



# Ambiguity: New Paths, Old Borders

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# Contents

Presentation <i>Jordi Fortuny, Pau Francesch, Neus Nogué, and Lluís Payrató</i> .....	9
The Limits Between Ambiguity and Other Cases of Indeterminacy. From Grammar to Pragmatics <i>Jordi Fortuny, Lluís Payrató</i> .....	13
Linguistic Ambiguity and Conceptual Engineering: Gender Terms <i>Manuel García-Carpintero</i> .....	39
On Ambiguity and the Expressive Function of Law: the Role of Pragmatics in Smart Legal Ecosystems <i>Pompeu Casanovas</i> .....	53
Digital Ambiguity. Challenges in Natural Language Processing <i>Mariona Taulé, Mireia Farrús</i> .....	109

## Presentation

Like other words that are often used when talking about certain linguistic topics, *ambiguity* is a term that comes from everyday language and *that*, precisely, is also ambiguous because it can have multiple interpretations.

At the thirty-first edition of the Colloqui Lingüístic de la Universitat de Barcelona (CLUB), held on 27 October 2023 at the Faculty of Philology and Communication of the University of Barcelona, we set out to study the phenomenon of linguistic ambiguity from different perspectives: from a language “internal” approach, that is to say, from those that refer to the grammatical system but also to its use; to a language “external” approach, associated mainly with the philosophical and legal fields. From a language internal approach, we asked ourselves to what extent ambiguity can be differentiated from phenomena such as generality of sense, vagueness or context-sensitivity; from a language external approach, we explored how ambiguity is handled in the construction of intelligent legal ecosystems, on the one hand, and in conceptual engineering, on the other.

We also addressed the issue of ambiguity in relation to functional variation, describing some obvious differences attested in different linguistic registers, especially when we compare the technical and the literary registers. Likewise, we considered how and why the multiple meanings of words appear in use, and we addressed the phenomenon in the annotation of digital corpora and in speech technologies.

The general objective of this edition of the CLUB was to open up new questions that went beyond the research we had carried out and that would help us design future lines of research. More specifically, we sought, in the first place, to expand the empirical scope of our research group, pointing out certain phenomena close to ambiguity but which we have so far put aside. This is a consequence of the results of the research that we have developed more recently. In the second place, we tried to build bridges between different disciplines that in one way or another deal with ambiguity and other related phenomena, such as linguistics and philosophy of language, linguistic pragmatics and law, linguistic theory and computational linguistics. And in the third place, we wanted to promote dialogue not only between the speakers but also between the attendees and the speakers.

Precisely to promote dialogue, we structured the conference so that each of the two large blocks of oral communications ended with a round table with the

participation of the invited speakers, and with a speaking turn open to all attendees. Both the videos of the oral communications and those of the round tables are published on the UBtv Video portal: <https://www.ub.edu/ubtv/colleccio/congressos-i-jornades/club-31-lambiguitat-un-fouixar-indisciplinaria-2-20393>

The chapters in this volume substantially develop the ideas presented in the oral communications. Thus, in the opening chapter, Jordi Fortuny and Lluís Payrató present the property of linguistic indeterminacy, according to which linguistic expressions do not determine all aspects of their interpretation. Firstly, they define and illustrate four types of linguistic indeterminacy: ambiguity, generality of meaning, sensitivity to context, and vagueness; secondly, they review how indeterminacy and especially ambiguity have been treated in pragmatic studies; and finally, they consider how the factor of functional or stylistic variation influences these phenomena.

In the second chapter, Pompeu Casanovas begins by observing the importance of the relationship between linguistic pragmatics and the expressive conception of law. In a first part of his article, Casanovas investigates pragmatic ambiguity in the field of law from a linguistic and cognitive pragmatic perspective, and in a second part he offers an exploration of legal ecosystems from the point of view of the science of design. This second part ends by relating the description of layers of meaning in law with the description of automatic and/or semi-automatic legal compliance and advancing a series of theses relating to ambiguity.

In the third chapter, Manuel García-Carpintero aims to investigate how certain philosophical debates understand gender terms, such as ‘man’ or ‘woman’. García-Carpintero begins by offering a summary of the philosophical “externalism” relative to the meaning of natural terms such as ‘water’ to subsequently deal with gender terms taking into account especially the debate about whether philosophy should include what is called “conceptual engineering”. The author concludes his contribution by arguing in favor of a form of pluralism for gender terms.

