Reference and Cognitive Status: Scalar Inference and Typology

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1. Introduction

The term 'information structure' has been used in two distinct, and logically independent senses in the literature, which we refer to as 'relational givenness/newness' and 'referential givenness/newness' (see Gundel 1988, 1999, 2012). 'Relational givenness/newness' describes a relation between two complementary parts of a single level of representation–syntactic, semantic, or pragmatic, where the first part of the pair is informationally given in relation to the second and the second part is informationally new in relation to the first. Relational givenness/newness 'reflects how the informational content of an event or state of affairs expressed by a sentence is represented and how its truth value is to be assessed' (Gundel and Fretheim 2004). Examples include notions like psychological subject and predicate (Paul 1880), logical subject and predicate (Chao 1968), presupposition and focus (Chomsky 1971, Jackendoff 1972), topic-comment (Gundel 1974), theme-rheme (Vallduvi (1992), topic-predicate (Erteschik-Shir 1997), topic-focus (Lambrecht 1994, van Valin 2004, Gundel 2012), and Question Under Discussion (QUD) (Roberts 1996) inter alia.

Referential givenness/newness, on the other hand, describes a relation between the intended interpretation/referent of a linguistic expression and its informational status in the speaker/hearer's mind, the discourse (model), some real or possible world, etc. Examples include existential presupposition (Strawson 1964b) and concepts such as salience, activation, familiarity, identifiability, specificity, etc. (Prince 1981, Ariel 1990, Gundel, Hedberg and Zacharski 1993, Chafe 1994 inter alia). In this paper, we will be concerned with referential givenness/newness, specifically within the Givenness Hierarchy theory proposed in Gundel, Hedberg and Zacharski (1993 and subsequent work), which attempts to explain the distribution and interpretation of different nominal expressions, and the fact that such forms succeed in picking out a speaker's intended interpretation even though the conceptual information they encode rarely, if ever, determines a unique referent.

We begin by briefly summarizing the Givenness Hierarchy theory. We then correct some misconceptions and misinterpretations that have appeared in the literature on the predictions of the theory. Finally, we discuss some cross-linguistic and typological facts about the ways in which languages can differ and ways they appear to be alike with respect to encoding cognitive statuses on the Givenness Hierarchy.

2. The role of information status in the interpretation of referring expressions: The Givenness Hierarchy

A central problem for theories of reference is to explain how forms that encode different conceptual/descriptive content can have the same interpretation, as in (1a-c), and forms that encode the same conceptual/descriptive content can have different interpretations, as in (2a-c).

(1) A1 *You've only known **the dog** how long did you say?*
   B1 *Well, about a year, I guess.*
      a. A2 *Oh well, it is uh, how old is **the dog**?* (Switchboard corpus "Dogs")
      b. A2' *Oh well, it is uh, how old is **it**?*
      c. A2" *Oh well, it is uh, how old is **this animal**?*

(2) A1: *uh, do you have a pet, Randy?*

B1: *uh yeah, currently we have **a poodle***
A2: ***a poodle**, miniature or, uh, full size*
B2: *yeah, uh, it's a full size*
A3: *uhhuh*
B3: *yeah*
     a. A4: *I read somewhere that **the poodle** is one of the most intelligent dogs around*
          (Switchboard Corpus, "Dogs")
     b. A4' *I read somewhere that **this poodle** is one of the most intelligent dogs around*
     c. A4" *I read somewhere that **that poodle** is one of the most intelligent dogs around*

     In (1a), the phrase 'the dog', which appeared in the original Switchboard dialogue, is easily interpreted as the dog which A and B have been talking about, i.e. B's dog. But A could also have used the pronoun 'it' to refer to the dog as in (1b) or 'this animal' as in (1c), and the interpretation would have been the same, even though the conceptual content encoded in the three examples is different.

     In (2a), on the other hand, the phrase 'the poodle' in A's statement could have a specific interpretation where it would be interpreted as referring to B's poodle or a generic interpretation referring to the whole class of poodles. The generic interpretation, which makes the most sense in this context, is the one that comes to mind first. And this is likely the one that speaker A intended. However, using the phrase 'this poodle', as in (2b) or 'that poodle', as in (2c), which encode the same conceptual content, could more easily be understood as referring to B's poodle, even though this interpretation makes less sense in the context of this sentence.

     The Givenness Hierarchy theory attempts to explain such facts by proposing that nominal expressions encode two kinds of information: (1) procedural information about how to mentally access a representation of the intended referent/interpretation, its (assumed) cognitive status in the addressee's mind; and (2) conceptual/descriptive information about the referent/interpretation. The former is encoded by the determiner/pronoun[1] head of the DP and the latter is encoded by the rest of the phrase.

