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## (C)OVERT MODALITY IN GENERIC SENTENCES

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### 1. Aim of the paper

This paper is about the modal interpretation of Indefinite Generic Sentences (ISs), illustrated in (1).

- (1) A lion has a mane

On the assumption that ISs involve a silent generic quantifier GEN, which is taken to be a modal operator, it has been argued (Krifka *et al.* 1995) that GEN can have different interpretations, corresponding to those of overt modalities in ISs sentences. In this view, (2-a) would be interpreted as in (2-b), and the silent operator GEN in (2-a) would have the deontic flavor of the overt modal *must* in (2-b). One of the aims of this paper is to show that GEN is not the silent counterpart of overt modality.

- (2) a. A lady is well behaved  
b. A lady must be well behaved

The second aim of the paper consists of providing a new modal analysis for ISs in which we reconsider the relations between facts and their categorization. To account for this relation, we use two parameters: worlds and ‘respects’.

The framework that we propose allows us to account for the fact that, contrary to what theoreticians have claimed, ISs are not analytic statements.

To state it briefly, the core argument in defense of the traditional view is the following. There are two distinct ways to obtain the generic reading of a sentence. The first is by directly making reference to a kind, as in (3), where the definite singular denotes the kind ‘lion’.

- (3) The lion has a mane

The second way is to use characterizing sentences, where the generic reading cannot be identified with a particular constituent, but rather belongs to the whole sentence. Characterizing sentences have been argued to be of

two sorts. In English, one distinguishes between indefinite singular generics (IS-sentences or ISs (4-a)) and bare plural sentences (BP-sentences or BPs (4-b)). In Romance languages, one can use ISs (5-a) or definite plural generics (DG-sentences or DGs (5-b)). Italian is used as representative of Romance languages<sup>1</sup>.

- (4) a. A madrigal is polyphonic  
b. Madrigals are polyphonic
- (5) a. Un madrigale è polifonico  
*A madrigal is polyphonic*  
b. I madrigali sono polifonici  
*'The' madrigals are polyphonic*

The current generalization about ISs is that they express only definitional properties, as illustrated in (4-a) and (5-a).

This explains why (6-a) and (7-a) are not acceptable: *popular* is not a definitional property of madrigals. BPs and DGs are acceptable with both definitional and non-definitional properties ((4-b)-(5-b) and (6-b)-(7-b)) (e.g., Lawler 1973, Dahl 1975, Burton- Roberts 1977).

- (6) a. \*A madrigal is popular  
b. Madrigals are popular
- (7) a. \*Un madrigale è popolare  
*A madrigal is popular*  
b. I madrigali sono popolari  
*'The' madrigals are popular*

We reconsider this generalization, argue that ISs are *synthetic a priori* statements and provide an analysis for this view.

Finally, the paper proposes a systematization of the recent, fruitful debate on ISs.

The paper is structured as follows. In Section 2, we provide new data to show that GEN is not the silent counterpart of overt modalities in ISs. In Section 3, I discuss previous accounts and provide some new observations. We present our analysis in Section 4 and derive the predictions from it in Section 5. Section 6 concludes the paper.

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<sup>1</sup> see Mari, Beyssade, Del Prete (in press) for a more extended discussion of Romance languages, taking into account both French and Italian. For French, specifically, see Carlier, 1989; Voegeleer and Tasmowski, 2005; Mari, 2008a,b).

## 2 GEN and overt modalities

### 2.1 Extensional and intensional interpretation of GEN

There are two contrasting views for the analysis of ISs, both of which use the silent quantifier GEN.

In the extensional approach, GEN means *always* and quantifies over situations (e.g., de Swart, 1991).<sup>2</sup> This view has been criticized based on a number of grounds, notably by Ferreira (2005). In addition to the shortcomings discussed by Ferreira, another difficulty that this approach faces consists of missing the explanation for the incompatibility of ISs with non-definitional properties, like *popular*. Assuming that ISs involve a silent quantifier *always* amounts to assuming that (6-a) would have to be interpreted as in (8). However, (8) is an acceptable sentence, in contrast to (6-a).

(8) A madrigal is always popular

In the modal approach, GEN is considered to be an intensional quantifier that quantifies over worlds. Our proposal is related to this second type of approach.<sup>3</sup> Semanticists who assume a modal approach agree with the key components of the analysis given in (9) and (10). In (9), GEN is an adverb of quantification (*à la* Lewis 1975) that binds any variable in its scope, and the indefinite provides a free variable (Heim, 1982) that gets bound by GEN (9). Translated into possible world semantics, (9) is further unpacked in (10) (see Eckart 2000 for details).

(9) GEN  $x$  [P(x)] [Q(x)]

(10)  $\forall w' \in MB(w), x [P(x, w') \rightarrow Q(x, w')]$

(10) says that in all worlds of the modal base under consideration, if something is a madrigal, it is also polyphonic. (10) has the form of a conditional and is meant to express the non-accidental nature of the relation between  $p$  and  $q$ : if an entity is a  $p$  entity, it is also a  $q$  entity.

As it stands, this analysis also faces some empirical shortcomings.

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<sup>2</sup> See criticism by Ferreira, 2005.

<sup>3</sup> For discussion about GEN meaning *always*, see Ferreira, 2004 and Mari, Beyssade and Del Prete, in press.