In the final chapter, Mariona Taulé and Mireia Farrús offer an overview of the challenges presented by ambiguity in the field of language technologies regarding both written texts and oral language and speech technologies. Taulé and Farrús emphasize that ambiguity remains the main difficulty when developing language models and point to additional problems that appear in speech synthesis, which are crucially absent when disambiguating written texts.

Throughout the entire book, therefore, we rediscover this desire to inquire into the knowledge of what ambiguity really represents. In language use – and

in very diverse domains or registers, from the legal to the literary world, through everyday language – as well as in linguistic systems and in cognitive capacity and, ultimately, in the world of language sciences, with many interconnected and diverse areas of analysis. To finish, we trust that this desire and the intention that has moved us have been materialized into proposals that promote the progress of research, to deepen the investigation of a field of study where the new paths and the old borders that we refer to in the title of the work often show up – if not *always*.

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# The Limits Between Ambiguity and Other Cases of Indeterminacy. From Grammar to Pragmatics<sup>1</sup>

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## 1. INTRODUCTION

A characteristic property of natural language expressions is that they do not determine all aspects of their interpretation. This property, which we call linguistic indeterminacy, is central to understanding how language is structured, what is the relationship between grammar, semantics and pragmatics, how we process speech, and how we can design artificial systems that process texts of different types.

The aim of this article is twofold: to define and illustrate the different types of indeterminacy, and to review how they have been treated in the literature on pragmatics. In section 2 we illustrate four basic types of indeterminate phenomena with emphasis on the properties that distinguish them; this section is clearly preliminary, in the sense that it aims to present the basic concepts into which the rest of the contributions in this volume will in one way or another delve. In section 3 we will show how indeterminacy and above all ambiguity have been dealt with in pragmatics. And finally, in section 4 we discuss how the factor of functional or stylistic variation affects these phenomena.

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## 2. TYPES OF INDETERMINACY

Let us consider, to begin with, the following expressions:

- (1) a. We are looking for graduates in philosophy or doctors of law [who obtained their degree after January 2021].
- b. My sister is married.
- c. You and you, come here.
- d. Paul is tall.

Let us imagine a man who graduated in philosophy in 2020. Assume that he has not received a doctorate in law. If he reads the job advertisement (1.a), he will not be able to decide if he is a suitable candidate to apply for the selection process. His doubt – expressed in syntactic terms – is whether the antecedent of the relative clause in (1.a) is *doctors of law* or the disjunction *graduates in philosophy or doctors of law*. We represent, for clarity, these two interpretations in (2).

- (2) a. [[graduates in philosophy] or [[doctors of law] [who have obtained their degree after January 2021]]]
- b. [[[graduates in philosophy] or [doctors of law]] [who have obtained their degree after January 2021]]

In the case that (1.a) is interpreted syntactically as indicated in (2.a), our graduate in philosophy satisfies the required condition to apply to the selection process: since the relative clause restricts only *doctors of law*, there is no problem if our candidate has obtained his degree in philosophy in a different year.

If we hear (1.b), we need additional information to determine, for example, whether the sister of the utterer of (1.b) is older or younger. As for (1.c), we cannot determine the references of the two occurrences of the personal pronoun *you* nor that of the spatial deictic *here* without contextualizing (1.c) in a specific speech act. And finally, if Paul is 1.77 meters tall and we frame the statement (1.d) in the current adult Catalan population, who can determine whether (1.d) is true or false?

At least in linguistics, there is a remarkable consensus when it comes to admitting that, strictly speaking, only (1.a) is ambiguous. The rest of them, although indeterminate, are not ambiguous. The expression (1.b) illustrates sense generality (or lack of specification) of the name *sister*, and the expression (1.c) shows that the interpretation of the deictics *you* and *here* is context-sensi-

tive. Finally, statement (1.d) contains the adjective *tall*, which in this case is not ambiguous, but has a vague meaning.

But what is this consensus based on when classifying the examples of (1) in the different types of indeterminacy to which we have just referred? Let us try to clarify it.