     The Givenness Hierarchy comprises the cognitive statuses in (3), where each status entails all lower statuses, but not vice-versa.

(3) The Givenness Hierarchy and associated English forms.

in focus	>	activated	>	familiar	>	uniquely identifiable	>	referential	>	type identifiable
it[2]		*this/that/this* NP		*that* NP		*the* NP		indefinite *this* NP		*a* NP

     Within a given language, individual determiners/pronouns encode different cognitive statuses. For example, in English, unstressed personal pronouns, such as 'it' in (1b), overtly signal that their referent is in focus for the addressee, which B's dog would be at this point since it is part of the content of the previous two utterances and is the topic of conversation; and, since the statuses are in a unidirectional entailment relationship, where each status entails all lower statuses (statuses to the right on the hierarchy), the referent is also necessarily activated, familiar, uniquely identifiable, and so on, which is why the determiner 'the' as in (1a) and 'this' as in (1c) are perfectly appropriate in referring to speaker B's dog as well. Linguistic forms that encode cognitive status provide procedural information about how to mentally access the referent, as described in (4).

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[1] A pronoun may be analyzed as a determiner with no NP complement (c.f. Postal 1966, Abney 1987); but for the purpose of this paper we will continue to use the more traditional term 'pronoun'.

[2] 'it' here stands for all unstressed personal pronouns.

(4) *it*   associate representation in focus of attention   (in focus)
     this/that/this NP   associate representation in working memory   (activated)
     that NP   associate representation in memory   (familiar)
     the NP   associate unique representation with DP   (uniquely identifiable)
     indefinite *this NP*   associate unique representation   (referential)
     a NP   associate type representation   (type identifiable)

Thus, the pronoun 'it' in (1b) instructs the addressee to associate a representation in his current focus of attention; but 'the dog' (the form actually used in this dialogue) is appropriate here as well since it only instructs the addressee to associate a unique representation with the DP, which he could easily do since the dog is in focus and therefore uniquely identifiable; and 'this animal' in (1c) is possible as well, since a dog is an animal and the determiner 'this' is an instruction to associate a referent which is activated; and anything in focus is also activated, i.e. in working memory.

While cognitive statuses on the Givenness Hierarchy further restrict possible referents from among those that satisfy the conceptual content encoded in the phrase, the Givenness Hierarchy interacts with general pragmatic principles to arrive at the interpretation the speaker actually intended. Thus, in (1b), the linguistic content of the phrase 'the dog' alone does not pick out the intended referent here (as would the pronoun 'it' which explicitly instructs the addressee to associate a referent in his focus of attention); it is simply consistent with the speaker's intended referent since it instructs the addressee to associate a unique representation of a dog, and anything in focus is also uniquely identifiable. The cognitive/pragmatic tendency to pick out the most relevant interpretation, the one that yields an adequate contextual effect with minimal cognitive effort (Sperber and Wilson 1986/1995, Gundel and Mulkern 1998), explains why the in-focus dog is the one that comes to mind first. On the other hand, in (2a), the phrase 'the dog' is much more likely to be interpreted as referring to the kind 'dog' than to the specific dog A and B have been talking about, because interpreting it as B's dog would not be as relevant in this context, as it would not yield an adequate contextual effect.

Interaction of the cognitive statuses signaled by different determiners and pronouns with general pragmatic principles also explains so called 'scalar implicatures' that arise from using different determiners and pronouns. Thus, although using an indefinite article is consistent with any context that allows a definite article, since anything that is uniquely identifiable is also type identifiable, use of the weaker indefinite article, which is unspecified for unique identifiability, often implicates that the referent is not uniquely identifiable (and therefore also not familiar, activated, or in focus). For example, the definite article in the phrase 'the dog' in A's question in (1) above, repeated here as (5a), is interpreted as referring uniquely to B's dog, which they have been talking about and which is therefore uniquely identifiable with minimal cognitive effort in this context. But if the definite article is replaced with an indefinite article, as in (5b), the preferred interpretation is one where 'a dog' is at most type identifiable, i.e. not uniquely identifiable, since the question of how long the addressee has known any member of the class of dogs is also relevant in this context. It yields a contextual effect with minimal cognitive effort.[3]

(5)   a.   *You've only known **the dog** how long did you say?*
       b.   *You've only known **a dog** how long did you say?*

In (6), on the other hand, which occurs later in the same dialogue, 'a nose' and 'a tongue' in line 45 are most naturally interpreted as the unique nose and tongue of B's dog, i.e. using 'a N' does not

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[3] We state the basis for the pragmatic inference here in relevance theoretic terms rather than in terms of Grice's Cooperative Principle, but the difference is not important for purposes of this paper.

implicate that the referent is not uniquely identifiable; uniqueness simply remains unspecified since it is not necessary to specify it in this context. The unique interpretation is the only one that would be relevant in this case and using the definite article would provide more information about cognitive status than necessary.