## 2.2 Empirical questions: the relation between silent and overt modality in ISs

The question that immediately arises concerns the relation between GEN (as a modal quantifier) and overt modalities. Krifka *et al.* (1995) explain that the choice of the modal base is determined by the corresponding sentence with an overt modality and that there is, for example, a correspondence between (11-a)-(12-a) and (11-b)-(12-b).

- (11) a. A gentleman opens the door for ladies  
b. A turtle lives for a long time span
- (12) a. A gentleman must open the door for ladies  
b. A turtle can live a long time span

This analysis has various shortcomings, some of which were already noted in Krifka *et al.* (*ibid.*).

1. First, ISs with covert modality are not always synonymous with ISs with overt modality, as the oddness of (13-b) shows. In contrast, (13-a) is perfectly fine.

- (13) a. A boat floats  
b. ??A boat can float

2. A second shortcoming pertains to (14). Krifka *et al.* (*ibid.*, 56) writes: "... This sentence evokes a kind of "realistic" modality in which the laws of biology hold. However, the worlds in which no turtle ever dies a premature death are biologically highly abnormal...".

- (14) A turtle lives a long time span

3. Another potential problem for assuming that GEN corresponds to a covert modality of any type is that one cannot rule out 'accidental'<sup>4</sup> properties (15). It is not trivial to rule out the possibility that in most similar worlds, it is true that rap songs are popular.

- (15) \*A rap song is popular

4. Although, as has often been observed, ISs are preferred when 'definitional' properties are used, they are unproblematic with non-definitional properties when modality is overtly present. The examples are from Krifka (in press).

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<sup>4</sup> We use quotes because the term is, for the time being, undefined, and one of the aims of this paper is to explain what the notion of accidentality amounts to in relation with the interpretation of ISs, cf. *infra*.

- (16) a. A trout can be caught by many different methods  
b. A poodle should be clipped by a professional groomer

In languages such as French, overt modality can rescue sentences that are otherwise odd (see Carlier, 1989; Dobrovie-Sorin and Mari, 2007a,b; Mari, 2008a,b).<sup>5</sup>

- (17) a. ??Un indien monte à cheval  
*An Indian rides horses*  
b. Un indien sait monter à cheval  
*An Indian is able to ride horses*

If covert modality corresponding to overt modality were in fact present, the sentence should not be odd.

The following question then arises: if IS-statements cannot be reduced to the corresponding statements with overt modality, then what kind of modal reasoning do they involve?

Recent debate on ISs has provided various answers to this question. The starting assumption in (10) reveals that there is a sort of causal reasoning involved in IS sentences, and this reasoning takes the form of a conditional. Theories divide on their views about the type of causal reasoning involved, and they enrich the analysis in (10) in different ways.

### 2.3 One more piece of data

Before discussing previous accounts, we introduce a final piece of data, which, *prima facie*, seems to cast doubt on the current generalization, according to which ISs are compatible only with definitional properties.

It has been repeatedly observed that this is not a correct generalization and that the choice of definitional properties is a *preference* rather than a requirement associated with ISs. ISs that do not involve definitional properties are illustrated in (18) (see Putnam 1975; Cohen 2001; Corblin in press; Krifka in press)<sup>6</sup>.

- (18) a. A refrigerator costs 1000 dollars  
b. A football player earns a lot of money  
c. A researcher earns little money

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<sup>5</sup> Prosody is another way to rescue some sentences, see Mari, 2008a, b.

<sup>6</sup> These are all cases in which there is no overt modality or temporal adverb because overt modalities and temporal adverbs *always* allow 'accidental' properties, as in *A rap is always popular; A rap can be popular*.

The example below also illustrates this point. Suppose that City Hall in New York has decided that restaurants must close one day a week. In particular, it has been decided that Italian restaurants close on Tuesdays. The following is an acceptable ISs sentence.

(19) An Italian restaurant is closed on Tuesday

With these cases in mind, we now turn to previous accounts. As we cannot do justice to the huge literature on this topic, we will not discuss proposals that have not raised the question of what the relation between GEN and overt modalities is. To introduce our own account, we focus instead on theories that have addressed this question and, more generally, that have discussed the status of modal representations in relation to genericity.

### 3 Theories and data: discussion

There are various ways in which (10) has been amended and enriched. Here, we identify three types of modal approaches: (1) dispositional accounts, (2) normal and ideal worlds accounts, and (2) rules and regulation approaches.

#### 3.1 ISs as dispositional statements

Following Dahl (1975), Menendez-Benito (2005, in press) argues that generics like (20) are dispositional statements and proposes the following two diagnostics to identify them. The first is the ‘can’ paraphrase in (21-a). The second is incompatibility with free choice items (21-b). Generic statements are argued to involve a covert *can* (rather than a covert *must* as assumed in (10)) because *must* is claimed to be incompatible with free choice items (21-b)).<sup>7</sup>

(20) This printer prints any document

- (21) a. This printer can print any document  
b. \*This printer must print any document

Menendez-Benito (*ibid.*) claims that the specificity of the covert *can* consists of being restricted to ‘inner dispositions’. Moreover, the covert *can* does not require that the property denoted by the embedded infinitive be instantiated in the actual world. In (22), if John is a human, then there is the inference that he has already played the trombone at some point in the past; if John is a robot, then the inference is that he has not necessarily played the

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<sup>7</sup> Note that Menendez-Benito (in press) does not focus on ISs sentences. However, Menendez-Benito (*ibid.*) seems to make a general claim, which seems to target all types of characterizing sentences.

trombone before. The covert *can* is claimed to be present in the latter case only because humans do not have ‘inner dispositions’ for playing the trombone.