In linguistics, it is common to conceive of ambiguity as follows, although it is rarely explicitly defined (see, for example, Fortuny & Payrató 2024, Sennet 2021, Wasow 2015, Wasow et al. 2005 and Zwicky & Sadock 1975):

(3) Definition of *ambiguity*.

An expression is ambiguous if (and only if) (a) it admits different interpretations and (b) these different interpretations are not particular instantiations of a more general interpretation.

If we consider again the example (1.a) and apply the definition of ambiguity of (3), we can observe that (1.a) has two possible interpretations: (2.a) and (2.b). Moreover, these two interpretations are not particular instantiations of a more general interpretation, as will become clearer later on. Consequently, (1.a) is a prototypical example of ambiguity; it is a case of syntactic (or structural) ambiguity, since we can analyze or solve this type of ambiguity at the level of syntactic analysis (see Fortuny 2024 for an investigation on syntactic ambiguity).

It is worth saying that syntactic ambiguities are very common in natural languages, although speakers are almost never aware of them (Martin et al. 1981). In general, we are able to choose the syntactic analysis appropriate to the communicative context unconsciously and apparently without making any effort. In fact, as far as we know, syntactic ambiguity rarely causes communicative errors among competent speakers or involves significant resolution difficulties. In any case, Poscher (2011: 129) cites a remarkable case in this regard:

A California statute governing the discharge of teachers allowed the dismissal of permanent employees in case of a ‘conviction of a felony or of any crime involving moral turpitude’. It is syntactically ambiguous as to whether the moral turpitude requirement modifies only the last or both preceding expressions (Solan 2005: 88).

In other words, does the California statute in question allow for the prosecution of a permanent employee who has committed a felony if the felony does not involve moral turpitude? Does the modifier *involving moral turpitude* affect

only the second component of the coordination (*any crime*) or the whole coordination (*of a felony or of any crime*)?<sup>2</sup>

Let us leave aside the example (1.a) of syntactic ambiguity. It is easy to see that the expressions (1.b-d) do not satisfy the definition of (3) of ambiguity, and therefore are not ambiguous. Let's look at it case by case.

In the case of (1.b), it is true that the name *sister* admits multiple interpretations, and therefore satisfies condition (a) of definition (3) of ambiguity; indeed, the expression *y's sister* can denote a female individual *x* younger or older than *y*. However, these different interpretations are effectively particular instantiations of a more general meaning: a female individual *x* is the sister of *y* if (and only if) *x* and *y* share at least one parent. In this definition of *sister*, it is simply indifferent whether *x* is older or younger than *y*. This observation leads us to the following definition of generality of sense (Zwicky & Sadock 1975, Atlas 1989):

(4) Definition of generality of sense.

An expression has a general sense if (and only if) (a) it admits different interpretations and (b) these different interpretations are particular instantiations of a more general meaning.

Therefore, concisely said, and according to our approach, the only difference between ambiguity and generality of meaning is that condition (b) of definition (4) of *generality of sense* is the negation of condition (b) of definition (3) of *ambiguity*.<sup>3</sup>

In order to compare the concepts of ambiguity and generality of sense, it may be helpful to introduce examples of lexical ambiguities, i.e., of words that satisfy condition (b) of (3), but logically not condition (b) of (4).<sup>4</sup> For example, the name *mouse* can denote “a small furry animal with a pointed nose and a

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2 Another aspect that is even more difficult to resolve is how to precisely define *moral turpitude*. This problem is not strictly related to ambiguity but to the phenomenon of vagueness, which we will introduce later; the question is whether it is possible to determine for any behavior whether such behavior is part of the concept ‘moral turpitude’ (or whether it makes sense to make such a concept more rigorous), understood as *an act or behavior that gravely violates the sentiment or accepted standard of the community*, as defined in the *Merriam Webster* (<https://www.merriam-webster.com/legal/moral%20turpitude>) legal dictionary. Let us note that the origin of the vagueness of the concept ‘moral turpitude’ is precisely the adverb *gravely* that in one way or another underlies its definition.

3 We note that it is possible that, in some languages, different words express what in other languages are different instantiations of a general sense expressed by the same word. In Chinese, for example, 哥哥 (*gēge*) is the term to refer to an older brother, while 弟弟 (*dìdì*) refers to a younger brother.

