An inquisitive approach to occasion-sensitivity*

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Abstract

The following paper presents a uniform account of occasion-sensitivity for a range of declarative and interrogative sentences using inquisitive semantics as the main semantic framework. We propose an extension to the basic inquisitive framework that takes into account that the interpretation of sentences is sensitive to contextually salient domain goals. The main idea is that, from a number of propositions that a sentence may express, only those that are more conducive to the salient domain goal than others are 'visible' to speakers in a given context. After introducing a formal system, we look at some applications to simple declaratives, negations, disjunctions, polar interrogatives and wh-interrogatives.

1 Introduction

1.1 Occasion-sensitivity: broadening the empirical scope

When someone says that the leaves are green or that the shoes are under the bed what they say is often sensitive to certain features of the occasion on which a sentence is uttered. For instance, they may be saying something that is compatible with the leaves being painted green, or, on other occasions, with them being only natural green. The phenomenon is referred to as *occasion-sensitivity* and it will be the main topic of the present discussion. To illustrate consider the following example from the class of examples called 'Travis cases' due to Charles Travis who first proposed them:[1]

> Pia, concerned for an impoverished student, asks Max whether the student has a desk. Max replies, 'It depends on what you mean by desk. If you count a door over two stacks of milk crates as a desk, then yes. If not, then, no.' (Travis 2000: 3)

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[1] See (Travis 1978, 2000, 2008, 2009)

The idea is that in order to answer this question correctly Max needs to know more about Pia's purposes for asking this question and what she expects from a desk. If she is concerned about whether the student has something to write on, then probably the correct answer is 'yes'. If, however, her goal makes her expect some high-end piece of furniture, then probably 'no'.[2]

In recent years there have been numerous discussions of occasion-sensitivity and other forms of semantic underdeterminacy.[3] However, the empirical focus has thus far been restricted exclusively to declarative sentences. In particular, the large majority of motivating examples involved simple positive declaratives such as Steel is strong enough, Tipper is ready or Smith weights 80 kilograms, and only occasionally simple negations such as You are not going to die. It is striking, however, that no extant theory of occasion-sensitivity takes into consideration that the phenomenon is more general and that it affects the interpretation of other sentential forms besides declaratives. Although some recent theories of occasion-sensitivity appeal to *questions under discussion*[4] as a main factor in determining what is said on some occasion (see Schoubye and Stokke 2015), interrogative forms are nonetheless exempted from this treatment. Our chief intention in what follows is to outline a theory that can uniformly account for the occasion-sensitivity of assertions as well as questions.

1.2 Plurality of interpretations

Travis cases indicate that a sentence, regardless of whether declarative or interrogative, may have different interpretations, or may express different (sets of) propositions in different contexts. Let us capture this pictorially. Assume there are two alternative (albeit compatible) ways in which some object a may count as being F.[5] Then a can be F in only one or only another of those ways, or in both ways at once (if the ways are compatible). We depict these possibilities in **Figure 1** where each grey circle represents a possible world and in each possible world (except 00) a is F in a different way (in the world 00 a is not F). Notice that **Figure 1** consists of three diagrams, such that in each diagram a different set of worlds is encircled. These sets of worlds represent three different propositions that the declarative sentence Fa may express, assuming two ways of being F: $[[\mathsf{Fa}]]_i = \{11, 10, 01\}; [[\mathsf{Fa}]]_{ii} = \{11, 10\}; [[\mathsf{Fa}]]_{iii} = \{11, 01\}$.[6]

Just as a declarative sentences can express different propositions in different contexts, so can an interrogative sentence. In **Figure 2** we have depicted

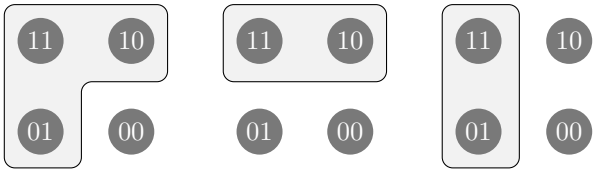
[2]This is at least the direction in which the intuitions as regards classifying desks in these circumstances are claimed to go. For some experimental evidence on intuitions concerning occasion-sensitivity and Travis cases see Hansen and Chemla (2013).

[3]For discussion of occasion-sensitivity see e.g. Recanati (2004), Recanati (2010), Recanati (2012), Carston (2002), Travis (1978), Travis (2006), Travis (2008), Cappelen and Lepore 2008, Predelli 2005, Rothschild and Segal 2009, MacFarlane (2009), and Kennedy and McNally 2010.

[4]This notion has been fruitfully used in the theory of information exchange and discourse structure. See Roberts 1996, 2004, 2012

[5]We use *a, b, c....* to denote individuals, F, G... to denote properties, and Fa, Gb to denote sentences. For atomic sentences, we sometimes also use sentential variables *p, q, r*.

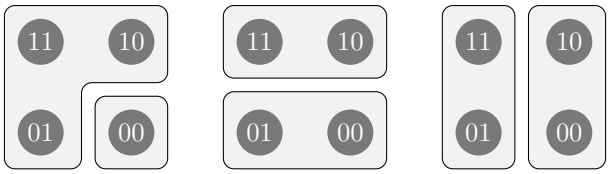
[6]This list is not meant to be exhaustive



(a) Fa in c_i (b) Fa in c_{ii} (c) Fa in c_{iii}

Figure 1: Different propositions expressed by Fa

three different propositions that an interrogative sentence ?Fa may express: $[[?Fa]]_i = \{\{11, 10, 01\}, \{00\}\}$; $[[?Fa]]_{ii} = \{\{11, 10\}, \{01, 00\}\}$ and $[[?Fa]]_{iii} = \{\{11, 01\}, \{10, 00\}\}$ (again not assuming exhaustivity).



(a) ?Fa in c_i (b) ?Fa in c_{ii} (c) ?Fa in c_{iii}

Figure 2: Different propositions expressed by ?Fa

Our methodology in what follows will be to think of the use potential of a sentence as being determined by (albeit not identical to) its context-independent meaning. That is, the meaning of a sentence determines the set of acceptance conditions that the sentence may have on different occasions of use, although it won't be necessarily identical to this set. This will allow us, as we shall soon see, to have a uniform occasion-sensitive semantics for both sentential forms without, however, compromising the intuitive contrast between their discourse effects (i.e. the fact that assertions provide and questions request information).