(6) 40 Speaker A: *… it's such a pleasure to come home at night and you can see her smiling from ear to ear. She's so happy to see me*
41 Speaker B: *yeah, definitely*
42 Speaker A: *and uh I don't know if you get that kind of greeting or not*
43 Speaker B: *I can honestly say we do uh we just recently put a security system in our house and so now uh in order to uh to accommodate the motion detectors we have to keep her uh locked up in the master bedroom during the day and the she's got the bedroom and the bathroom to for free run during the day but*
44 Speaker A: *uhhuh*
45 Speaker B: *we've always got **a nose** and **a tongue** pressed up against the window when we come walking up to the front door*

Pragmatic principles thus further influence the likelihood of interpretations of referring expressions depending on the relevance of procedural information conveyed by pronouns and determiners in particular contexts.

3. The Givenness Hierarchy as a big Horn scale

3.1. Background

In Gundel, Hedberg and Zacharski (1993), we called upon Grice's (1967/1975) Maxim of Quantity, shown in (7) below, in explaining how general pragmatic principles interact with the Givenness Hierarchy in accounting for particular reference interpretations in context.

(7) Q1: Give as much information as required for current purposes of the exchange.
Q2: Do not give more information than is required.

We pointed out that since the Givenness Hierarchy exhibits a unilateral entailment relation between the statuses, that relationship could thus be expected to give rise to scalar quantity implicatures (Horn 1972, 1984) pertaining to the forms and statuses, as noted in section 2 of the current paper. In our 1993 paper, we proposed that cognitive status implicatures can be explained by appealing to both parts of Grice's Maxim of Quantity. First, Q1 can be called upon to explain focus shift effects of demonstrative pronouns as opposed to unstressed personal pronouns. Examples from the 1993 paper and from Hedberg (2000) showing that use of the demonstrative pronoun, which explicitly signals only activation, can lead to the inference that the referent is not in focus are given in (8):

(8) (a) *Anyway going on back from the kitchen then is a little hallway leading to a window, and across from the kitchen is a big walk-through closet. On the other side of **that** is another little hallway leading to a window. …* [personal letter]

(b) Karen: *You know I've tried several times to take, take pictures of the library in Linden Hills. I, sometimes I think it must be haunted or something, because it won't uh … develop on some film.*
Neil: *Weird … I took in the=*

Karen: *=Isn't **that** supposed to be symbolic of something?* [Frederickson tapes]

In (8a), both the kitchen and the walk-through closet are activated and using 'that' to refer to either one of them would be licit. But since the kitchen is in focus and therefore activated, whereas the closet is at most activated, use of 'that' is relevant here in disambiguating between the two interpretations and therefore gives rise to the Q1 implicature that the referent is the 'not in focus' closet. Likewise in (8b), use of 'that' shifts focus of attention from the library (currently in focus and therefore also activated) to the fact that it doesn't develop on film (activated, but not in focus).

A second cognitive-status-based Q1 implicature proposed in our 1993 paper was the 'not uniquely identifiable' interpretation often associated with indefinite expressions, as discussed in section 2. This again can be viewed as a Q1 implicature, generated through use of a weaker form (one that simply instructs the hearer to associate a particular type interpretation) implicating that a higher status does not obtain. Thus, use of the indefinite article often conveys that the referent is not uniquely identifiable, and therefore also not familiar, activated or in focus, as in examples like (9).

(9)   *I went with my husband to the park and sat down on a bench. **A man** sat down next to me.*

If it were the activated husband who sat down next to the speaker in (9), this referent could have been encoded with a form that explicitly picks out the husband, such as 'he' or 'my husband'. Since the speaker used a relatively weak indefinite 'a' phrase, which explicitly signals only type identifiability, she implicates that the man is not uniquely identifiable and therefore not her husband.

In our 1993 paper, we suggested that such inferences behave similarly to the scalar implicatures discussed in Horn (1972) as applying when a lexical semantic relation, now called a "Horn scale", obtains between a stronger and weaker form, e.g. 'all' and 'some'. When interacting with Grice's Maxim of Quantity, use of a weaker form, as in (10a), often results in the implicature indicated in (10b).

(10)   a. *Some of the students passed the exam.*
        b. *Not all of the students passed the exam.*

The focus shift function of demonstrative pronouns and the "new referent" interpretation of indefinite article phrases are well supported by both naturally occurring and constructed examples, and seem to be insightfully characterized as scalar implicatures. They do not always arise, as shown in (6) above; but since implicatures are pragmatic inferences and not conventional meanings associated with the lexical items in question, they are context dependent; so we do not expect them to always arise.