4 See Brohagen & Boleda (2022) and Boleda (this volume) for lexical ambiguity.

long tail that lives in people's houses or in fields" or "a small object that you move with your hand to give instructions to a computer". Plausibly, these two interpretations are not instantiations of a more general meaning, or at least it is not evident which would be such meaning from which the meaning of "a small furry animal with a pointed nose and a long tail (...)" and that of "a small object that you move with your hand ...".<sup>5</sup> Let us now look at the following expressions:

- (5) a. I have no mouse.  
b. I have no sister.

Crucially, (5.b) means "I have no older sister and I have no younger sister", but (5.a) does not mean "I have no small furry animal such that ... and I have no small object such that ...". That is to say, a speaker cannot use the expression (5.a) to express in a single speech act, at the same time, that (s)he does not have a small furry nor a small electronic object. A speaker can use (5.b), however, to express that (s)he has neither younger nor older sisters. This observation introduces a fundamental logico-semantic property that distinguishes ambiguity from generality of sense. Let elaborate this question in some detail.

From a logical point of view, the denotation of a term with a generality of sense is the disjunction of the concrete meanings it comprises; if we focus on our example, the set of *y*'s sisters comprises all female individuals *x* who share at least one parent with *y* which are either younger or older than *y*. The negation of a disjunction, as that denoted by a term with a general meaning, is equivalent to the conjunction of negations, as made explicit by De Morgan's law below:

$$\neg(P \vee Q) \leftrightarrow (\neg P) \wedge (\neg Q)$$

Therefore, as we have stated above, (5.b) means "I have no older sister and I have no younger sister".

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<sup>5</sup> Another very different thing is that the two meanings may have been metaphorically related at some point at least for some speakers. In English, the term *mouse* was re-cycled to refer to the electronic device in question because of the superficial resemblance between the shape of the electronic device and that of the small furry animal. However, the fact that a term denotes a basic meaning and a metaphorical meaning is different from the fact that a term has a general meaning with multiple instantiations.

In contrast to what we have just observed, the negation of an ambiguity remains an ambiguity, as can be seen in (5.a): the statement *I have a mouse* is ambiguous and this ambiguity is preserved in the negation *I have no mouse*. This difference regarding the behavior of the negation with respect to ambiguity and generality of sense leads us to the following fundamental property of ambiguity (see Wurm & Lichte 2016 for a more extensive discussion of this property):

*Property 1.* Negation is distributed over ambiguity, but not over generality of sense.

We are aware that, according to what we have just argued, property 1 implies that it is not correct to conceive of ambiguity as a disjunction of interpretations, since the denial of an ambiguity is not logically equivalent to the denial of a disjunction. Let us remember that the expression *I have no mouse* does not mean (in a single speech act) that I have no small furry animal such that ... and I have no small object such that ...". However, it is legitimate to analyze semantically the generality of sense as a disjunction of concrete meanings, as in the case of the term *sister*.

Logico-semantic property 1 has repercussions when distinguishing how we process expressions of natural languages with ambiguity or generality of sense. Property 1 implies that, in order to interpret (5.a), we must first determine whether *mouse* denotes a small furry animal or a small manual device; however, it is perfectly possible to interpret (5.b) without having determined whether *sister* denotes an older or a younger sister. Therefore, the difference between ambiguity and generality of sense implies a temporal difference: the parser has to resolve the ambiguity of *mouse* before interpreting compositionally (5.a) and determine, for example, what its truth conditions are, while it is not necessary to specify the meaning of *sister* before interpreting compositionally (5.b).

The semantic relationship between the general meaning of a term and its possible instantiations is formally equivalent to that between a hyperonym and its hyponyms. We observe, in this sense, that *I don't have furniture* means that I don't have any chair, any table, any cupboard, etc. Therefore, the negation of a hyperonym is logically equivalent to the conjunction of the negation of its hyponyms.

We note that negation is also distributed over syntactic ambiguities. In this regard, observe, firstly, that the affirmative sentence *I like boys and girls from Paris* can be represented schematically as (6.a) or as (6.b). This is a case of

structural ambiguity similar to (1.a): *from Paris* can be attached to *girls* or to the conjunctive coordination *boys and girls*.