1.3 Why inquisitive semantics?

A formal semantic framework known as *inquisitive semantics*[7] that has recently been developed provides a suitable formal tool for our purpose. On this view, the meaning of any sentence encodes two basic types of content: one is the sentence's *informative content* – its potential to provide information – and another its *inquisitive content* – i.e. the potential to raise issues. The contrast between declaratives and interrogatives vis-a-vis their discourse effects is captured by trivialising one of these components. Thus, declaratives have only trivial inquisitive contents, whilst interrogatives have only trivial informative contents.

[7]See Ciardelli et al. 2013, Ciardelli et al. 2015a, Groenendijk et al. 2009, Roelofsen 2013, Roelofsen and Farkas 2015, Theiler et al. 2016

Second, the meaning of a declarative is lifted from a set of worlds to a (downward closed) set of propositions thus allowing for a uniform formal representation of the meaning of both sentential forms. Moreover, in the inquisitive framework, the meaning of a sentence is dissociated from alternatives that it introduces and, a fortiori, from answerhood, which again allows that both declaratives and interrogatives denote the same semantic entity.[8]

Nonetheless, in its basic implementation inquisitive semantics is not concerned with context-sensitivity; here, just like in the classical setting, each sentence is still associated with a *unique* (albeit enriched) proposition without considering any contextual information.[9]That is, the motivation to use sets of propositions to uniformly model meaning is quite different in inquisitive semantics from our motivation to explain occasion-sensitivity. In what follows we shall thus propose an extension of the basic inquisitive framework in order to explain how declarative and interrogative sentences may express different propositions on different occasions. Namely, in order to fully exploit the potential of inquisitive semantics we will need to show how we can assign to a sentence *multiple* semantic values, i.e., not just a *minimal proposition* corresponding to its context-independent meaning but also *contextual propositions*.

1.4 The structure of the paper

The paper will be structured as follows. In section 2 we introduce some motivating examples, including an informal analysis of the driving pragmatic mechanism. In section 3 we introduce inquisitive semantics in its basic form, including a formal system for a simple propositional language. In section 4 we propose an enrichment of the inquisitive framework that takes into account occasion-sensitivity. Here we formally define goals as a main parameter of occasions and introduce an extended formal system, InqC which recursively defines goal-sensitive denotations for a small propositional fragment. In section 5 we look at some applications of the theory to simple declaratives, negations, disjunction, polar interrogatives and wh-interrogatives. In section 6 we discuss a couple of potential problems and conclude in section 7.

2 Motivating cases

In this section we introduce a few examples of the cases that motivate the extension of the basic inquisitive framework we propose in this paper. In the

[8]"To enjoy the benefits of having alternatives in our semantics, it is not necessary to assume that the meaning of a sentence is identical with the set of alternatives that the sentence introduces; it is sufficient to assume that the meaning of a sentence determines the set of alternatives that it introduces." (Ciardelli et al. 2016: 16).

[9]In this framework, classical truth-conditions can be straightforwardly recovered from inquisitive meanings. As Ciardelli et al. (2015b) put it "statements behave exactly as they do in classical logic. The classical behavior of statements results in a tight connection between their support conditions and their truth conditions. Namely, a statement φ is supported by a state s just in case it is true in every world in s." Ciardelli et al. 2015b: 66)

literature these examples are known as 'Travis cases', and are taken to demonstrate that extra-linguistic information plays an ineliminable role in determining the propositional content expressed by a sentence on an occasion.[10] Consider some Travis cases:

The leaf is green[11]
State of affairs: Pia's Japanese maple is full of russet leaves. Pia paints them green.

1. *Zoe needs green leaves for her artwork* (henceforth, *the artist context*)
   (a) Zoe: Are the leaves green?
   (b) Pia: Yes, the leaves are green.

2. *Zoe is a botanist seeking green leaves for a study of green-leaf chemistry* (henceforth, *the botanist context*)
   (a) Zoe: Are the leaves green green?
   (b) Pia: *Yes, the leaves are green.[12]
   (c) Zoe: No, the leaves are not green.

The shoes are under the bed[13]
State of affairs: Pia is looking for her shoes. Sid sees them, heels protruding from beneath the bed.

3. *Retrieving shoes to go out*
   (a) Pia: Are the shoes under the bed?
   (b) Sid: Yes, the shoes are under the bed

4. *Pia wants to make sure that her shoes would not catch the eye of the kleptomaniacal Zoe and are well hidden* (henceforth, *the kleptomaniac context*)
   (a) Pia: Are the shoes under the bed?
   (b) Sid: *Yes, the shoes are under the bed.
   (c) Pia: No, the shoes are not under the bed.

[10] In what follows our focus will be on those context-sensitive sentences which would most obviously be taken to express propositional wholes independently of context rather than incomplete propositional fragments or proposition radicals. So, alongside sentences containing indexicals, we will exclude from our current analysis examples such as Tipper is ready or Steel is strong enough which are sometimes taken to require linguistically mandated contextual completion in order to express a proposition (e.g. as a result of hidden variables in their logical form.). See Bach (1994).
[11] Travis (2008): 111
[12] We use the star sign to indicate that a response is in some sense inadequate or infelicitous, and that an utterance is intuitively 'false' or it doesn't adequately resolve the salient issue
[13] Travis 2009: 119-120

Notice that the dialogues in (1)–(4) demonstrate not only that the interpretation of the same declarative sentence type varies cross-contextually but, equally, that what intuitively counts as a correct answer to a question is occasion-sensitive. Although the existing literature abounds with analyses of the context sensitivity of declaratives, there is hardly any discussion of this phenomenon in relation to questions.[14] The account we are about to propose is build around the assumption that occasion-sensitivity is not particularly about truth, but equally about answerhood.