Two features of conversational implicature as distinct from entailment are widely taken to be true of scalar implicatures. They can be cancelled without contradiction and they can be reinforced without redundancy (Levinson 1983), as shown in (11):

(11)   a *Some, if not all, of the students passed.* (cancellation)
        b. *Some, in fact all, of the students passed.* (cancellation)
        c. *Some, but not all, of the students passed.* (reinforcement)

Gundel et al. 1993 point out that the pragmatic Q1 implicature associated with indefinite articles can be cancelled, as in (12a); and it can be reinforced without redundancy, as in (12b).

(12)   a.   *I met **a student** before class. **A student** came to see me after class as well – in fact it was the same student I had seen before.* [Hawkins 1991]

     b.   *I met **a student** before class. **A student,** not the same one**, came to see me after class as well.*

The focus-shift inference of demonstrative pronouns can also be cancelled or reinforced, as shown in (13).

(13)   a.   *The kitchen is next to a big walk-through closet. On the other side of **that**, the kitchen, I mean, is a little hallway leading to a window.* (cancellation)
         b.   *The kitchen is next to a big walk-through closet. On the other side of **that**, the closet, I mean, is a little hallway leading to a window.* (reinforcement)

We also proposed in our 1993 paper that cognitive status implicatures can arise from the second part of Grice's Maxim of Quantity, Q2 (don't give more information than necessary) which also emerges from the unilateral entailment relationship between the statuses on the hierarchy. With this type of implicature, we explained the tendency found in our corpus data for 'the NP' phrases, which explicitly signal only the status 'uniquely identifiable', to be used extensively for referents that also have a higher cognitive status, e.g. familiar, activated, or even in focus. We suggested that the choice of a relatively weak form, the definite article, arises from lack of a need to signal that a higher status obtains, because the stereotypical uniquely identifiable phrase is uniquely identifiable because it is familiar, or even activated or in focus, appealing to Atlas and Levinson's 1981 proposed explanation for why Q2 rather than Q1 is applicable in explaining the common strengthening of the conditional 'if ' to 'if and only if' (see also Levinson (2000)). Hence we get examples like (1a) above and (14), where a relatively weak form is used to refer to a referent that also has a higher cognitive status.

(14)   *The man wins this time, and the fish that he selects is a big goldfish, which is, at the point when he selects it, hidden in a rocky formation in the tank, and it's impossible for the man conducting the game to get at **the fish** with the net.* [Goldfish stories].

Since uniquely identifiable phrases are also stereotypically familiar (or even activated), it is often not necessary to convey that a higher status obtains, since simply signaling unique identifiability will generally enable the hearer to resolve reference to a familiar or activated entity.[4]

3.2. Response to Kehler and Ward's (2006) criticism of the Givenness Hierarchy account of scalar implicatures

Kehler and Ward (2006) argue against the idea that the Givenness Hierarchy forms a Horn scale and therefore gives rise to scalar implicatures of the type discussed above.[5] They note that Horn scales

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[4] The fact that definite article phrases are frequently interpreted as having referents that are not only uniquely identifiable but also activated and in focus also receives a natural explanation under a Relevance Theory account, as in Gundel and Mulkern (1998), since the activated and in focus interpretations, assuming they yield an adequate contextual/cognitive effect, do so with minimal cognitive effort. In any case, the explanation for the inference is pragmatic and relies on the scalar nature of statuses on the Givenness Hierarchy, in this case the fact that anything which is in focus is also activated, familiar and uniquely identifiable.

[5] The name 'Givenness Hierarchy', and its frequent confusion with other referential hierarchies, such as Ariel's Accessibility Hierarchy (1990). may have contributed to the misinterpretation that would prevent it from giving rise to scalar implicatures. However, cognitive statuses on the Givenness Hierarchy, unlike in other referential hierarchies, are not mutually exclusive since each cognitive status entails all lower statuses; and they do not convey *degree* of accessibility. Rather, they convey procedural information about *manner* of accessibility, specifically on how to access a referent/interpretation. See Gundel, Hedberg and Zacharski (2012).

