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Publication date

2022

Document Version

Author accepted manuscript

Published in

Mind and Language

License

Unspecified

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Citation for published version (APA):

Dobler, T. (Accepted/In press). Pragmatic enrichment, issues, and domain goals. *Mind and Language*.

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Pragmatic enrichment, issues, and domain goals

January 16, 2022

Abstract

In this paper I propose an inquisitive approach to semantic underdetermination that uses the model of issue resolution to describe how occasion meanings are determined in the process of pragmatic enrichment. I appeal to ‘Travis cases’ to motivate the account of semantic underdetermination based on alternative ways for some object a to be F. When interpreting a sentence, we look how to narrow down the space of metalinguistic alternatives, and achieve the state where a metalinguistic issue is resolved. I suggest that, in doing this, we primarily rely on contextual domain goals, preferring those alternatives which are conducive to the goal. I demonstrate how the proposed system works in determining occasion meanings of several types of sentences in different contexts.

1 Introduction

Determining what someone intends to say or ask when they utter a sentence often depends on the context of utterance. Consider an example from Travis (1989). Max opens the fridge to find that the only milk left inside is a small puddle left by a leaky milk carton removed earlier. Pia needs milk to pour on her breakfast cereal. She asks (1) to which Max replies (2),

- (1) Is there milk in the refrigerator?
- (2) No.

Max has answered Pia’s question correctly despite the fact that the fridge does, strictly speaking, contain some traces of milk. In order to have given this correct answer, Max seems to have had to have taken into account what Pia expects to achieve on this occasion. If Pia’s expectations and so the occasion itself were different, Max’s answer might no longer be correct, as would be the case if Pia was coming to find out if the fridge had yet been cleaned after the removal of the leaky carton.

This and similar examples have been taken to underpin two influential ideas concerning the relation between *standing meaning* – i.e. the meaning encoded in linguistic expressions – and *occasion meaning* – i.e. the meaning expressed by a speaker on an occasion of utterance. These are:

- **Semantic underdetermination** – based on knowing the standing meaning of a sentence alone one cannot derive the proposition intuitively expressed by the sentence (Carston 2002; Travis 1985a).¹
- **Pragmatic enrichment** – in order to determine what is said, standing meaning must undergo pragmatic enrichment. (Recanati 2004, Pagin and Pelletier 2007)

In what follows I will propose an *issue-based* treatment of the phenomenon of semantic underdetermination. On this approach, semantic underdetermination represents an unresolved *metalinguistic issue* as to which way for *a* to be F is expressed at a given context by using an atomic sentence *Fa*. In the process of interpreting a sentence, we look to narrow down the space of alternative interpretations to achieve a state where the metalinguistic issue is considered resolved. Attaining the kind of resolution needed for interpretation requires that the informative content of a sentence undergoes pragmatic enrichment. To explain how we resolve semantic underdetermination to arrive at occasion meanings, I propose an account of pragmatic enrichment based on the idea of *goal-conduciveness* (see also Dobler 2019).

Treating semantic underdetermination in this way calls for the application of a semantics that utilises *alternatives*. Alternative-based semantic frameworks were originally developed for modelling the semantics of questions (Hamblin 1973, Groenendijk and Stokhof 1984, Ciardelli et al. 2013), but have since been used for the analysis of other semantic and pragmatic phenomena such as free choice (Aloni 2007), prosodic focus (Rooth 1992), disjunction (Alonso-Ovalle 2006), polarity (Krifka 1994), and ambiguity (Poesio 1996). For present purposes, I will make use of the framework provided by *inquisitive semantics* (Ciardelli et al. 2019), which works with representations construed as *downward closed sets*. As Ciardelli and Roelofsen (2017) and Roelofsen (2019) show, the deployment of downward closed structures distinguishes the inquisitive notion of *an alternative* from the one adopted in Hamblin’s alternative semantics (Hamblin 1973).

In what follows, inquisitive representations will be employed in a standard but also a *non-standard* way (i.e. as *metalinguistic* representations). The primary (non-standard) use of inquisitive representations will be for modelling the underspecification of predicates and atomic sentences.² However, once it has been shown how pragmatically enriched meanings of atomic sentences are determined, inquisitive representations will be ‘re-purposed’ – this time in their

¹Carston (2002) articulates the thesis as follows: “[the] linguistic semantics of the utterance, that is, the meaning encoded in the linguistic expressions used, the relatively stable meanings in a linguistic system, meanings which are widely shared across a community of users of the system, underdetermines the proposition expressed (what is said)” (Carston 2002: 19-20.)

²As Asher (2011) notes, predication understood as a single operation of applying a predicate to its arguments takes many different forms in natural languages (for overview see Asher 2011: 10). The formal model I propose in this paper captures the predication of a (simple) verb phrase to a subject, which explains the main focus on atomic sentences that are composed in this operation. However, the key idea that the root of metalinguistic alternatives lies in predicate underspecification can be applied to other sorts of predication.

standard use as first order *issues* – in recursively building occasion meanings of other complex clauses, including questions.

The discussion is structured as follows. In §2, I appeal to Travis cases to motivate the idea of semantic underdetermination, and suggest that this phenomenon might be due to simple predicates being associated with alternatives (i.e. *ways of being F*). I argue that the sort of predicate underspecification characteristic for Travis cases contrasts with the sort associated with ‘logical’ polysemy. In §3, I introduce inquisitive meanings, and show how alternative ways give rise to metalinguistic issues over information states. In §4, I propose a goal-sensitive approach to pragmatic enrichment, showing how goal-conducive ways (or, alternatively, anti-conducive ones) determine occasion meaning. In §5, I illustrate how the system works on several types clauses. I conclude in §6.

2 Travis cases and predicate underspecification

2.1 Motivating examples

The idea that utterance content is semantically underdetermined is supported by ‘Travis cases’ (many examples are collected in Travis 2008, 2011; Collins and Dobler 2018). In this section, I will introduce two such cases. The first is a well known green leaves case, which I will appeal to throughout what follows.³

- (3) *Pia paints russet leaves green for her art project.* (henceforth, *the painter context*).

Pia: The leaves are green. (TRUE)

- (4) *A botanist friend seeks green leaves for the study of green-leaf chemistry.* (henceforth, *the botanist context*).

Pia: The leaves are green. (FALSE)

The same sentence is uttered in each context, but intuitively, while Pia’s utterance is true in (3), it is false in (4).⁴ In the painter context, it seems that being painted green counts as being green, whereas in the botanist context, being painted green does not count as being green. Indeed, in the botanist context, being painted green seems to be excluded as a way of being green.

The second example appeals to a common noun, *philosopher*, as opposed to a colour adjective.⁵ Suppose that Max often likes to engage in deep philosoph-

³The green leaves case has been discussed, among others, by Sainsbury (2001), Szabó (2001), Predelli (2005) Kennedy and McNally (2010), Hansen (2011), Rothschild and Segal (2009), Vicente (2015) and Del Pinal (2018).

⁴For experimental evidence that corroborates these intuitions see Hansen and Chemla (2013)

⁵There are very similar examples with the nouns *welder* and *sailor* in (Travis 2018: 129) and (Travis 2008: 27), respectively (the latter featured originally in Travis 1985a). Both examples play on different understandings of what being a sailor or welder is. Travis lists several alternative ways of being a sailor:

ical discussions at social events and enjoys reading philosophy. Professionally, however, Max is an accountant (see Travis 2000: 130).