To establish the source of the observed contextual variability in Travis cases let us look at some of them more closely. Consider **The leaf is green** case in (1) and (2) above. Our intuitive acceptance of a painted green leaf which is naturally red as an instance of a green leaf varies as a function of *different purposes* which an object with such properties is meant to serve. That is, we would accept as an intuitively correct answer that this leaf is green if the goal on the occasion of utterance is to make an artistic decoration where the surface colouring matters. Yet we would refuse to accept is as such if the goal is something to do with the leaf's natural properties such as its chloroplasts (which property in the imagined case is lacking). Similarly, in **The shoes are under the bed** case in (3) and (4) it depends on what our plans and goals are what we will be prepared to accept as a case of shoes being under the bed: if we expect that they are safely hidden under the bed, certain other ways of the shoes being under the bed won't be accepted. Cases such as these are ubiquitous and they indicate that extra-linguistic information plays a critical role in the interpretation of linguistic expressions and in arriving at their intended contents.

The main idea behind the present account is that *practical goals* create *preferences* for (and biases against) certain ways in which some object a may count as being F, thus influencing the interpretation of utterances.[15] In order to successfully achieve a goal, certain requirements must be met. For instance, a leaf to be used in the botanist's experiment must be naturally green and not naturally red or yellow, but it doesn't matter (by assumption) whether it's painted green, red or any other colour, just as it doesn't matter if it fell off a tree yesterday or today, or if Pia or John found it, etc. What matters are only those properties (or lack thereof) *pertaining to the leaf's greenness* that may be reasonably considered as having an impact on a successful fulfilment of the domain goal.[16]

[14] An appeal to pragmatic factors in determining mention-some and mention-all readings of wh-questions has been made in Van Rooy (2003). Schoubye and Stokke (2015) use a combination of partition semantics and QUDs to explain the occasion-sensitivity of simple (positive) declaratives.

[15] Following Roberts (2012) we can distinguish between *discourse goals* of inquiry and practical, *domain goals* (see Roberts 2012: 7). The key factor responsible for occasion-sensitivity, on our account, are domain goals (although discourse goals determine the relevance of answers; see section 6.2)

[16] A world may have properties which are conducive to the goal but not pertaining to what a sentence is about. E.g. that it's a Tuesday may be conducive to the botanical experiment but it has nothing to do with the greenness of the leaf. Although downward closure lets in all kinds of possibilities as part of the denotation of a sentence (e.g. a possibility that the leaf is naturally green and it is a Tuesday is part of the meaning of The leaf is green), the contribution of c-values to contextual meanings can be restricted. See section 6.1

In general, whenever a certain goal is salient in a context we expect that what is communicated in a discourse be *maximally conducive* to this goal. On this view, Travis cases indicate that a sentence may express different propositions some of which are more conducive to the goal than others. Whenever this is the case we expect that the information provided or requested by uttering the sentence in a context be restricted to information which is *goal-conducive*.

It what follows we shall assume that the key parameter of variability illustrated in Travis cases is the *domain goal* that is salient of an occasion of utterance, and we will attempt to outline *a goal-sensitive inquisitive semantics* for declarative and interrogative sentences. In order to explain how contextual goals determine the proposition expressed by a sentence in context, current inquisitive semantics, albeit having required formal notions for this task, needs to be somewhat enriched. But before we suggest concrete enrichments we first need to introduce the basic framework.

3 Inquisitive semantics: a basic framework

In this section we introduce basic inquisitive semantic notions and definitions. Like alternative semantics (Hamblin 1973), inquisitive semantics takes the meaning of any sentence to consist of *a set of (classical) propositions* (cf. Ciardelli et al. 2016). As we shall see, a richer notion of a proposition will be useful not only for representing different types of propositional content (i.e. inquisitive in addition to informative) but also in capturing a range of possible interpretations that a sentence with a given standing meaning may have.

3.1 Inquisitive sentence meanings

3.1.1 Propositions

In the classical, truth-conditional framework, the meaning of a declarative sentence is taken to correspond to its truth-conditions or, equally, the proposition expressed by φ, which is formally modelled as a set of possible worlds where φ is true (or a function from worlds to truth-values). This is supposed to capture the *informative content* expressed by φ. However, besides providing information one of the effects of utterances in discourse contexts is to *raise issues*. Accordingly, sentence meanings should encode not only informative content but also *inquisitive content*. To this end, inquisitive semantics adopts a *richer* notion of proposition from the classical one. Namely, instead of being a set of possible worlds, a proposition in the inquisitive setting is *a downward closed set of classical propositions* or *possibilities*.

Definition 1 [Possibility, classical proposition].
A set of possible worlds $\alpha \subseteq W$ is called a possibility (or classical proposition). We write Π for the set of all classical propositions.

Definition 2 [Sentence meaning in inquisitive semantics].

A sentence meaning or proposition $\mathcal{P}$ in inquisitive semantics is a non-empty, downward closed set of classical propositions, such that if $\alpha \in \mathcal{P}$ and $\beta \subset \alpha$ then $\beta \in \mathcal{P}$.

The proposition expressed by a sentence φ is denoted by $[[\varphi]]$. When someone utters a sentence φ with an inquisitive meaning $\mathcal{P}$ she can be taken as (i) raising an issue which is resolved by establishing one of the classical propositions in $\mathcal{P}$ and (ii) providing the information that the actual world is contained somewhere in the union of these propositions, $\bigcup \mathcal{P}$. The elements of $\mathcal{P}$ are, in this framework, referred to as *resolutions* of the sentence with the inquisitive meaning $\mathcal{P}$. Downward closure is supposed to formally capture the intuition that if the issue raised by φ is resolved by a proposition α it will also be resolved by any stronger proposition $\beta \subset \alpha$.

3.1.2 Alternatives

Following the presentation in Theiler et al. (2016), we define the notions of alternatives, true alternatives and false alternatives. *Maximal elements* of $\mathcal{P}$ are called *alternatives* in $\mathcal{P}$. The alternatives in the inquisitive setting "correspond (roughly) to what are called answers in, e.g., a Hamblin-style theory of questions" (Theiler et al. 2016: 126). Although declaratives and interrogatives sentences both denote sets of propositions, declaratives are distinguished from interrogatives in that the former never introduce more than one alternative (one maximal element), and the latter introduce at least two. We refer to $\mathsf{alt}(\mathcal{P})$ as the set of all alternatives in $\mathcal{P}$, $\mathsf{alt}_w(\mathcal{P})$ as the set of those alternatives that are true in w (true alternatives), and $\mathsf{alt}^*_w(\mathcal{P})$ for the set of alternatives that are false in w (false alternatives).