have been proposed to involve equally lexicalized forms which vary along a single semantic dimension, a point on which Kehler and Ward challenge the Givenness Hierarchy; and they maintain that several properties in the data on referring expressions, which would be predicted from the premise that the Givenness Hierarchy is a Horn scale, are in fact missing. We agree that the Givenness Hierarchy does not form a scale based on semantic/conceptual meaning directly analogous to scales like <all, most, many, some>, or <necessary, probable, possible>. However, the differences that Kehler and Ward claim to distinguish the Givenness Hierarchy from standard Horn scales have their origins in the distinction between conceptual information relations, which most standard Horn scales encode, and the procedural information relations that the Givenness Hierarchy encodes. The Givenness Hierarchy still forms a unidirectional entailment scale in the sense that the addressee's ability to associate a representation based on a higher status necessarily implies their ability to associate a representation based on all lower statuses, but not vice-versa. Thus anything in focus of attention is necessarily activated (in short term memory); anything activated is necessarily familiar (in memory); anything familiar is necessarily uniquely identifiable (the addressee can associate a unique representation with the referring phrase); anything uniquely identifiable is necessarily referential (the addressee can associate a unique referent by the time the whole sentence is processed); and anything referential is necessarily type identifiable (the addressee can associate a type representation). Since Kehler and Ward base their arguments entirely on the 1993 paper, which, unlike later work (e.g. Gundel 2009) did not explicitly articulate cognitive statuses as encoding procedural information, this misunderstanding is partly understandable. However, we maintain that some of Kehler and Ward's arguments are misplaced in that they do not sufficiently take into account the role of relevance in modulating the inducement of scalar inferences and the cancellation of them.

Kehler and Ward agree with Gundel et al. 1993 that definite article phrases do not always convey familiar information, but rather encode unique identifiability. They also concede that 'the' and 'a' form a Horn scale, <the, a>, citing examples from Larry Horn that show that typical uses of 'a'-phrases can convey that the referent is not unique, inference that can be cancelled without contradiction or reinforced without redundancy, as shown in (15):

(15) a. *Over the nineteenth century, Britain became **a, if not the**, world power.*
       [eserver.org/cultronix/sigel/] (cancellation)
     b. *Decision making is **a, but not the**, fundamental construct in design.*
       [dbd.eng. buffalo.edu/papers/DR.position.htm] (reinforcement)

We would argue that the information encoded in 'the' vs. 'a' that distinguishes the two determiners in the usage cited in (15) is both conceptual and procedural, which is why cancellation and reinforcement using the determiners alone, without following conceptual content, is possible. It is conceptual because it can be formulated as a unique vs. non-unique interpretation, which is a matter for truth conditions to determine. Thus, 'the' in such examples means 'the only' and in fact can be paraphrased as such, which would not be the case for typical, unstressed uses of 'the' that convey purely procedural information (associate a unique representation).

Kehler and Ward also give some examples that do seem to show the possibility of cancelling an implicature that a higher status does not obtain when a form that explicitly encodes only a lower status has been used, as our theory would predict.

(16) ***A student** came by. In fact it was that weird guy who sits in the back of the class.*
(17) ***The book that John is currently reading*** [not necessarily familiar] – *in* fact the one I showed you yesterday when we were at the bookstore…

In (16) 'in fact' is followed by a cancellation of the Q1 implicature that the referent is not uniquely identifiable (and therefore also not familiar) through use of a 'that NP' phrase, which is necessarily familiar according to the Givenness Hierarchy. (17) is felicitous because the complement of 'the' in the clause following 'in fact' contains conceptual information identifying the book as not only uniquely identifiable but also familiar. Kehler and Ward conclude from examples like these that 'a' and 'the' phrases can give rise to non-familiarity implicatures, but they argue that these are the only cognitive-status-type implicatures that can arise.

Thus, they claim that (18) is infelicitous when the 'the' phrase in the 'in fact' clause is uniquely identifiable but not familiar.

(18) #*A student* *came to see me after class as well – in fact it was the student I met with three days ago* [not familiar].

We disagree with the judgment that this phrase cannot felicitously be interpreted as non-familiar. While it may be difficult to imagine a context in which this phrase would be intended as non-familiar to the addressee, other examples can be constructed where the phrase used in the cancellation clause can more easily be interpreted as uniquely identifiable, but non-familiar, e.g. (19).

(19) *A student* *came to see me after class as well – in fact it was the winner of the biggest scholarship on campus.*

We also dispute their conclusion about (20), an example from Barbara Abbott, which they give in a footnote. They claim that this does not constitute cancellation of a non-referentiality implicature, because the 'in fact' phrase could include a second 'a' determiner, instead of indefinite 'this'.

(20) *I'm going to buy* *a car* *today, in fact, this blue sportscar that's at John's car dealership, and it's in great condition.*

Note, however, that nothing in the Givenness Hierarchy framework prevents an 'a' phrase from including conceptual information that would indicate its referentiality. The Givenness Hierarchy simply predicts that 'a' is unspecified for referentiality; it does not exclude an 'a' phrase from being referential, since anything referential is necessarily also type identifiable.[6]

Kehler and Ward point out that a similar example, shown in (21), is infelicitous and here we agree.

(21) #*I'm going to buy* *a car* *today, in fact this car* [indefinite (and therefore unstressed) 'this'].