- (5) *Finding a moderator for a local debate club, someone with a notable philosophical bent* (henceforth, *the debate club context*)

Sid: Max is a philosopher. (TRUE)

- (6) *Selecting a member of the philosophy department for the university steering committee* (henceforth, *the university context*).

Sid: Max is a philosopher. (FALSE)

The same pattern holds: having a notable philosophical bent is sufficient for Max to be counted as a philosopher in the first context (5), but not the second (6).

These contrasts carry over to interrogative versions of the cases. Consider the following:

- (7) Are the leaves green?
(8) Is Max a philosopher?

Whereas in the painter context, the intuitively correct answer to (7) is “yes”, this is not the case in the botanist context. And again, the same pattern holds for the philosopher example. This suggests that the content intuitively expressed by (7) and (8) (i.e. their *intuitive resolution conditions*) may vary across different occasions of utterance.

Some preliminary observations concerning this data are in order. First, the pairs of scenarios in (3) and (4) (as well as in (5) and (6)) indicate that *extralinguistic* context plays a role in resolving which message the speaker intends to convey by using what is sometimes called an “ambiguous signalling strategy” (Santana 2014). Second, examples (7) and (8) demonstrate that the use of underspecified language – i.e. simple predicates without disambiguation modifiers – is not limited to declarative forms. It is clear that the phenomenon is more general and that, besides truth-conditions, it also affects resolution conditions and intuitively correct answerhood. Finally, as suggested by the variety of examples collected in Travis (2008), the variability in truth- and resolution-conditions that Travis cases reveal does not seem to be limited to particular classes of words but instead concerns “content words” in general.

He’s a sailor’, said of: (i) a stock broker whose 10 m yacht and weekend jaunts set him off from his squash-playing colleagues; (ii) an ordinary seaman who, whenever at sea, shows himself to be miserably and perpetually ‘at sea’; (iii) the executive chef, or the bandleader on a cruise ship; (iv) a retired sailor, or one who has changed professions; (v) someone with a ‘natural aptitude’, but who has never sailed.” (Travis 2008: 27)

2.2 Alternative ways of being

Following Travis (1985b, 2000, 2009, 2011) I will assume that the contrasts in intuitive truth-conditions we observe in Travis cases (such as those above) are rooted in our interpretation of *predicates*. A predicate such as **green** is associated, not only with the property of being green, which is commonly considered to be its reference, but also with different “ways” things may be green. According to Travis, a way in which a predicate “presents” the property it refers to plays an essential role in the interpretation of a particular use of a predicate.

Two uses of a predicate **grunts**, each in some statement **Sid grunts**, may each refer to (speak of) being a grunter, but each presents that property in a different way (Travis 2000: 46).

Predicates in general exhibit what [Travis] would term occasion-sensitivity: a proper understanding of a predicate on one speaking of it may differ from that which it bears on another speaking, where the differences are manifest, inter alia, in what the predicate as thus spoken would be true of. (Travis 1985b 346)

In what follows, I want to make use of the notion of *ways*, and the associated notion of the *occasion-sensitivity of predicates*. Basically, I will treat ways also as properties - but a *way of being F* is considered a more specific property than simply *being F*. For instance, if being green is a property denoted by **green**, then being naturally green or being painted green are different ways of being green.⁶ What counts as an acceptable way of being F is whatever “reasonable judges” (Travis 1989) would intuitively recognise as such: e.g. naturally green is clearly a way of being green, reddish green is not so clearly a way of being green, colourlessly green is clearly not a way of being green. Often, we use a more general and less costly term **green** to implicitly convey in context what a more specific **naturally green** or **painted green** would convey were it explicitly used (Santana 2014). Crucially, in which way a predicate presents the property it refers to – or better: in which way we present this property when using the predicate – is not something that is “fixed by specifying which property it refers to” Travis 2000: 46).

Taking into account the notion of ways thus understood, Travis cases can be characterised as eliciting intuitions to the effect that, when someone utters that *a* is F on some occasion, some ways of being F count as part of what they said about *a* while others do not. In the botanist context of the example in (4), being naturally green counts, but being painted green does not. To accept this is not to deny that the leaves in the botanist context *are* painted green. And nor is it to deny that being painted green is a way for leaves to be green. Indeed, there is nothing to prevent us from treating the *minimal content of green* as that undifferentiated set of objects at a world that are green in *some way or other* (see Borg 2010). What Travis cases seem to show, however, is

⁶There are many more ways of being green that come to mind: the leaves could be lit green, mouldy green, made from green plastic, or green from a swarm of aphids.

that when we come to interpret a particular use of the predicate **green**, we are able to selectively differentiate between alternative ways of being green and so arrive at a more nuanced understanding of what was said. This suggests that, rather than thinking only in terms of minimal content (i.e. the property referred to by the predicate), it may also be useful to think of predicates as having an *additional* layer of content at which alternative ways are differentiated.

Yablo (2014) introduces the idea of *enhanced* meaning (divisions) as an additional layer of the meaning of disjunctive sentences.⁷ Building on Yablo’s idea, I want to suggest that the ways of being green jointly form a *cover* over the minimal content of **green**.⁸ Thus, if we assume that the minimal content of **green** corresponds to the set of individuals which are green at a world w (as specified in (9)), the set of ways of being green can be characterised as a *refinement* of the original set, that is, the set of sets of individuals at a world w *covering* the minimal content of **green** at that world (as specified in (10)).

$$(9) \llbracket \text{green} \rrbracket_{\min} = \lambda w. \{x \mid x \text{ is green at } w\}$$

$$(10) E\text{-green}(w) = \{\sigma_1\text{-green}(w) \dots \sigma_n\text{-green}(w)\} \text{ where } \sigma_i\text{-green}(w) \subseteq \llbracket \text{green} \rrbracket_{\min} \text{ at } w \text{ and } i \in \{1 \dots n\} \text{ and } \bigcup \sigma_i\text{-green}(w) = \llbracket \text{green} \rrbracket_{\min} \text{ at } w.$$

The addition of a layer of content that captures more refined distinctions that we associate with the denotations of simple predicates is also in line with a number of other recent proposals. Del Pinal (2018) adds C (conceptual) structure consisting of four dimensions to the basic E (extensional) structure; following Yalcin (2016), Haslanger (2020) distinguishes the *informational* content of a concept (i.e. a partition of logical space) and its *epistemic* content (a refinement of this partition); similarly, Berto (2019) proposes a *two-component semantics* where the propositional content consists of two irreducible components, namely, truth-conditions and subject matters or topics. Adopting the idea suggested in Carston (2019) of there being two different lexicons associated with a lexical item – namely, the L-lexicon (“narrowly linguistic lexicon”) and the C-lexicon (“a usage-based store of established communicational units”) – we can classify *minimal content* as part of the L-lexicon and *enhanced content* as part of the C-lexicon.

2.3 Occasion-sensitivity and polysemy as types of predicate underspecification

So far I proposed, following Travis, that the interpretation of a predicate F is *underspecified* insofar as the intended way of being F is not fixed by specifying

⁷He writes,

[w]hen Frost writes, *The world will end in fire or in ice*, the truth-conditional meaning of his statement is an undifferentiated set of scenarios. Its “enhanced” meaning is the same set, subdivided into fiery-end worlds and icy-end worlds (Yablo 2014: 2).