Definition 2 [Alternatives.]
For any sentence meaning $\mathcal{P}$ and any world w:

- $\mathsf{alt}(\mathcal{P}) := \{\alpha \in \mathcal{P}$ *s.t. there is no* $\beta \in \mathcal{P}$ *such that* $\alpha \subset \beta\}$
- $\mathsf{alt}_w(\mathcal{P}) := \{\alpha \in \mathcal{P}$ such that $w \in \alpha\}$
- $\mathsf{alt}^*_w(\mathcal{P}) := \{\alpha \in \mathcal{P}$ such that $w \notin \alpha\}$

We said above that any $\alpha \in \mathcal{P}$ is a *resolution* of the issue raised by $\mathcal{P}$. Depending on whether the actual world is located in a true alternative or in a false alternative, some resolutions will be *truthful* and some not.[17]

3.1.3 Content

The information encoded by a proposition $\mathcal{P}$ is called its *informative content* and issues encoded by $\mathcal{P}$ its *inquisitive content*.

[17] A necessary condition on a truthful resolution is that it either entails all true alternatives (complete), or it doesn't entail any false alternatives (simpliciter). see Theiler et al. 2016:13)

Definition 3 [Informative content of a proposition].
The informative content of a proposition $\mathcal{P}$ corresponds to the union of all classical propositions $\alpha \in \mathcal{P}$, i.e., $\mathsf{info}(\mathcal{P}) := \bigcup \mathcal{P}$

The issue raised by $\mathcal{P}$ may be a *trivial issue* that is resolved by the informative content $\mathsf{info}(\mathcal{P})$, *viz.* whenever $\mathsf{info}(\mathcal{P}) \in \mathcal{P}$. Whenever $\mathsf{info}(\mathcal{P}) \notin \mathcal{P}$ a sentence raises a *proper issue* which is resolved by some more enhanced proposition $\alpha \subset \mathsf{info}(\mathcal{P})$. Depending on whether an issue is trivial or proper, sentences will have trivial or proper inquisitive contents.

Finally, propositions can be compared in terms of their inquisitiveness or informativeness. In inquisitive semantics the entailment relation between propositions can be defined in terms of inclusion.

Definition 4 [Entailment].
For any two inquisitive meanings $\mathcal{P}, \mathcal{Q}$,
$\mathcal{P} \models \mathcal{Q}$ iff $\mathcal{P} \subseteq \mathcal{Q}$

3.1.4 Inquisitive and informative sentences

A sentence φ with an inquisitive meaning $\mathcal{P}$ is *informative* (i.e. has non-trivial informative content) just in case $\mathsf{info}(\mathcal{P}) \neq W$. A sentence φ with an inquisitive meaning $\mathcal{P}$ is *inquisitive* (i.e. it has non-trivial inquisitive content) just in case $\mathsf{info}(\mathcal{P}) \notin \mathcal{P}$. Sentences can be only informative (falling declaratives), only inquisitive (interrogatives), or both (disjunctions).

3.1.5 Truth

Definition 5 [Truth.]
A sentence φ with meaning $\mathcal{P}$ is said to be true in a world w just in case $w \in \mathsf{info}(\mathcal{P})$

Definition 6 [Classical truth-set for φ]
For any φ, the set of worlds w where φ is classically true is denoted as $|\varphi|$.

For any *non-inquisitive* sentence φ, we can determine $[[\varphi]]$ from $|\varphi|$ by taking into account all subsets of $|\varphi|$; thus for any non-inquisitive sentence φ, $[[\varphi]]$ is a *power-set* of $|\varphi|$, i.e the set of worlds where φ is true.

3.1.6 An illustration

Let us illustrate what constitutes the proposition expressed by a sentence in inquisitive semantics on a couple of examples. The $^{\downarrow}$ symbol indicates that a set is downward closed.

5. The leaf is green

(a) $[[\textsf{The leaf is green}]] = \{\{w : \text{the leaf is green in } w\}\}^{\downarrow}$

6. Is the leaf green?

   (a) $[[\textsf{Is the leaf green?}]] = \{\{\ w : \text{the leaf is green in } w\}, \{\ w : \text{the leaf is not green in } w\}\}^{\downarrow}$

Propositions expressed by (5) and (6) are represented in Figure 1(a) and Figure 1(b) respectively. For visual clarity only maximal elements of $[[(5)]]$ and $[[(6)]]$ are depicted in the diagram. Let's assume that there are only two ways that a leaf could be green: naturally and painted (non-naturally) green. Grey circles marked with 11, 01, 10 represent possible worlds in which the leaf is green in different ways. In world 11 the leaf is painted green and naturally green, in 01 the leaf is only naturally green, in 10 it is only painted green, and in 00 it's neither, hence, it's not green (namely, on the assumption that painted and naturally green exhaust the ways of being a green leaf).

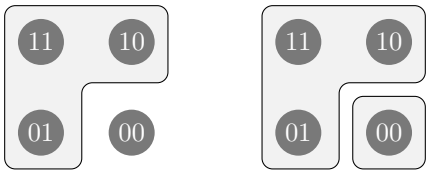


Figure 3: Propositions $[[(5)]]$ and $[[(6)]]$. Only maximal elements are depicted.

The informative content of (5) is the union of all subsets of $[[(5)]]$. Since $\textsf{info}((]5]])) \in [[(5)]]$ this proposition (and the sentence expressing it) has no (proper) inquisitive content (its inquisitive content is trivial). Moreover, since $\textsf{info}([[(5)]]) \neq W$, the proposition/sentence is considered informative (it has non-trivial informative content).