(22) John plays the trombone

The main advantage of the theory is that (23-a) and (23-b) are not predicted to be synonymous because overt *can* is not required to be restricted to ‘inner dispositions’. The unacceptability of (23-b) is not explained, but the sentence is also not predicted to be felicitous.

- (23) a. A boat floats  
b. ??A boat can float

This account faces some shortcomings. The first pertains to one of the diagnostic tests. It has been shown (see Giannakidou, 2011) that the universal modal *must* is compatible with free choice items, see (24). Corpus examples corroborate the description.

(24) Scenario: mistake task-force: You must find any mistakes and report them right away

- (25) a. To activate this quest *you must find any* one of them. To complete it, you must find them all and place them on the Altar of Dumat, on the Tower's ([www.bonefishgamer.com](http://www.bonefishgamer.com) accessed March 11, 2012)  
b. In order to get your script uploaded, *you must find any* directory with 777 permissions on it ([hossamozein.blogspot.com/.../how-to-create-your...](http://hossamozein.blogspot.com/.../how-to-create-your...))

The second is that it does not capture the proper cases. Imagine a scenario in which my three- weeks- old son is about to smile, but has not smiled yet. Definitely, he certainly has the ‘inner disposition’ to smile (unless it turns out that there is some abnormality, which would prevent this). Still, uttering *my son smiles* implies that he has already smiled.

More generally, when extended to IS sentences (though it is not primarily designed for this), the account can capture only a subset of the various types of ISs. In particular, it seems to fall short with cases such as those in (18). In (18-c), for instance, there is no ‘inner disposition’ for a researcher to earn little money. Note that this is also true of a particular researcher in *this researcher earns little money* (e.g., a French researcher).<sup>8</sup>

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<sup>8</sup> This shortcoming is also seen in Greenberg’s (2002) account of ISs as involving an ‘in virtue of’ property. For Greenberg, the sentence *A boy does not cry* expresses a causal relation between the property ‘being a boy’ and the property ‘not crying’, which involves a third property, namely ‘being tough’. Again, for



A counter-argument to this objection might be that (18-c) is not relevant because the paraphrase ‘A researcher can earn little money’ does not lead to the intended interpretation of the sentence. Nonetheless, even in cases that pass the *can*-diagnostic, as in (26), there is not necessarily an ‘inner disposition’ at stake. (26) is perfectly compatible with the interpretation according to which a Chinese person can learn any sign because he is obliged to work hard, not because s/he has an inner disposition to do so.

- (26) a. A Chinese person learns any sign  
b. A Chinese person can learn any sign

### 3.2 Normal and ideal worlds; normal and ideal objects

In an influential paper, Pelletier and Asher (1997) argue that generic sentences are about ‘normal’ objects. These ‘normal objects’ are to be found in ‘normal worlds’<sup>9</sup>. The ‘normal world approach’ elaborates on the ordering source in (10) and restricts generic sentences to circumstantial modal bases. The correspondence between different flavors of GEN and ISs with an overt modality of different types does not arise. Generic sentences are claimed to be about special types of objects and worlds: normal ones.

The main advantage of this theory is that it allows one to explain the existence of exceptions by appealing to ‘abnormality conditions’. It is often noted that generic statements tolerate exceptions very easily. In principle, turtles live a long time, but in fact, most of them die young because of predators. As for the old turtle case, the normal world approach explains that turtles die old only in worlds that are more normal than ours.

This ‘normality theory’ has been commented upon in a large number of works. The obvious question is the following: what is ‘normal’ for a turtle? What is ‘normal’ for an Italian restaurant? (Is what is normal not to be closed on Tuesdays?) We refer the reader to Eckardt 2000 and Cohen 2002 for extensive criticism.

A variant of this view is the ‘ideal’ object view (Eckart, 2000). According to this approach, the turtle who dies old is an ‘ideal’ turtle. However, here again, what is ideal for a turtle? Is an Italian restaurant that does not open on Tuesdays an ideal Italian restaurant?

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(18-c), there seems to be no ‘in virtue of’ property that explains why a researcher should earn little money. We will not discuss Greeneberg’s account any further here because it has already been discussed in a number of works (see recently Mari, 2008a,b; Krifka, forthcoming), and because it does not raise the question of what the relation between overt and covert modalities is in ISs.

<sup>9</sup> For an extensive discussion of this type of approach, see Cohen (2002) and Eckart (2000).

More importantly, there is a general problem for ‘normality’ and ‘ideal object’ based approaches, which was pointed out by Eckart herself, whom I quote here (Eckart, 2000 : 241):

“One might ask how speakers can acquire this kind of sophisticated knowledge about counterfactual worlds. All they can look at is the real world around them. Generic beliefs should be the result of [speakers’] desire to understand and characterize the world immediately surrounding them’ (Pelletier & Asher 1997: 1129), yet the ‘normal case in the world immediately surrounding one’ seems to be deeply hidden in Best World Theories.”

This problem is not solved in the Ideal World theories because the same criticism applies: how can we access ‘ideal’ objects?