⁸A cover of the set A is a family of subsets of A whose union is equal to A. For using the set-theoretic notion of covers in the analysis of natural language expressions see Aloni (2001).

the property the predicate refers to. Polysemy – a word having multiple related senses – is often called for to explain the underspecification of predicates.⁹ For instance, the meaning of **book** is underspecified insofar as it may refer to a physical object (when composed with the adjective **bound**), or information/content (in the context of **thought-provoking** or **scary**, Frisson 2015). Similarly, the noun **school** can be used to refer to the building (Max walked to the school), the school board (A concerned mother talked to the school), or the institution (Max’s brother goes to school).

Some authors don’t find a significant distinction between the underspecification of **green** or **philosopher** in Travis cases and the underspecification of polysemous expressions such as **book** or **school** (Carston 2010, Recanati 2012, Vicente 2015, Löhr 2021). This is not surprising because both “permit an expression to have different semantic values on different uses” (Viebahn 2020: 4). Thus, using the polysemy of **book** as the model, Vicente (2015) proposes an analysis of the green leaves case by appealing to two general “aspects” (qualia) associated with common nouns: *object-as-it-is* and *object-as-it-appears*. According to this analysis, while the botanist is interested in greenness as a property of the leaf as it is, the decorator is interested in greenness as a property of how the leaf appears (regardless of how the leaf actually is). He writes,

[a] common noun such as ‘leaf’ can contribute with two different perspectives, or aspects, to the truth-conditional contents of the utterances where it occurs. Its contribution can be its essential make-up (leaf-as-what-it-is) or its appearance (leaf-as it-appears). It is in this sense that it can be said that ‘leaf’ is polysemous, and it is this polysemy which explains the ambiguity of ‘those leaves are green’. Vicente 2015: 59)

Let me briefly point out two related reasons against using this style of analysis for the underspecification of predicates in Travis cases (i.e. occasion-sensitivity). First, notice that the (logical or regular) polysemy of **book** (or **school**) is typically *resolved compositionally*, namely, in (co-)predicational *linguistic* contexts (see especially arguments in Asher 2011 and Collins 2017). So, when combined with the adjective **bound**, the noun **book** denotes a physical object, and in the context of **scary** it denotes information. However, the type of predicate underspecification at play in Travis cases seems quite dissimilar in this respect to these more systematic “sense alternations”¹⁰ insofar as many candidate semantic values remain even when the linguistic context of the target term is provided. For instance, **green leaves**, **round ball**, **hot oven**, **blue ink**, **informative**

⁹Frisson defines polysemy as follows: “[t]he different, though semantically related, interpretations of a word like *school* are called senses, and a word with multiple senses is called a *poleseme* or *polysemous*.” (Frisson 2009:112). In recent years, there has been a surge of interest in connecting contextualist data and theories of polysemy, see Recanati (2017), Carston (2021), Löhr (2021)

¹⁰Pustejovsky lists a number of sense alternations (content/container, count/mass, figure/ground, product/producer, process/result, place/people) associated with what he calls “logical polysemy” (see Pustejovsky 1995: 31).

book each still has many different possible interpretations that may bring about the variability in intuitive truth-conditions of the sentences of which they are a part (see also Viebahn 2020). So, while a simple modification will typically disambiguate “senses” it need not, thereby, disambiguate ways. And this is because the resolution of the “ambiguity” of ways – i.e. of the type of predicate underspecification Travis calls “occasion-sensitivity” – is typically achieved by appealing to *extra-linguistic* context (see Collins 2017: 687).

Second, the commonly identified senses of a polysemous expression (e.g. physical object/information) seem to be *coarser* than ways, since different ways might fall under the same dimension or sense.¹¹ Whilst Vicente’s “is/appears” distinction perhaps aligns with the natural/painted green contrast in Travis’ green leaves example, it is ultimately not general or flexible enough to explain the type of variability that these cases target. In some examples, the ambiguity Vicente postulates fails to align with the contrast in ways. Consider the expression **red apple**, which typically means having a red peel, but can also be interpreted as having red flesh (see Lahav 1989, Blutner 1998). These are clearly different ways of being red as we can think of a scenario where only having red flesh (and not having red peel) would count as being red (see the case in Bezuidenhout 2002). So this difference in ways could conceivably come to bear on whether we would judge the sentence **This apple is red** as being true or false. Nonetheless, having red flesh and having red peel would *both* fall under the aspect of the “object-as-it-is”, they both instantiate the “perceptual dimension” of red, and each takes on a *gradable* meaning, see Kennedy and McNally (2010).¹² Hence, although occasion-sensitivity and polysemy both characterise predicate underspecification, contrasts such as these speak against treating them as the same phenomenon.

3 Underdetermination as a metalinguistic issue

On the characterisation of predicate underspecification introduced in §2.2., the minimal content of a predicate, F, is the property denoted by F. The enhanced content of a predicate provides a cover differentiating alternative ways of being F. Using *inquisitive semantics* (Ciardelli et al. 2019), we can integrate these two components of standing meaning into a single formal representation.

On the resulting construal of standing meaning, predicating F of an individual leaves it open which way of being F is at stake at an occasion. We shall therefore say that predication raises a *metalinguistic issue*. The process of arriving at occasion meaning is thus a process of *issue resolution*: deciding which metalinguistic alternative the speaker has in her purview on a given occasion. As we shall see, an advantage of framing things in this way is that it enables us

¹¹According to Viebahn (2020), besides *mere polysemy*, there is a category of *polysemy cum context-sensitivity* whereby each sense may further have many different semantic values.

¹²Whilst Del Pinal (2018) locates different (multiple) “dimensions” in the conceptual structure so that they can all play a role in modifying the extension of a term on a given use, Kennedy and McNally (2010) interpret them as different lexical meanings.

to recursively define the occasion meanings of complex clauses.

3.1 Inquisitive meanings

3.1.1 Basic notions in inquisitive semantics

In the framework of *inquisitive semantics*, the meaning of a sentence φ , regardless of whether it’s a declarative or interrogative, is modelled as a (*non-empty*) *downward closed set of information states* that support φ (Ciardelli et al. 2019).¹³ Any such set of information states (i.e. a set of sets of worlds) is referred to as an *issue*, where issues are resolved by the information states they contain. Downward closure is supposed to formally capture the intuition that if the issue raised by φ is resolved by a state $s \in \llbracket \varphi \rrbracket$ it will also be resolved by any stronger state $t \subseteq s$. By introducing this richer notion of meaning, we are able to capture not only *informative* content – i.e. the information provided by a sentence – but also *inquisitive* content – the issue that it raises. The *informative* content of φ corresponds to the *union* of all members (informative states) of $\llbracket \varphi \rrbracket$, i.e., $\text{info}(\varphi) := \bigcup \llbracket \varphi \rrbracket$.

In the inquisitive framework, all sentences regardless of their sentential form raise issues. The issue raised by φ constitutes its *inquisitive content*. A sentence raises a *trivial* issue whenever its informative content is enough to resolve it, and it raises a *proper* issue whenever its informative content is insufficient to resolve it.¹⁴ *Maximal elements* of $\llbracket \varphi \rrbracket$ are called *alternatives* for φ .¹⁵ Depending on whether the issue raised is trivial or proper, a sentence will have one or more than one alternative, respectively. Simple declarative sentences typically have trivial inquisitive contents, whilst interrogatives have non-trivial inquisitive contents. For disjunctive sentences, however, both informative and inquisitive contents are non-trivial.