The informative content of (6) is the union of all subsets of $[[(6)]]$. Notice that unlike in the case of (5), $\textsf{info}([[(6)]])$ is not contained in $[[(6)]]$, i.e. $\textsf{info}([[(6)]]) \notin [[(6)]]$, which means that this sentence has non-trivial inquisitive content. In other words, the informative content of (6) cannot settle the issue that (6) raises. The issue raised by (6) is settled by locating the actual world in one of the two *alternatives*, i.e. proper subsets of $\textsf{info}([[(6)]])$ which jointly form a cover over $\textsf{info}([[(6)]])$. Let the actual world w be located in the world 10. Then the alternative consisting of propositions containing world 10 is a *true alternative* for (6) in w_{10}. Finally, notice that since $\textsf{info}([[\textsf{Is the leaf green?}]]) = W$ the inquisitive sentence (6) is, just like a classical tautology, true in any world in $\{11, 01, 10, 00\}$; by contrast, the issue raised by (6) is *truthfully resolved* by any $\alpha \subseteq \{11, 01, 10\}$ and *falsely resolved* by any $\alpha \subseteq \{00\}$.

3.2 The InqB system

In this section, following the presentation in Roelofsen and Farkas (2015), we introduce an inquisitive semantics for a simple propositional language $\mathcal{L}$ consisting of atomic formulas $\mathcal{A}$, negation ($\neg$), disjunction ($\vee$), and two non-standard operators, (! and ?). This simplest implementation of inquisitive semantics is referred to as InqB.

For every atomic formula $p \in \mathcal{A}$, a possible world w is a valuation function that assigns p a truth value such that either $w(p) = 1$ or $w(p) = 0$. The proposition expressed by a formula $\varphi \in \mathcal{L}$ is determined by the following recursive definition.

7. $[[p]] = \wp(\{w : w(p) = 1\})$
$[[\neg\varphi]] = \wp(\overline{\bigcup[[\varphi]]})$
$[[\varphi \vee \psi]] = [[\varphi]] \cup [[\psi]]$
$[[!\varphi]] = \wp(\bigcup[[\varphi]])$
$[[?\varphi]] = [[\varphi]] \cup \wp(\overline{\bigcup[[\varphi]]})$

Let us briefly comment on each of the clauses.

Atomic formulas. The proposition expressed by an atomic formula p contains all possibilities α whose elements are possible worlds in which p is true. Since $[[p]]$ contains only one alternative, it can be always be recovered from $|p|$ by taking into account all of its subsets.

Negation. In a classical, truth-conditional semantics negation amounts to set complementation, i.e. $|\neg\varphi| = \overline{|\varphi|}$. In an inquisitive setting, the proposition expressed by φ is not a set of possible worlds, but rather a set of downward closed possibilities. The proposition expressed by a negated formula, $\neg\varphi$ always contains a single alternative possibility $\overline{\bigcup[[\varphi]]}$. This proposition consists of all the classical propositions that are inconsistent with any proposition in $[[\varphi]]$, thus all states that consist exclusively of worlds where φ is classically false.

Disjunction. The proposition expressed by a disjunction $\varphi \vee \psi$ amounts to the union of $[[\varphi]]$ and $[[\psi]]$. Disjunctions contain (at least) two possibilities and so they are typically inquisitive. However, insofar as their informative content is not necessarily trivial a disjunction can also be informative.

Projection operators. The role of projection operators ! and ? in the InqB framework is to project any proposition to an informative or inquisitive dimension thus 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 possibility $\bigcup[[\varphi]]$ and is thus never inquisitive, whilst the proposition expressed by $?\varphi$ contains all elements of $[[\varphi]]$ and the complement of $\bigcup[[\varphi]]$, including all their subsets, and is

thus always inquisitive.

With this we finish our introduction to the basic system of inquisitive semantics or InqB. In the next section we describe occasion-sensitivity in inquisitive terms and show how the basic framework can be extended to explain the phenomenon that these cases capture.

4 Inquisitive semantics meets Travis cases

Earlier we introduced a few Travis cases suggesting that the main thing they indicate is that the content expressed by declarative and interrogative sentences may vary cross-contextually due to different domain goals.[18] Here we intend to capture occasion-sensitivity in inquisitive terms, using the notions we defined in the previous section as well as some new ones.

4.1 Goal-conduciveness

4.1.1 Facts and truthmakers

To explain how practical goals influence interpretation it would be useful to introduce a couple of new notions: *facts* and *truthmakers*. Similarly to classical propositions, facts are formally represented as sets of worlds: a fact is a set of worlds where it holds. Formally speaking, facts and propositions are, therefore, of the same kind.[19] Conceptually speaking, a fact and a proposition may stand in a special kind of relation of *truthmaking*, where a fact that makes a proposition true is its *truthmaker*.[20] Insofar as a fact is classically represented as a set of worlds (where it holds), it also is a property of any world which is in this set. Facts (and propositions made true by them) are thus properties of worlds. Being conducive to a particular goal is then a property of this property, i.e., a property of a fact and, a fortiori, any proposition made true by the fact. Correspondingly, a goal can be seen as a valuation function that maps propositions

[18] The importance of contextually salient goals for the interpretation of questions has been emphasised in Ginzburg (1995), and Van Rooy (2003). More generally, goals are taken to be a parameter of the so called QUD's in Roberts (1996, 2004, 2012). The account of goal-dependence we propose here has a similar motivation as those earlier accounts yet because it's couched in inquisitive terms it can explain the goal-dependence of questions and assertions uniformly.

[19] Thus Yablo (2014) writes: "The fact of Sparky's barking is a truthmaker for the proposition that something barks. If we assume, again following Lewis, that a proposition too is a set of worlds, then truthmakers are of the same category as at least some of what they make true, namely other propositions. *Masha has a sister* is true because of this fact: Helen is a sister to Masha. Both parties to this relation – the fact and the proposition – are sets of worlds. (Yablo 2013: 74).

[20] See Rothschild (2015), Yablo (2013). To count as a truthmaker, a fact must satisfy two additional requirements according to Yablo: naturalness and proportionality. Naturalness excludes disjunctive facts (i.e. $\mathbf{p} \vee \mathbf{q}$ is not a truthmaker for $p \vee q$), proportionality excludes conjunctive facts where an atomic fact is sufficient: the fact that $\mathbf{p}$ is more proportional as a truthmaker for p than the fact that $\mathbf{p} \wedge \mathbf{q}$

to goal-conduciveness values (*c-values*) in accordance with the capacity of their truthmakers to support a successful achievement of the goal.

