interpretation which is tied to both DPs of the antecedent clause, while their morphological form is uniquely determined by the subject of the antecedent clause (Lakoff, 1968). An example is given in (1).

(1)   a.   If I were you, I would go to Cuba.
       b.   #If I were you, you would go to Cuba.

Lewis (1973)'s analysis of counterfactuals was examined, according to which a counterfactual statement quantifies over possible worlds, with the domain of quantification restricted by the *if*-clause. Both Lewis (1973) and Lakoff (1972) employ counterpart relations to derive the composite individual denoted by the consequent-subject. In this way, they are

able to show how the consequent-subject can be interpretively tied to two different DPs, by giving them a common counterpart arrived at by means of two separate counterpart relations. What the analysis is unable to do is provide a means of blocking sentences like the one in (1-b), as the common counterpart of *I* and *you* should be identifiable by the use of either pronoun.

To account for this restriction, Thomas (2009) suggests that first and second person pronouns be analyzed as rigidly designating - having a stable reference across worlds. This property disallows their interchangeability as the consequent-subject. It also challenges an analysis which treats the copula in the *if*-clause as identificational or equative. To address this, Thomas (2009) posits a type-shifting predicational copular operator: be_{pred}. This operator takes an object of type e (like a rigidly designating first or second person pronoun), and shifts it to type <e,t>. Additionally, it predicates certain attributes of its object to the subject of the clause. This analysis is successful in predicting the above-mentioned constraint, but is not easily extended to third person pronouns, which do not rigidly designate.

5.1.2   Third person subjects

The use of third person pronouns as consequent-subjects was shown to introduce new questions. The constraint seen on first and second person subjects holds also for the third person, but an additional constraint on the use of gender features presents itself. Some examples are repeated in (2).

(2)   a.   If John were the queen, he would abdicate.
        b.   #If John were the queen, she would abdicate.

The infelicity of (2-b) raises several questions. The questions focused on in this thesis were: (a) Why must the gender feature on the consequent-subject match the actual-world gender of the referent of the antecedent-subject? and (b) Why does the complement of the *if*-clause not constitute an appropriate antecedent for the consequent-subject, if the latter is interpreted as an e-type pronoun?

5.1.3   The proposal

The proposal put forth in this thesis to account for the constraints on these constructions involves the Formal Link condition on e-type anaphora, as well as a restriction on the use of gender features called the Real Gender constraint (Yanovich, 2012). The Formal Link condition requires that an e-type pronoun have an overt NP antecedent (e.g., Kadmon, 1987; Heim, 1990). In this thesis, I suggested a further restriction on the antecedent of an e-type pronoun, in that the antecedent must also introduce a discourse referent. The Real Gender constraint requires a speaker to use the gender feature which matches the "most actual" gender of a pronoun's intended referent, in the case that there is competition between a more and less actual gender, as is the case when an actual-world male individual is female in a possible world. To address the questions noted in Section 5.1.2, I looked at cases in which the complement of the antecedent clause is interpreted as *de dicto*, *de re*, and predicational.

If the antecedent-object is a definite description interpreted *de dicto*, then the discourse referent which it introduces does not exist in the actual world. The consequent-subject must, therefore, match in phi-features with the antecedent-subject, as it denotes the only actual-world discourse referent. According to the Real Gender constraint, the most actual gender of the referent introduced by the antecedent-subject must be respected. In the case of (2), this is the actual world gender of the individual denoted by *John*, which is male. This explains the infelicity of (2-b).

If the antecedent-object is a definite description interpreted *de re*, then the copular clause of the antecedent is most plausibly analyzed as predicational. Employing Thomas (2009)'s type-shifting be_{pred}, the definite description can be shifted to type <e,t>, becoming predicational and presumably not introducing a discourse referent which meets the Revised Formal Link requirement (that an e-type pronoun have an overt NP antecedent introducing a discourse referent). In this case, as well, the consequent-subject is required to match in phi-features with the antecedent-subject. The Real Gender constraint, again, requires that it is the referent's actual world gender which is morphologically realized.

5.2   Remaining questions

The present thesis has focused exclusively on data from English. Many languages, of course, have grammatical gender which is marked on all nouns, regardless of whether or not they refer to animate or inanimate objects. The analysis presented here does not make predictions for sentences involving non-human referents. In fact, it would seem to suggest that the constraints seen in this thesis would not apply to inanimate objects. However, examples can be found in which the constraint applies equally to DPs denoting inanimate objects. The following example is from Czech.[1]

(3)   kdyby tahle židle   byla stůl,   tak by   stála/*stál   víc
       if   this chair.F was.F table.M then would cost.F/cost.M more
       "If this chair were a table, it would cost more."

Here, the consequent-subject is a pro subject reflected in the verbal agreement morphology. As has been seen in the data examined in this thesis, the consequent-subject obligatorily shares the gender feature of the DP which is the antecedent-subject. The sentence is unacceptable if the consequent-subject matches in phi-features with the antecedent-object instead. The incorporation of a semantics of the gender of inanimates being beyond the scope of this thesis, I leave this problem to future research.

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[1]Due to Ivona Kučerová, p.c.

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