3.1.2 Applying inquisitive representations to semantic underdetermination

I proposed above that underdetermination motivates the approach whereby the standing meaning of the predicate F encodes not only its minimal content – the property of being F – but also the enhanced content – the set of *ways* of being F . The latter component, I want to suggest, generates a *metalinguistic issue* which becomes pragmatically resolved in a discourse context. Using inquisitive semantics, we can integrate these two components by modelling the standing meaning of an atomic sentence as *an issue over an information state*. The minimal content can be represented by the informative component of standing

¹³Sentences are evaluated at states in terms of *support* rather than truth; still support supervenes on truth in as much as a sentence is supported in a state s iff it is true in all worlds in s . Formally, a state, possibility or (classical) proposition is a set of possible worlds, $s \subseteq W$.

¹⁴The sentence φ can raise a *trivial issue* that is resolved by its informative content $\text{info}(\varphi)$, *viz.* whenever $\text{info}(\varphi) \in \llbracket \varphi \rrbracket$. Whenever $\text{info}(\varphi) \notin \llbracket \varphi \rrbracket$ the sentence φ raises a *proper issue* which is resolved by some more enhanced state $s \subset \text{info}(\varphi)$.

¹⁵ $\text{ALT}(\varphi) = \{s \in \llbracket \varphi \rrbracket \text{ such that there is no } t \in \llbracket \varphi \rrbracket \text{ such that } s \subset t\}$

meaning (also called here *minimal proposition*), whilst the enhanced content is captured by taking this issue as a *non-trivial issue* whose resolution requires a proper (i.e. non-trivial) enrichment. More specifically, the information provided by the standing meaning of an atomic sentence Fa – that a is F – is insufficient to resolve which ways count at an occasion – that, for all that, a might be σ_1 -F or σ_2 -F etc. In this way, the underdetermination of the standing meaning of Fa is modelled as an *implicit question* as to which way for a to be F is expressed in a context by uttering Fa .

3.1.3 Why inquisitive alternatives?

Both alternative semantics (Hamblin 1973) and inquisitive semantics associate sentences with sets of propositional alternatives (or issues). However, as Ciardelli and Roelofsen (2017) and Roelofsen (2019) show, the underlying notion of alternatives is conceptually quite different in the two frameworks. The difference comes from construing inquisitive propositions as downward closed sets and alternatives as their maximal elements. According to Roelofsen, “this means that one alternative can never be contained in another (otherwise it would not be a maximal element). By contrast, in alternative semantics one alternative may very well be contained in another” (Roelofsen (2019): 270). In other words, unlike in alternative semantics, in inquisitive semantics alternatives are “logically independent” and are construed as *non-nested sets*.

One of the empirical consequences of this conceptual difference has to do with the treatment of the so called “Hurford disjunctions”. Hurford disjunctions are sentences such as *John is American or Californian* and also *Is John American or Californian?*. Although the peculiarity of these sentences cannot be accounted for in traditional alternative semantics, they are ruled out as infelicitous by inquisitive semantics.

Now, how is this distinction between the two notions of alternatives and the exclusion of Hurford disjunctions relevant for the current proposal? I suggested that metalinguistic issues on the sentential level are generated by the alternative ways for a to be F. Thus the metalinguistic issue to resolve in the process of pragmatic enrichment is whether a is σ_1 -F or σ_2 -F and so on. This issue thus involves a disjunction of alternative ways of being F. Crucially, the disjuncts should be construed as *non-nested sets* since whether a is σ_1 -F or F (e.g. *Are the leaves naturally green or green?*) being a Hurford disjunction, is clearly not a valid metalinguistic issue. So, the alternatives defined in inquisitive semantics are more appropriate representations for metalinguistic issues arising from ways. Furthermore, as I am concerned to model the context-sensitivity of predication, the application of inquisitive representations in modelling metalinguistic issues will be limited to atomic sentences that are composed through the operation of predication.

3.2 Typed inquisitive semantics

Let us embed our characterisation of the underspecified meaning of a predicate within the framework of *typed inquisitive semantics* (Ciardelli et al. 2016). In this way, we can compositionally capture how the alternatives associated with predicates (i.e., ways) generate metalinguistic alternatives at the sentential level.

In typed inquisitive semantics, sub-sentential expressions do *not* denote sets of their usual denotations, unlike, for instance, in alternative semantics (Hamblin 1973). Still, in order to have sets of propositions as sentence meanings, the typing of sub-sentential expressions is adjusted. For example, the denotation of a predicate is still a *single* function (i.e. not a set of functions as in alternative semantics), but its semantic type is $\langle e, T \rangle$ instead of $\langle e, t \rangle$, where T is an abbreviation for the type $\langle \langle s, t \rangle, t \rangle$.¹⁶ A simple predicate F in typed inquisitive semantics (InqT) denotes a function that maps an individual to the (downward closed) set of states which contain enough information to establish that the individual has the property F . This is captured in the following definition (the downward pointed arrow indicates that the set is *downward closed*),

$$(11) \quad \llbracket F_{\text{InqT}} \rrbracket_{\langle e, T \rangle} = \lambda x. \{ |Fx| \}^\downarrow \\ = \lambda x. \{ s \mid x \text{ is } F \text{ in every } w \in s \}$$

Recall that on our characterisation of the relation between the minimal and enhanced meaning of **green**, the minimal meaning of **green** is refined by the set of alternative ways of being green which cover the original set. In typed inquisitive semantics, a disjunctive verb phrase such as **sing or dance** is taken to express “an alternative-generating function, i.e., a function that, for any given input, produces a set of alternative propositions” (Ciardelli et al. 2016: 11). We can use this sort of function to model the underspecified meaning of a simple predicate such as **green**. Namely, we envisage the standing meaning of **green** as an *implicit inquisitive disjunction* of alternative ways of being green that, despite denoting a single function, generates the set of propositions (i.e. metalinguistic alternatives) that emerge at the level of an atomic sentence. Each such metalinguistic alternative embodies a different way of being F holding of an individual. Thus, on the current approach, the set of alternative propositions that emerge from combining a simple predicate F with an individual a are generated by the *implicit* (rather than explicit) disjunction operator in the verb phrase joining alternative ways of being F .

In light of this observation, the entry for the underspecified standing meaning of **green** should be modified as follows:

$$(12) \quad \llbracket \text{green} \rrbracket_{\langle e, T \rangle} = \lambda x. \bigcup_{i \in n} \{ |\sigma_i\text{-}Gx| \}^\downarrow \\ = \lambda x. \{ s \mid x \text{ is } \sigma_i\text{-green in every } w \in s, \text{ for some way } \sigma_i \text{ of being green} \}$$

¹⁶In an intensional type theory, s denotes a type, i.e., possible world. It’s important not to confuse this with our adopted notation for information states.