4.1.2 Goals

Definition 15 [Goals].
Goal γ is a function that maps a proposition $\alpha \in \Pi$ to a c-value, 1 ('conducive to γ') or 0 ('not conducive to γ'). I.e. $\Gamma : \Pi \rightarrow \{0, 1\}$, where Γ is the set of goals γ, Π is the set of classical propositions, and $\{0, 1\}$ is the set of c-values.[21]

According to this definition, classical propositions are evaluated for conduciveness to a goal γ and assigned a c-value with respect to γ. There is an important constraint, however, concerning which c-value a goal γ may assign to certain propositions, which assures that contextual meanings (like context-independent meanings) are *downward closed*. Namely, if γ assigns the c-value 1 to some classical proposition α it will assign 1 to any proposition $\beta \subseteq \alpha$. After all, if some proposition α is conducive to a goal γ then any more specific proposition $\beta \subseteq \alpha$ will also be conducive to γ. For instance, if the botanist's goal requires that the leaf be either only naturally green or both naturally and painted green, then the proposition that the leaf is both naturally and painted green (which is one of its subsets) is conducive to the botanist insofar as the former is.

By contrast, any classical proposition α which is *not* conducive to γ (i.e. where $\gamma(\alpha) = 0$) is *not* so constrained: for there could be $\beta \subset \alpha$ which *is* conducive to γ.[22] For instance, the proposition that the leaf is non-naturally green or naturally green is *not* conducive to the botanist's goal (because one of its truthmakers that may obtain at w is not conducive to γ), but the proposition that the leaf is naturally green (which is a subset of the proposition that the leaf is naturally or non-naturally green) is conducive to the botanist (because *its* truthmakers that may obtain at w are all conducive to the goal).

Definition 16 [Goal-conduciveness constraint].
For any pair of states α, β, such that $\beta \subseteq \alpha$, $\gamma(\beta) \geq \gamma(\alpha)$.

The proposed constraint thus assures that a sentence is always interpreted in the strongest possible way relative to the goal of context such that any further restriction would not add more goal-conduciveness.[23]

4.2 Occasion-sensitive inquisitive semantics, InqC

In this section we specify occasion-sensitive inquisitive semantics InqC for a simple propositional language $\mathcal{L}$, which represents an extension of the basic in-

[21] Although our goal function maps possibilities to only two values we acknowledge that this choice of values is a simplification. In reality conduciveness to a goal will be more a matter of degree than a binary affair.

[22] Notice that in the latter case β must be a proper subset of α since a proposition cannot be both conducive and not conducive to γ.

[23] Thanks to the InqBnB2 Reviewer#4 for pointing out this prediction.

quisitive framework InqB introduced above. We define the proposition expressed by $\varphi \in \mathcal{L}$ given a goal γ in the following recursive definition.

8. $[[p]]_\gamma = \{\alpha \in \wp(\{w : w(p) = 1\})$ such that there is no $\beta \in \wp(\{w : w(p) = 1\})$ such that $\gamma(\beta) > \gamma(\alpha)\}^{\downarrow}$
$[[\neg\varphi]]_\gamma = \wp(\overline{\bigcup[[\varphi]]_\gamma})$
$[[\varphi \vee \psi]]_\gamma = [[\varphi]]_\gamma \cup [[\psi]]_\gamma$
$[[!\varphi]]_\gamma = \wp(\bigcup[[\varphi]]_\gamma)$
$[[?\varphi]]_\gamma = [[\varphi]]_\gamma \cup [[\neg\varphi]]_\gamma$

Let us comment on those clauses that differ in some sense from their InqB counterparts.

Atomic formulas. The proposition expressed by an atomic sentence p on an occasion where the goal γ is operative is a downward closed set of propositions $\alpha \in \wp(|p|)$ which have *greater c-values than others* (i.e. any proposition with the c-value that is lesser than the c-value of others in this set is excluded from it). Notice that in case no proposition $\alpha \in \wp(|p|)$ is conducive to γ the contextual proposition expressed by p will still contain those propositions that are not conducive to γ. This condition assures that an utterance of p where γ is salient could be accepted as true when no $\alpha \in \wp(|p|)$ is conducive to γ. This is the case, for instance, with (positive) sentences that (contextually) entail or implicate true negations of φ. For instance, in the botanist context at the world where the leaf is painted green and naturally red the utterance of These leaves are naturally red is true (and relevant) even though none of its truthmakers is conducive to γ (see 5.1.1 below).

The InqC proposition expressed by an atomic formula p (just as its InqB counterpart) determines only one alternative: $\mathsf{alt}(p)_\gamma = \{\alpha \in [[p]]_\gamma$ s.t. there is no $\beta \in [[p]]_\gamma$ s.t. $\alpha \subset \beta\}$. Enriched informative content of p wrt γ: $\mathsf{info(p)}_\gamma = \bigcup[[p]]_\gamma$

Contextual negation. The InqC proposition expressed by a negated formula, $\neg\varphi$ like in the InqB system always determines a single alternative corresponding to the complement of the union of classical propositions contained in $[[\varphi]]_\gamma$, i.e. $\overline{\bigcup[[\varphi]]_\gamma}$. So, like the InqB negation, contextual negation is never inquisitive. Notice, however, that $[[\neg\varphi]]_\gamma$ contains the possibilities that consist of worlds where φ is classically false, but it *also* may contain some possibilities consisting of worlds where it *is* classically true but which are *not* conducive to γ. We discuss this property of contextual negation in more detail below.

Polar question. Recall that in the inquisitive setting a polar question $?\varphi$ is identical to the disjunction of a positive formula and its negation, $\varphi \vee \neg\varphi$. Correspondingly, $[[?\varphi]] = [[\varphi \vee \neg\varphi]]$, which means that the proposition expressed by $?\varphi$ always determines two alternatives (and is therefore always inquisitive),

which jointly cover logical space (and it's therefore never informative). The proposition expressed by $?\varphi$ in InqC is similarly always inquisitive and never informative, however, a true/false alternative may contain more/less possibilities compared to its InqB counterpart. We discuss this feature of polar questions in more detail below.