Taking the methodological question raised here seriously into account, one of the goals of an intensional theory of ISs is to explain how facts in the actual world cope with IS generalizations. These facts must be extrapolated from a small number of occurrences (see Cimprian, Brandone, Gelman, 2010) and do not correspond with the vast majority of facts in the actual world. In the realm of genericity, exceptions seem to be more prominent than non-exceptional cases.

### **3.3 Rule based approaches**

#### **3.3.1 The foundations**

A third type of intensional approach is proposed in Burton-Roberts (1977). This type of approach denies altogether that ISs sentences are about facts of the actual world. They are instead statements that prescribe how the actual world must be. Burton-Roberts thus claims that IS-sentences express rules. (27) is the famous example of a gentleman opening the door for ladies.

(27) A gentleman opens the door for ladies

The author claims that: "... if Emile does not as a rule open doors for ladies, his mother could utter [(26)] and thereby successfully imply that Emile was not being a gentleman...". This view denies altogether that there might be exceptions to the rules. If a  $p$  entity does not satisfy  $q$ , then it is not a  $p$  entity.

As it stands, this view seems to ensure little empirical coverage. Let us first consider the Italian restaurant case from (19). If one of the Italian restaurants breaks the law and stays open on Tuesday, one will nonetheless call it an ‘Italian’ restaurant, and it is, in fact, still an Italian restaurant.

The same problem arises in the case of the old turtle. A turtle that dies young is still a turtle.

It seems that meaning and use are collapsed into one notion in this type of approach. With the assumption that ISs sentences express rules, one should explain what a rule is independently of the claim that ISs have a prescriptive use.

### 3.3.2 Cohen 2001

Cohen (2001) also develops a 'rule and regulation view' and argues that ISs arethetic judgments about rules (Kuroda, 1973).

Rules are primitives in Cohen's account (inspired from the Lewisian semantics for imperatives, Lewis, 1981) and the analysis for (27) is as in (28). '! ' signifies that the rule is in effect.

(28) !(gentleman(x) → opens – door – for – ladies(x))

Rules come in different sorts: there are biological rules, physical rules and so on. Advantageously, this account captures the fact that all types of IS statements are good candidates for IS sentences (and not only for definitional ones) because any type of rule can be asserted. We are sympathetic with this view, but Cohen's theory has some problems and leaves some open questions.

1. The first problem in Cohen's theory pertains to the analysis of indefinites. Cohen argues that by being non-specific, the indefinite in generic sentences does not provide a restriction for the quantifier GEN (and thus that ISs are not quantificational statements). This claim is problematic. Although non-specific, indefinite singular generics seem to provide an entity that the generalization is about. The material that they provide goes into the restriction of GEN. Another way to put this is to say that generic sentences are categorical judgments (i.e., an entity is available, of which the property denoted by the predicate is predicated). If they were thetic judgments, negation of the verb would result in negation of the existence of the entity in the subject position, as illustrated in (29).

- (29) a. A man entered  
b. A man did not enter (entailment: 'there is no man')

In generic sentences this effect is not obtained, as shown in (30).

- (30) a. A cat is intelligent  
b. A cat is not intelligent (it is not the case that there is no cat)

Contrary to Cohen (*ibid.*) and in line with Krifka *et al.* (1995), we will assume that there is universal quantification for the indefinite.

2. Second, in addition, denying that the indefinite provides an entity that the generalization is about, Cohen (*ibid.*) argues that ISs arethetic judgments about rules. However, the test of negation again shows that with negation, one does not deny the existence of the rule, but rather expresses a prohibition. This is shown in (30).

(31) A girl does not laugh too loud

3. Third, if all types of modal bases are allowed, why is it that ISs with overt modality have a larger distribution than those with covert modality?

- (32) a. ??A trout is caught in different manners  
b. A trout can be caught in different manners

4. Fourth, why are definitional properties preferred with ISs?

5. Finally, what is the relation between facts and rules? Cohen (*ibid.*) states that a rule is true if it is in effect. The old turtle case in (14) is problematic within this framework. The rule that 'a turtle lives a long time span' is asserted and is in effect in our world. According to the theory, it is thus true in our world. However, it seems to be false because most turtles die old.

In conclusion, although the rule based approach, which takes into consideration the full variety of ISs, might be on the right track, it suffers from not clearly spelling out the relation between facts and rules.

#### **4 Proposal: worlds and respects**

The discussion in the previous section leads us to identify a number of desiderata that a theory of ISs should satisfy. First, the variety of sentences must be accounted for, such that definitional statements are preferred but are not mandatory (see (18) and (19)). Second and related to the first desideratum, we must explain why ISs with overt modality have a wider distribution (see e.g., (16-a)). Third, one must make clear what the relation between facts and rules is. Fourth, one should avoid going into accessible worlds, on the assumption that ISs are about entities that we observe in the actual world. Finally, the account should provide an explanation as to why generalizations are accepted as felicitous, even in cases in which only a few individuals fall under the scope of the generalization.

##### **4.1 Points of view**

Mari (2008a) proposes to dissect the notion of common ground into that of world and *respects* (after Ross, 1997; Attardi and Simi, 1995; Jayez and Masson, 2006). The aim is to show that we are talking about turtles in our

world (i.e., not ‘normal’ or ‘ideal’ objects) and also to show that the generalization holds under a certain respect. Here we informally introduce the notion of respect, and provide a formal analysis in section 4.2.