The standing meaning of a simple predicate F is a function from individuals to the set of states consisting exclusively of worlds where something is F in the σ_i way of being F. Correspondingly, the underspecified standing meaning of an atomic sentence Fa is a downward closed set of states, each containing worlds where a is F in some way σ_i of being F. I use $|\sigma_i-Fa|$ to denote the set of worlds where it is true that a is F in some way σ_i of being F.

$$(13) \llbracket Fa \rrbracket_{\langle T \rangle} = \bigcup_{i \in n} \{|\sigma_i-Fa|\}^\downarrow \\ = \{s \mid a \in \sigma_i\text{-F in every } w \in s, \text{ for some way } \sigma_i \text{ of being F}\}$$

Metalinguistic alternatives of Fa are represented by the maximal elements of $\llbracket Fa \rrbracket$ whose number will depend on a number of ways σ_i of being F at w . Each alternative thus contains the states where a is F in the same σ_i way of being F. Whenever there is more than one way of being F, it means that more than one alternative will constitute the standing meaning of Fa . Therefore, in all such cases, the *meta-linguistic* issue expressed by Fa will also be *non-trivial*.¹⁷

Let me illustrate with an example what I proposed so far. Consider again the sentence:

(14) The leaves are green

Suppose there are two ways of being green, σ_N -green (naturally green) and σ_P -green (painted green). The diagrams in Figure 1 represent different components of the underdetermined standing meaning of (14). Grey circles represent possible worlds. Each circle contains a different combination of ways of being green holding of the leaves at w . For instance, the state 11 represents that the leaves are both σ_N -green and σ_P -green at w .

The diagram in Figure 1(a) represents the underdetermined standing meaning of (14) constituted by two metalinguistic alternatives (i.e. σ_N -green alternative and σ_P -green alternative), including all their subsets. Thus, in this model, $\llbracket \text{The leaves are green} \rrbracket = \{\{11, 10\}, \{11, 01\}, \{11\}, \{10\}, \{01\}\}$. The diagram in Figure 1(b) represents the *informative* component of the standing meaning of (14) (i.e. minimal proposition) constituted by the set of worlds where the leaves are green, namely, $\text{info}(14) = \{11, 10, 01\}$. The set of metalinguistic alternatives represented in Figure 1(c), contains *two* elements, namely $\text{ALT}_{\text{META}}(14) = \{\{11, 10\}, \{11, 01\}\}$. In one alternative, the leaves are naturally green ($\{11, 10\}$), and in another the leaves are painted green ($\{11, 01\}$). Hence, despite being informative (i.e., because its informative content doesn't cover the entire logical space), (14) also has *non-trivial metalinguistic inquisitive content*.

Let me stress again that the alternatives represented in the current application of inquisitive semantics are *metalinguistic* (thus encoding semantic underdetermination) rather than being first-order alternatives encoding answerhood or free choice. This means that a (polar) question or disjunction, besides non-trivial metalinguistic inquisitiveness, will also encode a non-trivial first-order

¹⁷Note that the first order issue encoding inquisitiveness understood as answerhood/choice remains trivial as in standard inquisitive semantics.

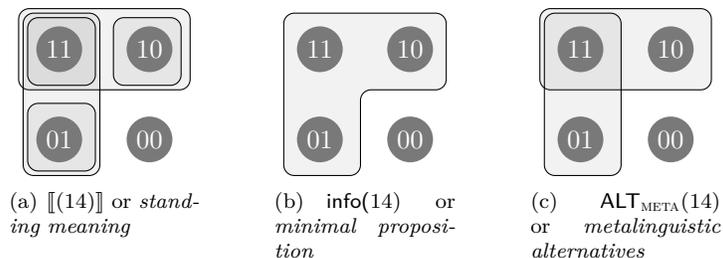


Figure 1: The standing meaning of *The leaves are green* (for two ways of being green), its informative content and metalinguistic alternatives

issue which will need to be resolved in the usual way, namely by providing explicit answers or highlighting the intended alternative (e.g. by using focus).

4 Pragmatic enrichment as driven by goals

In this section, I say more about the mechanism behind the process of pragmatic enrichment. I propose domain goals as the driving force of this process and the goal-conduciveness of states as a basis for determining occasion meanings.

4.1 Goals in the theory of interpretation

The appeal to goals is not a new method of explaining pragmatic phenomena. In the QUD framework (short for “question under discussion”), Craige Roberts brings together the theory of discourse interpretation and planning theories in which the notion of goal-driven behaviour plays the central role (Roberts 1996, 2004, 2012, 2018. See also Van Rooy 2003, Stone 2013, Schoubye and Stokke 2016)). Roberts identifies two sorts of goals that come into play during a conversation between interlocutors, effectively helping to drive successful interpretation. First, there are goals that interlocutors aim to achieve in a given discourse, such as resolving certain implicit and explicit questions under discussion: these are called *discourse goals*. Besides, there are other practical, *domain goals* that interlocutors aim to achieve in the real world (Roberts 2012: 6).

The two types of goals stand, according to Roberts, in a particular relationship so that “discourse goals (QUD) should subserve pre-existing or over-arching domain goals” (Roberts 2018: 323). As such, domain goals provide the context in which QUDs can be understood. Being aware that the domain goal at a context is to conduct a botanical experiment enables speakers to understand what is at issue when the question emerges as to whether the leaves are green. All discourse goals contribute to, and so can be understood as part of, an over-arching effort to establish whether or not our domain goals can be met. In the remainder of this section, I provide a more formal characterisation of goals so

conceived that treats them as the driving force behind the process of pragmatic enrichment.

4.2 Goals and γ -valuations

4.2.1 Conditions on achieving goals

Goals can be defined as states of the world that the agent wants to bring about (Winikoff et al. 2001). Formally speaking, a state of the world is a set of possible worlds, and thus identical to an information state. In the green leaves example, the botanist’s goal is to conduct an experiment using green leaves. This is the state of the world she intends to bring about.

Following the approach proposed in Winikoff et al. (2002), we can think of domain goals as comprised of descriptive and procedural aspects: a description, s_γ , of the state of a world to be brought about and a set of procedures for achieving s_γ . Before a procedure to attain s_γ can be executed, there are certain conditions that ought to be met in order to achieve s_γ . For instance, to attain the state s_γ where the botanical experiment using green leaves is successfully performed, the leaves used in the experiment must be green in a natural way. Thus, if a required condition is met, a desired state s_γ can be achieved. Expanding on this, there are also cases where an object’s being a certain way might actually *rule out* the achievement of a goal. Discovering that the bread is mouldy green might rule out one’s chances of achieving the goal of making a sandwich to eat. But, there will also be those cases where, even if being green is a condition for meeting a goal, that condition is not exclusively tied to any particular way of being green (e.g. sorting green leaves from red leaves).

To account for the intuitions elicited by Travis cases, I suggest that speakers in a discourse are particularly attentive to information that places some condition on their being able to achieve their domain goals. The proposal here is that, of the states constituting the standing meaning of an atomic sentence, those that represent some condition on the achievement of a goal stand out in a way that ensures their being incorporated into the interpretation of occasion meaning. By the same token, those that have no particular bearing on the achievement of a goal do not. The idea, therefore, is that speakers have a certain kind of *selective attention* when it comes to interpretation in such a way that *some* ways of being end up standing out while others effectively fall out of consideration (see also Smith 2010).