Here, we note that the attempted cancellation is infelicitous because the 'in fact' phrase does not convey any additional conceptual information and thus the reformulation is not relevant. The felicitous examples in (16)-(20) all have in common that the 'in fact' phrase contains additional conceptual information about the interpretation of the referring phrase. We maintain that this is an essential property of felicitous use of 'in fact'.

The same explanation can be given for the infelicity of Kehler and Ward's examples in (22) and (23).

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[6] Gundel et al. 1993 claim that 'a' does not typically implicate non-referentiality because the only form that explicitly signals this status is indefinite 'this', which is restricted to certain registers of colloquial English.

(22)   #***That dog,*** *in fact it, kept me awake last night.*
(23)   #***That dog that bit you last year***, *in fact, that/this dog/that dog, won't be able to get out of the yard anymore.*

Note that if the referential expression following 'in fact' were stressed and would thereby convey conceptual deictic information (e.g. the dog over there, or the dog you are looking at), the cancellation would be felicitous.

Kehler and Ward give no account of cases, such as those illustrated above in (8), where demonstrative pronouns are used to indicate a focus shift. They presumably would draw the conclusion from the lack of cancellability of focus shift inferences using 'in fact' phrases that such focus shift inferences are not Q1 implicatures. We suggest, on the contrary, that the lack of cancellability has to do with it not being possible to cancel with only procedural content following 'in fact'. It is true, as mentioned above, that there are contexts in which such inferences do not arise: e.g. 'that' can be used for an in-focus entity in some contexts, even stressed 'that'; but the fact that an inference does not necessarily arise in all contexts is also a criterion for identifying it as a quantity-based implicature rather than as an entailment arising from the conventional meaning of the lexical item in question.

In sum, we maintain that determiners and pronouns which signal cognitive statuses on the Givenness Hierarchy convey procedural information about how to access a representation of the speaker's intended referent/interpretation, and that this explains why implicatures associated with forms on the hierarchy sometimes appear to have different properties from standard scalar implicatures associated with forms that convey conceptual content. It also explains why the 'in fact' cancellation phrases that involve forms which signal cognitive status are often infelicitous, because the phrase following 'in fact' must convey additional conceptual meaning in order to be felicitous.

4. Typological facts: Cross-linguistic differences and similarities

Cognitive statuses on the Givenness Hierarchy are assumed to be universal. Given that conceptual content alone rarely determines a unique referent, it is expected that all languages have determiners and pronouns that encode cognitive status of the referent, assisting the addressee in picking out the actually intended referent from among the possible ones which satisfy the conceptual content of the phrase.

While all languages investigated within the Givenness Hierarchy framework thus far do indeed have pronouns and determiners that encode cognitive status of the intended referent, not all languages have forms that explicitly encode every status. Few languages have forms that distinguish all three of the statuses on the lower end of the Givenness Hierarchy – type identifiable, referential, and uniquely identifiable. This is also as expected, given the unidirectional entailment relation of the hierarchy, where lower statuses are entailed by higher ones, but not vice-versa, and forms that explicitly encode the lower statuses thus provide less information about how to access the referent. In English, for example, the definite article explicitly signals the status 'uniquely identifiable' and the indefinite article explicitly signals only type identifiability. Indefinite 'this', which explicitly signals referentiality, occurs only in colloquial English. Also, as is well known, many languages lack a definite or indefinite article, and the indefinite article in many languages explicitly signals referentiality, not type identifiability. This was true in earlier forms of English, for example. Non-referential phrases such as predicate nominals, as in 'She is a teacher' could be produced as a bare nominal. And it is also true in Modern Spanish (Bolinger 1980). In languages, like Mandarin, where the numeral 'one' is developing into an indefinite article, it is used only for referential phrases (Gundel et al 1993). Moreover, if a language has only one article, it is more likely to be a definite article than an indefinite article.

Hedberg, Görgülü and Mameni (2009b) discussed the referring expression system of Salish languages. Salish languages do not contain definite articles that indicate unique identifiability or

indefinite articles that indicate type identifiability, but they do have a system of frequently used articles that indicate referentiality, also called 'specificity'(Matthewson 1998, Gillon 2006). The feminine referential article in the Salish language Sechelt (Sháshíshálh) is illustrated in (28), where the data is drawn from a story, 'The Beaver', published in Beaumont (1985). The important character of the snake woman is introduced in (28a) using the feminine form of the referential article. Here the DP is referential but not uniquely identifiable. Later in the story, as in (28b), when the snake woman is referred to, the referential article is again used, here for a familiar or activated referent.

(28) a. *tí*   *súxʷ-t-as*   **ɬe**   **ʔuɬqay**   **Sɬánay** ...
          AUX   see-TR-3ERG   ART   snake   woman
          'He saw a snake woman.'...

      b. *tí*   *ƛum*   *s-qʷál-s*   **ɬe**   *sɬánay* ...
          AUX   then   NOM-speak-3SG.POSS   ART   woman
          'Then the woman said ...'