4.3 Truth, resolution and acceptance

We have seen that inquisitive semantics can fully accommodate the classical notion of truth which is defined with respect to the sentence's informative content. The minimal InqB proposition captures resolution conditions of sentences from which their classical truth-conditions can be straightforwardly recovered. In the InqC system that we defined above, on each occasion of utterance we assume that only one goal is salient which determines the proposition expressed by uttering a sentence on that occasion. A successful, goal-driven communication depends on identifying contextually salient goals and exchanging information that is relevant to successfully achieving them. Our readiness to *accept* the sentence as true (or as being truthfully resolved) on a given occasion depends on how it figures in this process.

However, like InqB, InqC is essentially conservative insofar as it presupposes that the context-independent meaning of a sentence determines resolution conditions from which classical truth-conditions are recoverable. What InqC describes is *which* part of the minimal proposition is 'highlighted' when a certain contextual goal is present, determining when a sentence is acceptable. Truthful resolutions of φ which are *not* accepted as truthful resolutions given a goal γ *are* nonetheless its truthful resolutions, even in InqC. Hence, although InqC defines context-dependent inquisitive meanings it presupposes that a sentence also has a context-independent meaning. When it comes to Travis cases what our intuitions track is when a sentence is *accepted as true or truthfully resolved*. Whilst acceptance conditions are sensitive to contextually salient goals, truth and resolution are considered absolute properties of propositions and sentences that express them.

5 Linguistic relevance of the InqC system

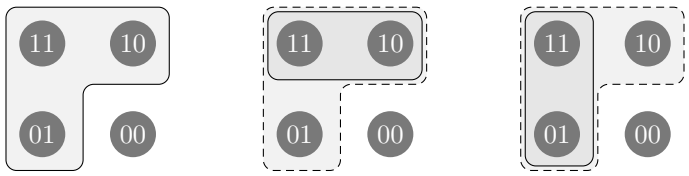
The extension of the InqB system formally introduced in the last section is mainly motivated by linguistic examples known as Travis cases. In this section we want to illustrate how the InqC framework can be used to explain the phenomenon that these cases capture. The InqC system has greater empirical coverage than many of the accounts of occasion-sensitivity proposed thus far. Namely, as we shall see shortly, in this system we can not only account for the occasion-sensitivity of positive declarative sentences but also of negations, disjunctions, and of polar interrogatives.

5.1 Declaratives

5.1.1 Simple declaratives

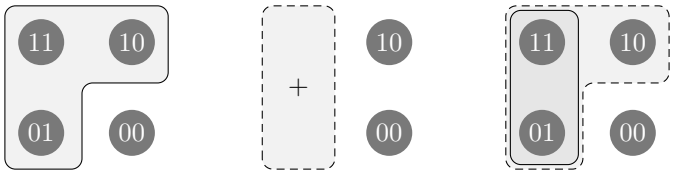
Let us start with simple declaratives. Consider again the following declarative sentence uttered in dialogues (1) and (2) we outlined in the introduction above,

9. The leaf is green



(a) Minimal (b) Artist (c) Botanist

Figure 4: Literal and contextual propositions expressed by (9)



(a) Minimal (b) Map (c) Contextual

Figure 5: From literal to contextual meaning: the botanist's case

The minimal proposition expressed by (9) is depicted in Figure 4(a). It represents a set containing classical propositions each of which consists of worlds where (9) is true. In the artist's context (9) expresses the proposition depicted in the shaded part in Figure 4(b). In the botanist context (9) expresses the proposition depicted in Figure 4(c). The two contextual propositions are determined with respect to two different goals. We have illustrated this process for the botanist's case in Figure 5. On the present account then, any contextual proposition expressed by a positive declarative sentence is a subset of its minimal proposition consisting of maximally goal-conducive possibilities containing worlds where the sentence is true.[24]

Next consider the case where for all $\alpha \in \wp(|p|)$, a goal γ maps that classical proposition to 0, namely the case where *no* classical proposition in this set is goal-conducive. Assume that the contextual goal is to prevent a kleptomaniac from stealing the shoes by hiding them under the bed (cf. example (4) above).

[24]Notice that although our diagrams depict only maximal (goal-conducive) elements, we require (see Definition 16) that any smaller element be at least as goal-conducive as its superset.

Furthermore, assume that the shoes are not under the bed but are visibly next to the bed. Compare the following sentences uttered in this context (suppose that both are true):

Hiding the shoes under the bed from a kleptomaniac

10. The shoes are next to the bed

11. It's Tuesday

Intuitively, no possibility compatible with the sentence in (10) is conducive to the goal of having the shoes hidden under the bed. Ditto for (11). However, whilst uttering (10) is still relevant in this context, uttering (11) (out of the blue) is clearly irrelevant and odd. Our account doesn't distinguish between relevant and irrelevant utterances of sentences (however, we will say more about this below). In all such cases where *no* element of the minimal proposition is conducive to a given goal, the contextual proposition expressed by a simple declarative sentence will simply correspond to its minimal proposition. Notice that this will also be the case if *all* possibilities are goal-conducive. In general, whenever there is no difference in c-values between the classical propositions expressed by the sentence, the contextual proposition expressed by it will be identical to its minimal proposition.

In the inquisitive setting, the two contextual propositions expressed by (9) are both *proper enhancements* of the minimal proposition expressed by (9). Contextual propositions expressed by (10) and (11), however, are *trivial enhancements* of the minimal propositions expressed by these sentence. Since an inquisitive meaning is construed as a downward closed set of classical propositions it contains all of its enhancements. This allows us to see contextual meanings as *subsets* of context-independent meaning, standing in the relation of entailment to the minimal proposition expressed by an atomic formula. So, for any atomic formula p it holds that: $[[p]]_\gamma \subseteq [[p]]$.