4.2.2 Evaluating information states

To capture this, we need some account of how certain states come to stand out (or not), and how this leads to their being included (or not) in occasion meaning. Let us start by representing a domain goal γ as a function that maps states to the *domain goal values* (or γ -values for short). For simplicity’s sake, let us assume that there are *two* γ -values that a state can score, either 1 or 0, where 1 represents a highlighted state and 0 non-highlighted state.

$$(15) \gamma(s) \mapsto \{1, 0\}.$$

An information state s is mapped to γ -value 1 if it represents a requirement (or in some cases impediment) on achieving a particular domain goal. This in turn depends on which way of being F holds of a at all the worlds contained in s . A given way σ_i of being F can be *relevant* for achieving the goal γ either by being *conductive* or *anti-conductive* to it. But a certain way can also be *irrelevant* to achieving the goal, in which case, if a goal state s_γ is achieved, the state embodying this way may or may not obtain. On the basis of these considerations, we can formulate the following standard condition for assigning γ -values to states:

(16) **Standard γ -condition:**

- (a) $\gamma(s) = 1$ just in case for all $w \in s$ there is some σ_i -F such that $a \in \sigma_i$ -F and σ_i -F is *conductive* to γ .
- (b) Otherwise, $\gamma(s) = 0$

Let's clarify the standard γ -condition on our working example. Assume as before that there are two ways of being green, naturally green and painted green, which jointly cover the property of being green. Being naturally green is *conductive* to the botanist's goal, whilst being painted green is *irrelevant*. This means that, out of all states that constitute the standing meaning of **The leaves are green** (namely, $\{\{11, 10\}, \{11, 01\}, \{11\}, \{10\}, \{01\}\}$ see Figure 1a), only those states, such that at *all* the worlds contained in them the leaves are naturally green, will score 1 (i.e., 'the naturally green alternative'). Since being painted green is as such *irrelevant* for the botanist, it is not the case that at all the worlds in $\{11, 01\}$ there is a goal-conductive way of being green (namely, there is none at 01). Hence 'the painted green alternative' scores 0 for the botanist goal (as does the state $\{01\}$).

How about the painter context? Both ways of being green are conducive to the painter's goal: the goal can be achieved regardless of the way in which the leaves are green. Therefore, at all the worlds in both alternatives the leaves are green in (at least one) goal-conductive way. Hence all the states score 1.

4.2.3 Non-standard γ -conditions

Flipped γ -condition

In many conversations, we selectively attend to the ways which would positively advance the achievement of our domain goals. However, there are also those contexts in which the point of the conversation is to highlight *anti-conductive* ways instead of goal conducive ones. For instance, someone asking whether the bread is green (fearing that it may be) is looking to check if the things with the bread stand so as to prevent them from making a sandwich to eat. In this case, rather than highlighting a possible goal-conductive way for the bread to be green this person is highlighting an anti-conductive way of being green (i.e. mouldy

green). Accordingly, since the polarity of the conversation is flipped so is the condition for evaluating information states.

(17) **Flipped γ -condition:**

- (a) $\gamma(s) = 1$ just in case for all $w \in s$ there is some σ_i -F such that $a \in \sigma_i$ -F and σ_i -F is *anti-conducive* to γ .
- (b) Otherwise, $\gamma(s) = 0$

The dominant “polarity” of a conversation – i.e. whether the (implicit) focus of a conversation is on goal conducive or goal anti-conducive ways – plays a role in determining occasion meanings. Namely, depending on it, either the standard or the flipped γ -condition is used.

Strong γ -condition

Besides requiring that a is F in at least one goal conducive way of being F, some goals may require that one way be included and another ruled out. For instance, we could imagine a context where conducting a more demanding botanical experiment would require not only that the leaves be naturally green but additionally that they *not* be painted green or covered in green mould.¹⁸ Call any such context, a “picky context”. For a picky context, a stronger version of a γ -condition can be formulated which assures that a state is highlighted just when both conducive and anti-conducive ways are taken into account as follows:

(18) **Strong γ -condition:**

- (a) $\gamma(s) = 1$ just in case for all $w \in s$ there is some σ_i -F such that $a \in \sigma_i$ -F and σ_i -F is *conducive* to γ and there is no σ_j -F such that $a \in \sigma_j$ -F and σ_j -F is *anti-conducive* to γ .
- (b) Otherwise, $\gamma(s) = 0$

The decision to single out picky contexts as non-standard has to do with their borderline character when it comes to pragmatic enrichment. For, the minimal content of a sentence is supposed to be *multiply pragmatically enriched* in *opposite* directions. The more demanding and intricate the context, the more risk that the brief ambiguous signal (e.g. **green**) is misinterpreted. And, because the risk of a possible misunderstanding would thus outweigh the benefit of brevity, it would be more optimal, in a picky context, for a speaker to use a costlier, partly disambiguated expression in a combination with the standard (or flipped)

¹⁸Note that this requirement differs from a more mundane requirement that the leaves be naturally green and not be *painted*. The goal we are entertaining presently requires that the leaves be naturally green but not painted *green*.

γ -condition (e.g. The leaves are green but not painted green) instead of solely relying on the strong yet potentially riskier γ -condition.¹⁹

In the end, whether the standard or non-standard γ -condition is used to evaluate information states largely depends on the conversational context. Still, the dominant polarity of a conversation and the complexity of the demand imposed by a goal are factors that make this choice more constrained.

4.2.4 A note on downward closure

Recall that a way of being green (e.g. naturally green), just like being green, is a property, and so, as a property, it is also ‘covered’ by ways, and each of these ways is also ‘covered’ by ways and so forth. Now, assuming being naturally green is conducive to the botanist goal – i.e., it is sufficient that the leaves are naturally green for the goal to be achieved – then, intuitively, so is any more specific way of being naturally green. More generally, if σ_i -F (as it applies to a) is conducive to γ then so is any ω_i -F $\subseteq \sigma_i$ -F that forms a part of its cover. In other words, *conduciveness (and anti-conduciveness) to a goal is a downward closed property*. Correspondingly, whenever a state s scores γ -value 1 (on the basis of a given way of being F), any state $t \subseteq s$ will inherit the same score. However, if a state s scores 0 there may be some state $t \subseteq s$ that scores 1.²⁰ Hence, unlike conduciveness and anti-conduciveness to a goal, irrelevance is *not* downward closed.

4.3 Goals and occasion meanings

Having provided a description of how γ -valuations are assigned, the question remains how occasion meaning is determined on the basis of those values. A simple approach here, which appears to be intuitively adequate for the kinds of cases under discussion, is to suggest that the pragmatically enriched occasion meaning of an atomic sentence is comprised of those, and only those information states that receive a *highlighted γ -valuation*.

However, there is one more final step. Once the states constituting the standing meaning of an atom have gone through the γ -function, the metalinguistic issue associated with it can be considered resolved (for, we know which way *for a to be F* counts given γ). In order to capture this fact in the definition of occasion meaning, we can apply the *non-inquisitive closure operator !* to relevant γ -weighted states. In this way, the metalinguistic alternatives bearing a given γ -value will be ‘flattened’, and any remaining metalinguistic inquisitiveness will be removed.²¹

¹⁹Our intuitions on how to evaluate ‘ambiguous signals’ in picky contexts are, to my mind, far less clear than in standard Travis cases. Suppose, in the picky botanist context, the leaves are indeed naturally green but they are also painted green. So the goal requirement is satisfied but only with respect to one way of being green. Is the utterance of **The leaves are green** intuitively false here? I don’t think the answer to this question is straightforward.

²⁰In the botanist context, for instance, the painted green alternative scores 0, but the state $\{11\}$, which is one of its subsets, scores 1.