To a first approximation, respects are amenable to contextual restrictions. The data that Mari (*ibid.*) uses to introduce the notion of respect come from French.

In French it has been observed that indefinite singular sentences are odd, unless some restriction is provided.

- (33) a. ??Un chien mange des croquettes  
*A dog eats croquettes*  
b. En Autriche, un chien mange des croquettes  
*In Austria, a dog eats croquettes*

Italian speakers also prefer generic indefinite sentences when an overt restrictor is present<sup>10</sup>.

- (34) a. (It.) ??Un cane mangia crocchette  
b. (It.) In Austria, un cane mangia crocchette

Respects are more general than contextual restrictions, though, and informally they can be compared to abstract spaces (see Charolles, 1997). The laws of biology, legality, and points of view related to particular individuals are mental, social spaces that are governed by laws. A classification of actual entities into categories is also an abstract space. Examples of abstract spaces are given in (35). Abstract spaces are generally introduced by prepositional phrases, which are often left dislocated.

- (35) a. D’après les habitudes de ce pays, un chien mange des croquettes  
*According to the habits of this country, a dog eats croquettes*  
b. D’après moi, un chien mange des croquettes  
*As far as I know, a dog eats croquettes*

The same type of data (left dislocated prepositional phrases) have been used in the literature related to modality to argue that the evaluation of the modal is relative to the modal basis that is introduced by the phrase (e.g. Kratzer, 1991).

- (36) D’après les lois de ce pays, tu dois aller à l’école

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<sup>10</sup> In both French and Italian, there are other means to improve ISs. As extensively discussed in Mari (2008a), these improve when a contrastive prosody is used, or when an overt alternative is proposed. We do not discuss prosody and alternatives here, as this is the topic of Mari (2008b).

*According to the laws of this country, you must go to school*

Sentence (36) is generally analyzed (see Kratzer, *ibid.* and subsequent literature) as meaning that in all worlds in which the laws of this country hold, you go to school. The relation between spaces and modal bases will be clarified in the next section.

Mari (2008a) uses two indices: a respect index  $i$  and a possible world index  $w$ , i.e., a pair  $\langle i, w \rangle$ . Worlds are considered to belong to the circumstantial modal basis and correspond to a factual state of the world. For any  $i, w, w'$  and expression  $\alpha$ , if  $[\alpha]^{i,w} \neq [\alpha]^{i,w'}$ , then there is some factual difference between  $\langle i, w \rangle$  and  $\langle i, w' \rangle$ . Furthermore, for any  $i, i', w$  and expression  $\alpha$ , if  $[\alpha]^{i,w} \neq [\alpha]^{i',w}$ , then  $\langle i, w \rangle$  and  $\langle i', w \rangle$  differ in the way that facts are interpreted.

The notion of respect can be extended to languages in which there is no need to use overt prepositional phrases introducing the respect. For English, such a notion is argued to be at play on the basis of the empirical predictions it allows; this will be considered in section 5. The question of why respects need to be overt in some but not all languages is outside the scope of this paper.

In order to get there, an analysis for respects needs to be provided, which is missing in Mari (2008a). Before providing such analysis, we consider here a criticism that has been leveled against Mari's proposal, in Mari (2008b).

#### **4.2 A criticism: Krifka, forthcoming**

In Mari 2008a there is no analysis of respects. In Mari 2008b, the respect index  $i$  is analyzed as a judge parameter. Krifka (in press) criticizes Mari 2008b and proposes an account very much in line with the tradition going back to Lawler (1973), Burton-Roberts (1977), and Mari (2008b). Krifka claims that IS-sentences are 'definitional', i.e., they provide definitions for *words*. Krifka also argues that generic sentences are sensitive to two parameters: worlds and *interpretations of words*.

According to Krifka (forthcoming), "if a proposition is accepted definitionally at a common ground  $\langle I, W \rangle$ , then the set of possible worlds stays the same, but only such interpretations  $i$  remain admissible for which the proposition is true in all possible worlds of the common ground."

This view explains why ISs use a singular indefinite, as definitions apply to singular entities.

Krifka (*ibid.*) tries to squeeze into the definitional account the whole variety of generic sentences, and here is where problems seem to arise. Krifka gives the following example in (32), saying, "... we refer to a set of entities defined by a natural kind and a property, in this shop. If the shop

manager has determined that the price of a pomegranate apple is 49 cents, then this is a property that each pomegranate that is offered in this shop has by definition, based on the decision of the shop manager. This price can easily change the next day, but then one definition would be superseded by another one...."

(37) A pomegranate in this shop costs 49 cents

It seems that (32) is not a definition of what a pomegranate is. No matter what its price may be, a pomegranate is a fruit with such and such characteristics. The owner of the shop is not establishing a convention for the use of the word pomegranate, but rather a rule (i.e., how much to pay) for what is commonly known as a pomegranate. Assuming that what the manager of the shop is doing is defining the meaning of 'pomegranate' will result in un-communicability. Two owners fixing different prices for their pomegranates would not be able to talk about the same type of entity. Yet they can, otherwise they cannot compare prices.

- (38) a. In my shop a pomegranate costs 1 dollar  
b. In my shop a pomegranate costs 5 cents. I am going to have more customers!