      The Sechelt (Sháshíshálh) referential article behaves like definite articles in English and Spanish and like bare NPs in Chinese, Japanese, and Russian in that it does not induce Q1 implicatures. This can be seen by comparing distribution of uses of those three forms in the three languages across cognitive statuses in discourse, as shown in (29); where the English and Chinese data is taken from Gundel et al. 1993, and the Sechelt data is taken from the Beaver story.

(29)

	FOC	ACT	FAM	UID	REF	TID
English *the* NP:	30	95	47	108		
Sechelt *te/ɬe* NP:	4	5	6	2	7	
Chinese Ø NP:	12	17	14	49	2	10

In all three languages, the forms that are given in (29) are also distributed across statuses higher than the ones they explicitly encode, as only pronouns and demonstrative determiners encode a higher status in the respective languages.

      Hedberg, Görgülü, and Mameni (2009a) discuss the relationship between definiteness and referentiality in Turkish and Persian.[7] Turkish and Persian do not have definite or referential articles but they do have ways of differentially marking referential as opposed to non-referential objects through accusative case marking in the case of Turkish, or the object marker –RA in the case of Persian. Without accusative marking, Turkish indefinite objects get a non-referential (at most type identifiable) reading, as shown by the contrast in (30). Likewise, Persian marks referential direct objects with the suffix –RA, as shown by the contrast in (31)[8]. The referentiality markers co-occur here with the numeral meaning 'one' and hence the DPs are indefinite.[9]

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[7] Referentiality in our sense is often called 'specificity' in the literature.

[8] Some scholars (e.g. Sadrai 2014) analyze –RA as a definiteness marker, specifically a marker of unique identifiability, rather than a referentiality marker because a DP marked with –RA in the absence of the numeral 'one' (*ye*) or the marker –I (see footnote 10) must be interpreted as definite.

[9] Turkish also allows a bare noun to appear in object position (Öztürk, 2005). Persian allows this too. However, these nouns do not have an argument status. In (i) it is possible that the speaker is seeing more than one lawyer.
(i) *Bugün*   **avukat**   *gör-üyor-um*
     today   lawyer   see-PROG-1SG
     'I am lawyer-seeing today.'

(30) Turkish:
    a. *Bugün **bir** **avukat-ı** gör-üyor-um.*
       today   one   lawyer-ACC   see-PROG-1SG
       'I am seeing a (particular) lawyer today.'

    b. *Bugün **bir** **avukat** gör-üyor-um.*
       Today   one   lawyer   see-PROG-1SG
       'I am seeing a lawyer today (some lawyer or other).'

(31)   Persian:
    a. *Emruz **ye** **vakil-(i)-o** mi-bin-am.*[10]
       today   a/one   lawyer-I-RA   DUR-see-1SG
       'I am seeing a (particular) lawyer today.'

    b. *Emruz **ye** **vakil** mi-bin-am.*
       today   a/one   lawyer   DUR-see-1SG
       'I am seeing a lawyer today (some lawyer or other).'

       Referentiality has sometimes been discussed in the literature as a category orthogonal to definiteness, e.g. by von Heusinger (2002), which contradicts the entailment relation between uniquely identifiable and referential encoded in the Givenness Hierarchy. Von Heusinger proposes that definite NPs interpreted as attributive (Donnellan 1966) are non-referential ("non-specific"). However, data from Turkish and Persian show that at least in these languages, any DP interpreted as definite (uniquely identifiable in the sense that one can associate a unique referent, whether the exact identity is known or not) is necessarily marked referential. Examples from each language of uniquely identifiable attributive DPs are shown in (32) and (33). If they are to be interpreted as definite, referentiality marking is obligatory.[11]

(32) Turkish:
    katil-*(i)   *bul-malı-yız*
    murderer-ACC   find-MOD-1PL
    'We must find the murderer (whoever it is)*'.*

(33) Persian:
    bayad **qatel-(a)-*(ro)** *peyda kon-im*
    must   murderer-E-RA   find   do-1PL

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[10] In spoken Persian, –RA is realized as –*o* following consonants, and –*ro* following vowels. Ghomeshi (2003) calls the suffix –I an 'indefinite' marker, but Hedberg et al. (2009a) show that –I has other functions. It contrasts with a suffix –E (used in (33) below), which indicates that the DP is familiar; hence –I is used in uniquely identifiable but not familiar DPs as well as in indefinite DPs that are at most referential. *ye* 'a/one' and –I are both optional in (31a), but one of the two morphemes is necessary if the –RA marked DP is to be interpreted as indefinite (at most referential).'