- (6) a. I like [boys and [girls from Paris]]  
 b. I like [[boys and girls] from Paris]

Secondly, we check that the negative sentence *I don't like boys and girls from Paris* is not synonymous with the conjunction of negations expressed in (7), as we expect if it is certainly an ambiguous sequence:

- (7) I don't like [boys and [girls from Paris]] and I don't like [[boys and girls] from Paris]

Let us go back to the example (1.c): *You and you, come here*. It is an expression that contains two occurrences of the personal pronoun *you* and one occurrence of the locative adverb *here*. These categories are deictics, and their semantic content varies contextually, depending on the speech act in which they occur. We cannot say, however, that deictics are ambiguous, since they have only one clearly unequivocal meaning: *you* refers to the hearer of a speech act, just as *I* refers to the speaker of a speech act. If there are different speakers in a given speech act, we expect that different occurrences of *you* can refer, respectively, to different speakers, as observed in (1.c). Given that there may be many different speech acts, each with different participants, we expect that the denotation of *I* and *you* may vary to adapt to who is the speaker and who is the hearer in each speech act.

According to what we have just said, the pronouns *I* and *you* are characterized, respectively, as being [+speaker] and [+hearer]; similarly, we can characterize the third person singular deictics as well as the third person nominative pronouns *he/she* or the third person possessive determiner *his/her* as being [-speaker, -hearer].

It is also possible to determine an unequivocal meaning for the locative adverb *here* referring to the speech act: *here* denotes the place where the speech act takes place, or to be more precise, a place that contains the speech act; for example, if I say *Here everybody complains*, the denotation of the deictic *here* can be office 4.15 of building Josep Carner, the fourth floor of building Josep Carner, the Faculty of Philology and Communication, etc. The place denoted by *here* is fixed contextually, but what is decisive is that, in the communicative background shared by the interlocutors, this place includes the place of the speech act. We note, moreover, that the meaning of the quantifier *everybody* is

also sensitive to the communicative context and is fixed coherently with the meaning of the locative adverb *here*: said informally, *everybody* denotes all the individuals in the place that contains the speech act.

We have seen that we can find an unambiguous meaning for deictics and understand that this meaning is context-sensitive. For this reason, the deictics are not ambiguous, and context sensitivity is a different phenomenon from ambiguity. We have not discussed, however, whether context sensitivity is comparable to the generality of sense. In order to demonstrate that context sensitivity is not comparable to the generality of sense, we consider, in particular, the personal pronoun *you*. First of all, *you* can have multiple referents, as we have already said; in fact, it can refer to all possible hearers of all possible speech acts of all possible worlds. This could lead us to think that all these possible referents are contextual instantiations of the semantic feature [+hearer]. However, we can be sure that *you* is not an expression with a general sense because a sentence like *It is not true that you are corrupt* is not synonymous with the sentence *It is not true that all possible hearers of all possible speech acts in all possible worlds are corrupt*. The truth-value of the first sentence is variable depending on who is the hearer each time it is uttered, but not that of the second, which, in a universe where not everyone is corrupt, is a simple contingency regardless of who hears it.

If context-sensitive expressions (Donaldson & Lepore 2012) are neither ambiguous nor underdetermined, then they must constitute a different type of indeterminate expressions that we define in the following terms:

(8) Definition of *context sensitivity*.

An expression is context-sensitive if (and only if) it has an unequivocal interpretation that must be fixed contextually.

Finally, we consider (1.d): *Paul is tall*. This expression contains the adjective *tall*, which denotes a vague predicate, as most adjectives do (Fara 2000, Kennedy 2019, Noguera-Clofent 2009). We understand that a predicate is vague when there are certain cases for which we cannot decide whether or not they satisfy it. For example, if a man is 2 meters tall, we can determine that he is tall, and if he is 1.50 meters tall, we can determine that he is not. However, if he is 1.77 meters tall, then we cannot determine whether he is tall or not. We could think that the origin of the vagueness is the lack of definition of natural languages predicates. If we want to avoid vagueness, then we simply have to define precisely the meaning of a predicate such as *tall* and stipulate that a man is tall if (and only if) he is, for example, 1.80 meters tall. Then, naturally, vagueness disappears. However, when we specify the meaning of an adjective