The same observation extends to the case of the Italian restaurant in (19). The meaning of the phrase 'Italian restaurant' is not fixed by the fact that they are closed on Tuesdays. An Italian restaurant is a restaurant that serves pizza, pasta and is generally owned by Italian people.<sup>11</sup>

While Krifka's view of ISs is not tenable, Mari's (2008b) proposal that respects are to be treated as judges is not tenable either (as arguably shown in Krifka (*ibid.*), as in most of the sentences discussed above in the paper there are no judges points of view at issue.

We thus return to the initial intuition in Mari (2008a) that there are 'respects' at stake, and provide an analysis for the informal account in Mari (2008a).

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<sup>11</sup> This example is also problematic for accounts that claim there is a causal relation between the NP modifier 'Italian' and the property denoted by the VP (e.g. Mari, 2008a) because there is no causal relation between being an Italian restaurant and being closed on Tuesdays.

### 4.3 An analysis for respects

#### 4.3.1 Respects as subject matters

Taking into consideration Krifka's criticism related to the treatment of  $i$  as a judge parameter, we build here on the notion of *respect* that we now define.

As in Mari 2008a, we maintain the idea that an expression has varying truth-conditional values, according to whether it is evaluated factually or respect-wise.

Our definition of respect is amenable to that of 'subject matter' of Lewis (1983).

We can think of a subject matter, sometimes, as a part of the world: the 17th Century is a subject matter, and also a part of this world. Or better, we can think of a subject matter as a part of the world *in intension*: a function which picks out, for any given world, the appropriate part- as it might be, that world's 17th Century. (If for some reason the world had no 17th Century, the function would be undefined.) We can say that two worlds are exactly alike with respect to a given subject matter. For instance two worlds are alike with respect to the 17th Century iff their 17th Centuries are exact intrinsic duplicates (or if neither one has a 17th Century).

This being exactly alike is an equivalence relation. So instead of thinking of a subject matter as a part of the world in intension, we can think of it instead as the equivalence relation. This seems a little artificial. But in return it is more general, because some subject matters- for instance, demography- do not seem to correspond to parts of the world. Or if they do, it is because some contentious theory of "abstract" parts of the world is true. (Lewis, 1983 :161).

We consider a respect to be a subject matter in the sense of Lewis. With regard to the implementation, we technically treat it as a set of propositions, or, alternatively, a set of sets of possible worlds. If  $p$  is a proposition that is in the set of relevant propositions, it defines a set of possible worlds, which is a subset of the modal basis. Our definition is along the lines of von Stechow and Gillies (2008) theory of Kernels, also inspired by Lewis' notion of subject matter.

(39) *Respect*. A respect  $i$  is a set of propositions. If  $p \in i$ , then  $p \subset W$ .

What about the actual world? It is certainly the case that  $w \in \bigcap i$ . However, it is not guaranteed that  $w \in i$ .



When one thus considers a proposition  $p$ , it can be the case that this proposition is in  $i$  but it is not in  $w$ .

Let us return to sentence (36). That you go to school is true according to the respect  $i$ , which is the set of propositions that constitute the laws of the country, but it might not be true in the actual world.

### 4.3.2 Analysis

We assume that the modal base of ISs generic sentences is circumstantial. Furthermore, we choose worlds in which there are turtles and restaurants that are just like the ones we are acquainted with.

Let us call a pair  $m = \langle W, I \rangle$  a modal viewpoint, where  $W$  is a set of worlds and  $I$  a set of respects. We assume that the only modal base relevant for ISs is the *circumstantial* modal base. Following the traditional assumption that ISs are like conditionals of the form  $p \rightarrow q$ , an IS sentence is true under rule (34).

(40)  $p \rightarrow q$  is true in  $w$  under a modal viewpoint  $m$  iff  $\exists i \in I$  s.t. if  $p$  is true in  $w$ , then  $p \rightarrow q$  is true in  $\langle w, i \rangle$ .

Unpacking  $p$  and  $q$ , the following truth conditions are obtained for an IS sentence.

(41)  $\forall w, x \exists i [p(x, w) \rightarrow q(w, i, x)]$

Let us illustrate the analysis with the case of the old turtle in (14). For all  $x$  and for all  $w$  in the modal basis (including  $w$ ), if  $x$  is a turtle in world  $w$ , then it has the property  $q$  in  $w$  under the respect  $i$ . A turtle is considered to die old only under a certain respect (the biological rules).

## 5 Satisfying the desiderata

### 5.1 Facts and rules

Our discussion of Cohen's (2001) approach has shown that the major flaw of a rules and regulations approach is that it assumes that a rule is true so long as it is in effect. However, in these approaches, rules are disconnected from facts. That a turtle dies old is a rule that is in effect according to the laws of biology, but the facts on the ground are not always in accord with the rule. The rule is false in the actual world, which is taken to be a member of a circumstantial modal base.

However, the interpretation of ISs does not require that facts and facts under respect obey the same laws. Factually, a turtle usually dies young (because of predators). Respect-wise (i.e., the laws of biology), a turtle dies

old. What facts and respects are about is the same turtle in the actual world. The rules of biology hold for an actual turtle, and not only for a turtle that exists in the worlds where just the laws of biology hold, as such laws hold in the actual world. Still the laws hold in the actual world and, in the actual world, turtles die prematurely.