[11] In fact, the murderer in (33) is marked with the –E suffix as familiar, but unfamiliar uniquely identifiable examples also are marked for referentiality, as in (i):
(i) *Jân* **avval-in mâshin-(i)-ro** *ke* **did** *az-ash* *xosh-esh* *umad.*
   John   first-DEF   car-I-RA   that   saw   from=CL:3SG   good=CL:3SG   came.3SG
   'John liked *the first car that he saw*.' (speaker cannot necessarily identify the car)
The DP is definite here because it refers to a unique referent and the addressee can assign a unique representation. There can only be one car that is the first one that John saw. It is not necessary, however, that the addressee already has a representation of the car in memory. (The example in (i) is modeled after a Turkish example discussed in Görgülü (2009).)

'We must find the murderer (whoever it is)*'*.

While many languages lack a form that explicitly signals one or more of the three lowest statuses on the Givenness Hierarchy – type identifiable, referential and uniquely identifiable, all languages that have been investigated within the Givenness Hierarchy appear to overtly encode the distinction between the two highest statuses – activated and in focus. This is true for the five languages investigated by Gundel et al 1993 (English, Japanese, Mandarin Chinese, Russian and Spanish) and also for the four languages investigated in Gundel, Bassene, Gordon, Humnick, and Khalfaoui (2010) – Eegimaa, Kumyk, Ojibwe and Tunisian Arabic.

Again, while this fact doesn't follow necessarily from the Givenness Hierarchy, the Givenness Hierarchy provides a natural explanation for it. The higher the functional load of a given status, the more likely a language is to have a form that overtly signals that status. Since statuses are in a unidirectional entailment relation, with higher statuses entailing lower ones, but not vice-versa, languages are more likely to encode the distinction between higher statuses than they are to encode the distinction between lower statuses. And languages are most likely not to have forms that explicitly encode the status type identifiable, which is entailed by all other statuses.

In addition to the fact that not all languages distinguish between every cognitive status on the Givenness Hierarchy, corresponding forms (i.e. pronouns and determiners) across languages do not necessarily encode the same status in every language.[12] This is especially true for demonstratives. Thus, in Russian, which like English has a two-way demonstrative distinction (often called 'proximal' and 'distal'), the distal demonstrative determiner ('to') is used primarily to encode contrastive conceptual information about spatial distance, as distinct from procedural information about cognitive distance. The distal form is thus rarely used, and the so-called proximal demonstrative determiner ('eto'), unlike its counterpart 'this' in English, explicitly encodes only familiarity, though like the proximal demonstrative determiner in English and other languages, it can be used for activated referents, since anything activated is also familiar. The proximal form is thus possible, and in fact preferred, in examples like (34) even if the dog has not been recently mentioned and is not present in the immediate visual context, i.e. if it is familiar, but not activated.

(34) Russian:
Eta sobaka u soseda *mne vsju noč' ne davala spat'…*
this dog at neighbor me all night not allow sleep.INF
'I couldn't sleep last night. That dog next door kept me awake...' (Gundel et al 1993, p. 286)

Finally, of the languages investigated, none explicitly encode the set difference between two cognitive statuses on the Givenness Hierarchy with a single lexical item, for example one that means 'type identifiable but not uniquely identifiable', or 'activated but not in focus,' just as there is apparently no language that has a single lexical item which means 'some but not all'. This again is as expected given the unidirectional entailment of statuses on the Givenness Hierarchy since such meanings can be derived by pragmatic inference, when relevant.

5. Conclusion

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[12] This is partly true because types of determiners and pronouns do not have clear language independent definitions. For example, although many languages lack a form that would be clearly classified as a definite article, in some languages the distal or proximal demonstrative, though not obligatory, is beginning to function like a definite article in that phrases headed by this determiner only have to be uniquely identifiable, not necessarily familiar. This is true in Mandarin Chinese for example. See Gundel et al 1993 for further discussion. Also, as noted above, some languages have referential determiners that behave like definite articles except that they encode only referentiality and can occur with phrases whose referents are at most referential, and not necessarily uniquely identifiable.

The Givenness Hierarchy is a set of six cognitive statuses in a unidirectional entailment relation that specify procedural information to the addressee about how to mentally access representations associated with the intended interpretations of nominal expressions. Different pronominal and determiner forms explicitly encode different statuses on the hierarchy as part of their conventional meaning. The hierarchy interacts with general pragmatic principles to give rise to quantity implicatures similar to the quantity implicatures triggered by standard Horn scales, which are mainly based on conceptual meaning. The Givenness Hierarchy and the general pragmatic principles that it interacts with are universal, although different languages have referring forms that map onto the Givenness Hierarchy in different ways, with higher, more informative statuses being more likely to be mapped onto specific forms than lower, less informative ones. Thus, the theory can explain differences as well as similarities in referring expression systems across languages.

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