²¹The role of non-inquisitive closure is to remove inquisitiveness while leaving informative

4.3.1 Atomic occasion meanings

Now we are ready to define the occasion meaning of an atomic sentence as follows:

$$(19) \llbracket Fa \rrbracket_\gamma = \neg \{s \in \llbracket Fa \rrbracket \text{ such that there is no } t \in \llbracket Fa \rrbracket \text{ such that } \gamma(t) > \gamma(s)\}$$

According to the clause (19), the occasion meaning of an atomic sentence Fa is the (downward closed) set of states (constituting the standing meaning of Fa) with the *greatest* γ -value. Notice that in case no such state is relevant to γ (by being conducive or anti-conducive to it), an utterance of Fa may still be true.

4.3.2 Occasion meanings of complex clauses

After applying the γ -function to the standing meaning of Fa and then flattening any metalinguistic alternatives associated with the ways for a to be F we end up with the downward closed set of states with the greatest γ -value. Note that this is still an *inquisitive* representation even though its remaining (meta-linguistic) inquisitiveness is only trivial. Nevertheless, this means that we can plug in the atomic definition of occasion meaning into the standard inquisitive framework InqB (Ciardelli et al. 2019) and recursively define remaining complex clauses, including questions as follows:

$$(20) \quad \begin{aligned} \llbracket \neg \varphi \rrbracket_\gamma &= \wp(\overline{\bigcup \llbracket \varphi \rrbracket_\gamma}) \\ \llbracket \varphi \vee \psi \rrbracket_\gamma &= \llbracket \varphi \rrbracket_\gamma \cup \llbracket \psi \rrbracket_\gamma \\ \llbracket \varphi \wedge \psi \rrbracket_\gamma &= \llbracket \varphi \rrbracket_\gamma \cap \llbracket \psi \rrbracket_\gamma \\ \llbracket !\varphi \rrbracket_\gamma &= \wp(\bigcup \llbracket \varphi \rrbracket_\gamma) \\ \llbracket ?\varphi \rrbracket_\gamma &= \llbracket \varphi \rrbracket_\gamma \cup \llbracket \neg \varphi \rrbracket_\gamma \end{aligned}$$

We do need to bear in mind that for an atomic sentence p to have trivial inquisitive content in a context where γ is salient here means *two* different things: that neither *metalinguistic* nor *first-order* issue (question) require any further information to be resolved.²² The *informative* content of p in context where γ is salient (i.e. *contextual proposition*) is the union of all information states constituting its occasion meaning: $\text{info}_\gamma(p) = \bigcup \llbracket p \rrbracket_\gamma$. Because this set doesn't cover the entire logical space the informative content of p in context is *not* trivial, i.e. p is informative. Hence, the informative content of p in context is a *subset* of its literal informative content. Notice that the strengthening of the informative content of p need not be proper, it can also be trivial. For any atomic formula p it thus holds that

$$(21) \text{info}_\gamma(p) \subseteq \text{info}(p).$$

content untouched. In inquisitive semantics, the non-inquisitive closure operator is defined as follows: $\llbracket !\varphi \rrbracket = \wp(\bigcup \llbracket \varphi \rrbracket)$. Notice that this is still a downward closed set.

²²The former is the case because the γ -function has done its job, the latter is the case because its informative content in context is an element of its occasion meaning. see fn 14.

In other words, the contextual proposition expressed by p is (trivially) stronger than the minimal proposition expressed by it.

Now, let's look more closely at the recursive definition of the occasion meaning for complex clauses given in (20). As mentioned, this is a standard definition used in the basic inquisitive semantics InqB . The occasion meaning of *negation* corresponds to the power-set of the complement of the union of the information states contained in $\llbracket \varphi \rrbracket_\gamma$. Like an atomic sentence, a negative sentence will have trivial inquisitive content in context and non-trivial informative content in context. The occasion meaning of a *disjunctive* sentence $\varphi \vee \psi$ amounts to the union of $\llbracket \varphi \rrbracket_\gamma$ and $\llbracket \psi \rrbracket_\gamma$. Disjunctions contain (at least) two (first order) alternatives, and so they are typically *inquisitive*. However, insofar as their informative content is not necessarily trivial, a disjunction will also be informative. The occasion meaning of a *conjunction* is the intersection of $\llbracket \varphi \rrbracket_\gamma$ and $\llbracket \psi \rrbracket_\gamma$, and encodes a single alternative (hence, has trivial inquisitive content).

The role of projection operators $!$ and $?$ is to project any proposition to an informative or inquisitive dimension, trivialising either its inquisitive or its informative contents. $!$ is the non-inquisitive operator and $?$ the non-informative operator. For example, the proposition expressed by $!\varphi$ always contains a single (first-order) alternative $\bigcup \llbracket \varphi \rrbracket_\gamma$ and it thus has trivial inquisitive content. A *polar question* $?\varphi$ is identical to the disjunction of a positive formula and its negation, $\varphi \vee \neg\varphi$. Correspondingly, $\llbracket ?\varphi \rrbracket_\gamma = \llbracket \varphi \vee \neg\varphi \rrbracket_\gamma$, which means that the proposition expressed by $?\varphi$ always encodes two alternatives (and is therefore always inquisitive). And since these alternative jointly cover the entire logical space, a polar question has trivial informative content.

5 Illustrations

5.1 Simple positive declaratives

Let us start with a toy example. Consider again the simple declarative sentence uttered in the botanist context described in (4).

(22) The leaves are green

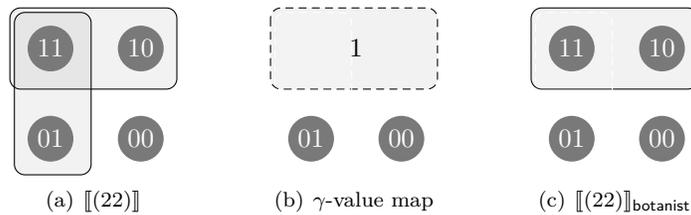


Figure 2: Standing meaning of (22), γ -value map for the botanist goal, and occasion meaning of (22). Only maximal possibilities depicted.

Figure 2 depicts the standing and occasion meaning of (22), including the γ -valuation map for the botanist goal. Grey circles represent possible worlds such that in world 11 the leaves are both naturally and painted green, in world 10 they are only naturally green, in world 01 only painted green, and in world 00 neither (assuming there are only two ways of being green). The *standing* meaning of (22) corresponds to an implicit inquisitive disjunction of metalinguistic alternatives. Its *minimal proposition* corresponds to the union of states constituting its standing meaning, namely, $\{11, 01, 10\}$. For the botanist goal, since the leaves being naturally green is conducive to it, the states associated with this way of being green all receive a value of 1, including the state in which the leaves are both painted and naturally green. As explained above, we obtain occasion meaning by taking into account only highlighted alternatives: in this case, only goal-*conductive* states count towards occasion meaning depicted in Figure 2(c).²³ Applying the definition (19) to the botanist context, the occasion meaning becomes that set of states in which the leaves are naturally green. Finally, the contextual proposition expressed by (22), i.e. $\text{info}_{\text{botanist}}(22)$, represents a *proper enrichment* of its minimal proposition.