## 5.2 Explaining exceptions

Our view of generic statements as parametric to both worlds and respects explains the compatibility of generalizations with a large number of so-called exceptions. Looking again at the example from (14), the analysis here states that turtles that die young are *not* exceptions. Respect-wise, according to the laws of biology, turtles die old. As a matter of fact, the same turtles die young. The discrepancy between facts and respects shows that the same entity displays some non-uniform behavior. According to facts (and the way the actual world works), most turtles die because of predators; according to the respect (the laws of biology), turtles die old. Crucially, these laws (that of the actual ecosystem and that of biology) hold for the same entity, i.e., an individual turtle. Consequently, the turtle that dies young is not an 'exception' to the generalization that turtles die old; rather, it is a turtle that biology-wise dies old and fact-wise dies young.

Moreover, our account does not predict that a turtle that dies young is not a turtle (as is the case with Burton-Robert's approach). A turtle is an animal that obeys the laws of biology as far as its categorization as an animal that dies old is concerned, but it is an animal that does not *factually* obey the laws of biology because as a matter of fact, it dies young.

## 5.3 Avoiding to step into non-actual worlds

In our analysis, all the worlds quantified over by the universal quantifier belong to the circumstantial modal basis of  $w$  and are equally ordered. In fact, there is no ordering relation among them.

As Eckardt (2000) points out, a normal world-based account of generic statements faces the problem of explaining why generalizations about facts of our world should hold in non-actual worlds. The answer in normal based accounts is that non-actual worlds are 'better' or 'more normal' than our actual world.

The analysis here is that the conditional as expressed by ISs (I am by no means proposing an analysis for conditionals *tout court*), states that if  $p$  is true in our world, to see what the consequences are, you do not go into a more normal accessible world – instead, you must adopt a respect. The consequences of  $p$  change according to the respect that one chooses and not according to the worlds one has stepped into.

## 5.4 Accounting for the variety of sentences

### 5.4.1 The refrigerator, the researchers, and Italian restaurants.

The sentences in (18) and (19) are true according to a respect. The respect that is selected for grounding the generalization can be relativized to a certain context. For example, a refrigerator costs 1000 Euros in Europe, or a researcher earns little money in France according to the scale of salaries of people with a diploma.

This observation seems to question the status of the universal quantification induced by the indefinite. As in Krifka *et al.* (1995) we assume that the indefinite introduces a variable that gets bound by a universal quantifier. As a consequence, all entities that satisfy  $p$  must also be  $q$  entities. Nonetheless, the account we propose restricts the quantification to specific domains. This restriction is induced by the choice of the respect according to which the generalization holds.

### 5.4.2 Why are definitional generics preferred?

The account we are proposing predicts that generalizations can be restricted to specific spatio-temporal domains or to particular contexts. They can also be relativized to particular judges that are the sources of a categorization. (42) is a true generalization for preschool children, but it is a false one for biologists. In this case, the set of propositions that constitutes the respect is the set of propositions that children/biologists consider to be true.

(42) A bird flies

In the absence of such contextual restrictions, the generalization holds by default of all the  $p$  entities in the actual world. In this case, well-established categorizations are preferred. Well-established categorizations have turned into definitions, and thus, in the absence of a context that allows categorizing entities in new ways, so called 'definitional' properties are preferred<sup>12</sup>.

### 5.4.3 Why are facts not a good source of ISs categorizations?

As a corollary, it follows that facts are not a good source for respects, as in (43-a) and (44-a). There is no respect that establishes that the property

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<sup>12</sup> On the relation between concepts, definitions and categorizations, see Prasada, 2010; Carlson, 2010.

*popular* can be attributed to an entity; rather, this attribution rests on *experience*.

Moreover, observing that one rap song is popular does not suffice for determining that all rap songs are popular.

Note, in this respect, that *singularity* plays a role in ISs, as opposed to *plurality* in BPs and DGs in English and Romance, respectively. This is illustrated by the following contrasts, noted at the beginning of the paper:

- (43) a. \*A rap is popular  
b. Raps are popular
- (44) a. \*Un rap è popolare  
*A rap is popular*  
b. I rap sono popolari  
*'The' raps are popular*

ISs generalizations are based on consideration of singular exemplars, which are *arbitrary p* instances, and this is what is expressed by universal quantification in the analysis that we have proposed (see Prasada 2010). As universal quantification is to be used, one must guarantee that the generalization holds of an arbitrary *p* instance. The popularity of a specific rap song cannot guarantee the popularity of any rap song. When a respect is chosen and a new categorization of *p* entities as *q* entities is provided, that categorization applies to all *p* entities.

BPs and DGs in English and Romance languages are instead about a *plurality* of entities. According to Farkas and de Swart's proposal (Farkas and de Swart, 2007), BPs generalizations are true of all the entities in the plurality denoted by the BPs.

Induction is an acceptable source for generalizations expressed by bare plurals and plural definites as the property *q* is verified by a plurality of *p* entities. Verification for a plurality of entities grounds statistical generalizations, which are supported by BPs and DGs.

As noted above, though, ISs are compatible with non-definitional properties (see section 2.3). Here are some more examples.

- (45) a. A Norwegian student wears green socks  
b. An Italian shoe is very prestigious

The question then arises of what exactly 'accidental' means and in what case an 'accidental' property can be used with indefinite singular generics.