Let us also briefly look at the second example, Max is a philosopher. Recall that in (5) and (6) we have considered two contexts – the *debate club context* and the *university context*, respectively. There we assumed two ways for someone to be a philosopher (in reality, there are many more): being someone who likes to philosophise in their free time and being a professional philosopher who is employed in a philosophy department. In the debate club context, it matters that a person with the aptitude for philosophical thought is chosen – for this goal to be achieved, it does not matter whether the person is a professional philosopher or not, as long as they are a talented thinker and enjoy doing philosophy. By contrast, in the university context, it is essential that a person is employed in a philosophy department and is considered a philosopher in this way. Out of the two ways of being a philosopher we distinguished, only one is considered conducive to the goal.

The analysis works in the same way for those conversations whose focus is on situations that would present an impediment to fulfilling the goal. Suppose A utters *The bread is green* in reply to B’s asking whether the bread is green in the context of wanting to make a sandwich to eat. The reason for B asking this is to rule out a (likely) situation where bread has gone mouldy and is inedible. A’s reply in this context highlights a way for bread to be green whose obtaining would have the (negative) impact on the goal. The flipped γ -condition is now used to evaluate information states and the definition given in (19) is used to determine the occasion meaning of A’s utterance, thus taking into account only those states (if any) that would prevent the fulfilment of the goal.

²³Suppose some goal γ requires *more than one way of being F* for its achievement. Based on the standard definition of the γ -condition in (16), a state s with only one goal conducive way of being F and a state s' with more than one goal-conductive way will both score the same positive score, 1. However, the state s' is clearly preferable to s . We can make sure that only a *maximally* goal-conductive state s' counts towards occasion meaning by taking into account not only the score but also the *amount* of positive γ -evaluations.

In all three examples, we achieve the metalinguistic issue resolution by (non-trivial) strengthening of standing meaning, restricting it to only those states that impose, in and of themselves, some condition on the achievement of the goal. In some contexts, all states may be assigned 0, as none would impose a relevant condition in and of itself. In these cases, as no particular way of being has been highlighted, the process of pragmatic enrichment would effectively yield an empty occasion meaning. Intuitively, as a result, speakers would fall back on the minimal proposition. This will also be the case whenever *all* states and alternatives are highlighted and receive score 1. So, in general, whenever no state or metalinguistic alternative stands out (either by being better or worse for the goal), no proper pragmatic enrichment will take place and the proposition expressed by a simple declarative sentence in context will be identical to its minimal proposition.

5.2 Negations

We've seen that the contextual proposition expressed by a simple declarative sentence Fa is an enhancement of the minimal proposition expressed by it. This is intuitively correct as well, because, at least concerning the phenomenon of occasion-sensitivity considered here, we typically assert something stronger and more specific in context, compared to what the sentence would say out of the blue. However, this principle doesn't hold generally for all declarative sentences.²⁴ To see why not consider the following negation:

(23) The leaves are not green

In Figure 3(a) I depicted the minimal proposition expressed by (23)²⁵ and in Figure 3(b) and 3(c) two contextual negations.²⁶ To determine the occasion meaning of (23), besides those possibilities containing worlds where it is false that the leaves are green in some way of being green, we need to take into account *other* possibilities which are in the power-set of the *complement* of $\bigcup \llbracket (22) \rrbracket_\gamma$. Accordingly, in addition to possibilities that constitute the minimal proposition expressed by (23), these other possibilities (if any) will also constitute the intended contextual negation for each domain goal. In the painter's context, there is no such possibility (contextual proposition coincides with minimal proposition) and in the botanist context this is the possibility $\{01\}$ (only painted green).

It is easy to see based on the diagram in Figure 3 that, the minimal proposition expressed by (23) is stronger than the proposition expressed in the botanist context (Figure 3(c)).²⁷ Correspondingly, the entailment order is here reversed compared to positive declaratives: (non-trivial) pragmatic enrichment of the

²⁴This has also been observed in (Schoubye and Stokke 2016: 782).

²⁵We apply the standard InqB definition for negation to our definition of the standing meaning for the atomic clause in (13) to obtain the standing meaning of $\neg Fa$. The union of these states determines its minimal proposition.

²⁶These are determined by the clause for contextual negations specified in (20).

²⁷That the leaf is not green in any way entails that the leaf is not painted green.

informative content of negative sentences is characterised not by strengthening but by *weakening*. By contrast, the contextual proposition expressed by (23) in the painter’s context corresponds to its minimal proposition (the weakening of the informative content here is trivial).

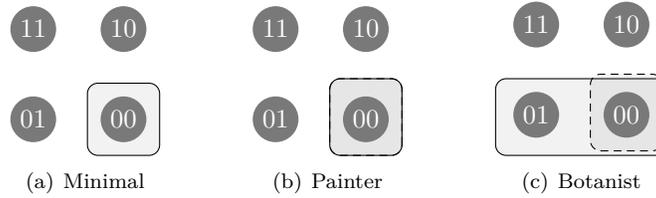


Figure 3: Minimal proposition and two contextual negations.

5.3 Questions

My final illustration concerns questions. We have seen that the use of inquisitive representations allows us to define the meanings of other complex clauses, including questions. I mentioned also that the meaning of $?\varphi$ is in the context of InqB is taken to be identical to the disjunction of a positive formula and its negation, $\varphi \vee \neg\varphi$. The application of the non-informative operator $?$ assures that a question always has non-trivial inquisitive content and that its informative content is trivialised. Let us consider a polar question and see what its resolution conditions are in context.

(24) Are the leaves green?

Figure 4 represents the resolution conditions of (24) in the two contexts we have been looking at. In the painter context (Figure 4(a)), as no strengthening of the positive disjunct takes place in the process of pragmatic enrichment, so no weakening of the negative disjunct happens either. However, in the botanist context (see Figure 4(b)), as the positive alternative is strengthened, the negative alternative is accordingly weakened.

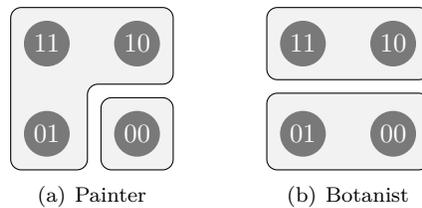


Figure 4: Two occasion meanings of (24). Only maximal elements depicted.

The occasion meaning of a *wh*-question (e.g. Which leaves are green?) can be easily derived from the occasion meaning of a polar question such as the one in

(24), because “the meaning of a *wh*-question can also be thought of as a simple list of polar subquestions” (Schoubye and Stokke 2016: 767).

6 Conclusion

In this paper I proposed an approach to semantic underdetermination that uses the model of issue resolution to describe how occasion meanings are determined in the process of pragmatic enrichment that is driven by domain goals. I used Travis cases to motivate the idea of predicate underspecification (occasion-sensitivity) based on alternative ways for some object *a* to be F. Remaining unresolved in predication, these ways are taken to generate non-trivial inquisitiveness in the standing meaning of an atomic sentence. In the process of interpreting the sentence in context, we look how to narrow down the space of alternative interpretations, and achieve the state where underdetermination is resolved. I argued that, in doing so, we primarily rely on contextually salient domain goals, highlighting those metalinguistic alternatives that are conducive (or anti-conducive) to the goal. These alternatives determine the occasion meaning of a sentence. I illustrated how the proposed system works in determining occasion meanings of several types of sentences in different contexts. Overall, I hope to have shown that combining inquisitive representations with domain goals provides a fruitful characterisation of how interpretation proceeds at occasions of utterance.

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