#### 5.4.4 On the notion of 'accidentality' with respect to ISs

This discussion brings us back to the well-known question of the *incompatibility of a generic reading of indefinites with stage-level predicates* (e.g., Diesing 1992; Kratzer 1995; Chierchia 1995; McNally 1998; Jäger 2001). One possible answer is that *popular* is simply relative to a spatio-temporal location, and this blocks the generic reading of the indefinite, as explained in the cited works.

This answer is not entirely satisfactory. As illustrated in (18), and as mentioned above, a fridge costs 1000 Euros *in Europe*. The example in (18) shows that the property is always relativized to a spatio-temporal location.

The question that remains is the following: when are 'accidental' properties accepted?

We have claimed that in (18-c) the property *q* is 'accidental'. By 'accident', I mean that there is nothing intrinsic in being, for example, a researcher such that it results in earning little money. ISs teach us something and add new information to that of the predicate 'researcher'. Similarly, in the Italian restaurant case in (19), there is nothing intrinsic in being an Italian restaurant that explains its being closed on Tuesdays. Thus, the generalization introduces a new property of Italian restaurants.

When is this type of generalization accepted? The answer, which we have suggested, is only when there is a 'respect' that justifies the attribution of property *q* to *p* entities. For (18-c), these are the scales of salaries; for the Italian restaurant, it is the decision of City Hall, and so on.

The question then arises as to what 'accidentality' means when ISs are concerned. Here, I propose to establish a difference between the *nature* of a property and the *method* of attribution of a property. 'Being closed on Wednesday' is 'accidental' for a restaurant because it is not 'natural' for, or 'definitional' of, a restaurant (contra Krifka, forthcoming). Consequently, ISs are not necessarily associated with non-accidental properties.

However, the *attribution* of a property is not 'by accident'. An entity is not characterized as *q* in virtue of mere circumstances, but rather in virtue of a decision, or a law.

Coming back to the property *popular*, we can now state that the reason why it is incompatible with ISs is not related to being relativized to a spatio-temporal location because relativization to a spatio-temporal location of a property is compatible with ISs (and the generic interpretation of indefinites). Instead, it is the 'method' of attribution of the property: the attribution of the property is dependent on experience, and thus it is incompatible with indefinite generic statements. Experience cannot guarantee that arbitrary instances satisfy the property because it can only guarantee a statistical generalization.

In contrast, when an *experience*-based property is used, the indefinite has an existential reading because the experience on which the attribution of the property is based must be *about a particular* entity in the actual world.

The analysis here leads us to the conclusion that ISs sentences express *synthetic a priori judgments*. The denotation of the predicate need not be included in the denotation of the subject, as it is in analytic statements. Instead, ISs classify an entity *p* as satisfying a property *q*. However, the attribution of the property is independent of experience (as the respect is independent from facts).

### 5.5 Explaining the wider distribution of ISs with overt modalities

The wider distribution of ISs with overt modalities over ISs without overt modalities is explained in the following way.

As for the possibility modal *can*, it is important to note the basic fact that 'it is possible that *q*' does not entail *q*. In *a trout can be caught by many different methods*, it does not follow that a trout is caught by many different methods in the actual world. As a consequence, the generalization holds of possible worlds and not (necessarily) of the actual world (as in normal worlds based accounts). It follows that almost any property can be used with overt modality in ISs because anything is, in principle, possible in non-actual worlds (assuming the relevant accessibility relation among worlds of the modal base, in this case, the circumstantial modal base).

As for the modal *must*, one could argue that (46) holds and that the reasoning that applies to the possibility modal does not apply to the necessity modal.

(46) NEC  $q \rightarrow q$

This observation is not entirely correct. When *must* is used in ISs, it has a deontic interpretation. Deontic *must* does not obey the axiom in (46). For example, (47) is felicitous in a context in which the addressee does not go to school (see Mari and Schweitzer, 2011; pace Ninan, 2005).

(47) You must go to school!

As a consequence, as *q* is not necessarily true in the actual world, it follows that any property can be a *q* property in ISs with an overt deontic modal *must* (again, assuming that the same laws hold in the actual and the relevant accessible worlds).

## 6 Conclusion

This paper has provided a new analysis for ISs that has taken into consideration facts and their categorization. We have argued that ISs express statements about entities in the actual world that hold under a certain respect. We have provided a model of respects, elaborating on a classical Kratzerian framework, which has shed new light on a number of questions that had previously remained unanswered within the 'rules and regulation' type of approaches that I have adopted here.

The main result showed that ISs are not analytic or definitional statements, but rather express *synthetic a priori* judgments. We have thus covered a number of unexplained cases.

This view allows us to provide a pragmatic explanation for the incompatibility of generic indefinites with stage-level properties; this explanation does not use spatio-temporal restrictions on predicates, nor event arguments. It rather explains that experience based predicates must have an object of experience and thus existence of the object is implied.

Having shown that GEN is not the covert counterpart of overt modality in ISs, we considered the case of overt modalities in ISs and explained why they have a wider distribution than ISs without overt modality.

Finally, by appealing to a plural feature along the lines of Farkas and de Swart (2007), we have proposed a new explanation for why bare plurals and definite plural generics, in English and Romance, respectively, are compatible with experience-based properties.

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