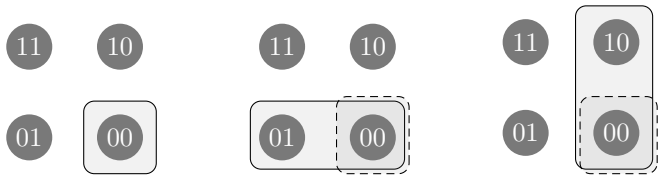
5.1.2 The case of negation

So far we have established that the contextual meaning of a simple declarative is an enhancement of the InqB proposition; in other words, its contextual meaning *entails* its literal meaning. However, as we shall see next, this doesn't hold generally for all declarative sentences. To see why not consider the following negative declarative:

12. The leaf is not green

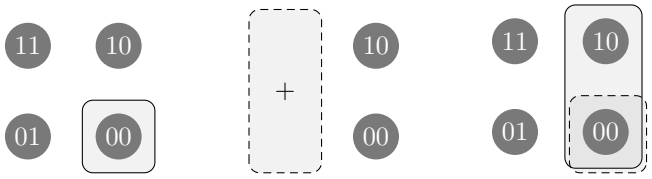
In Figure 6(a) we have depicted the minimal proposition expressed by (12) and in Figure 6(b) and 6(c) two contextual negations. To determine a contextual proposition expressed by a negated sentence (12), besides those propositions containing worlds where (12) is classically false, we need to take into account *other* classical propositions which are in the complement of $\bigcup[[(12)]]_\gamma$. In the artist's

context that is the singleton possibility {01} (only naturally green) and in the botanist context the singleton possibility {10} (only painted green). Accordingly, besides the minimal InqB negation, each of these possibilities constitutes the intended contextual negation for each goal.



(a) Minimal (b) Artist (c) Botanist

Figure 6: Literal negation and two contextual negations



(a) Minimal (b) Map (c) Contextual

Figure 7: From literal to contextual negation: the botanist's case

Because of this, although contextual negation *may* be identical to literal negation (i.e. just in case all $\alpha \in [[\varphi]]$ have the same c-values, either 0 or 1), it never *asymmetrically entails* the minimal proposition expressed by a negated declarative sentence, since the negative contextual proposition is never a *proper* subset of the negative minimal proposition, but the other way around. In many cases where there are classical propositions $\alpha \in [[\varphi]]$ which have different c-values relative to a goal γ, contextual negation *fails to entail* literal negation.[25] It is easy to see in the diagrams in **Figure 6** that the minimal proposition expressed by a negated sentence entails both of the contextual proposition expressed. Namely, that the leaf is not green in any way entails that the leaf is not painted green or that the leaf is not naturally green. So in the case of negation the entailment order holding between literal and contextual meaning is *reversed*: $[[\neg\varphi]] \subseteq [[\neg\varphi]]_\gamma$.

We can make the following generalisation concerning entailment orders between contextual and literal meanings of positive sentences and their negations:

Fact 17 [Entailment orders for meanings of positive sentences and their negations].

[25] This property of negation has also been observed in Schoubye and Stokke 2015: 782.

$[[\varphi]]_\gamma \subseteq [[\varphi]]$ iff $[[\neg\varphi]]_\gamma \supseteq [[\neg\varphi]]$.

That is, the contextual meaning of a positive declarative is more specific than its literal meaning just in case the literal meaning of its negation is more specific than its contextual negation. In case there is a difference between c-values of classical propositions constituting minimal proposition wrt to γ, the contextual meaning of φ *strictly* entails the literal meaning of φ (and *reverse* holds for $\neg\varphi$), namely: $[[\varphi]]_\gamma \subset [[\varphi]]$ and $[[\neg\varphi]]_\gamma \supset [[\neg\varphi]]$.

5.1.3 Disjunctive declaratives

In inquisitive semantics, besides existential quantification, disjunction is considered a source of inquisitiveness (cf. Roelofsen 2013: 93). A disjunctive sentence such as $p \vee q$ in InqB is both informative (i.e. providing the information that the actual world is located somewhere in the possibilities compatible with p or in the possibilities compatible with q) and inquisitive (i.e. leaving it unresolved whether it is located among the possibilities compatible with p or those compatible with q). However, it is important to point out that a disjunctive sentence in InqB does not necessarily correspond to a disjunctive declarative or disjunctive interrogative, which are formed with *projection operators* ! and ?, respectively. The main effect of the *!* operator is to trivialise the inquisitive content of the InqB disjunction, and of *?* to trivialise its informative content. In (13) and (14) we have specified the InqB translations for these two linguistic forms.

13. The shoes are under the bed or next to the bed. $!(\mathsf{Us} \vee \mathsf{Ns})$

14. Are the shoes under the bed or next to the bed? $?(\mathsf{Us} \vee \mathsf{Ns})$

In InqC a disjunctive declarative in (13) has the same logical form as in InqB only the proposition it expresses is determined relative to a contextually salient goal γ. In the kleptomaniac context (13) has the following intended interpretation:

15. The shoes are hidden under the bed or the shoes are next to the bed.

The proposition expressed by The shoes are under the bed in the kleptomaniac context is different from the minimal proposition expressed by this sentence, insofar as some possibilities are more conducive to the goal of context than others. By contrast, since there is *no* goal-conducive way of the shoes being next to the bed, The shoes are next to the bed in this context expresses the proposition that is identical to its minimal proposition. So (15) provides the information that the actual world is located somewhere in the union of $[[\mathsf{Us}]]_\gamma$ and $[[\mathsf{Ns}]]_\gamma$, where $[[\mathsf{Ns}]]_\gamma = [[\mathsf{Ns}]]$. Notice that, because of the existence of the operator *!* in its logical form, the content of (15) like that of (13) is *not* inquisitive (i.e. it corresponds to the classical disjunction). A disjunctive declarative has thus a single alternative.

5.2 Interrogatives

In this section we turn to interrogatives. Whilst the declarative form may be used to express either assertion or question depending on whether it's intonationally marked, interrogative sentences are typically used to express questions (see Roelofsen (2013), Roelofsen and Farkas 2015). In some semantic frameworks for questions the meaning of a question is taken to correspond to a set of propositions which represent possible or true (at w) answers to the question (cf.Hamblin 1973, Karttunen 1977). In inquisitive semantics the notion of answerhood is not a primitive notion like in these theories, but what counts as a basic answer to a question is derived from a more basic notion of *resolution*.[26] An issue can thus be thought of as a set of propositions that resolve it or a set of resolving answers (in case an issue is a question). If an issue is not trivial – if it's inquisitive – there will be *two or more* alternative resolutions and thus two or more basic answers. Basic answers to a question are those that resolve the issue raised by the question and do not provide more information than necessary to do so.

Insofar as our combined system assigns two semantic values to a sentence (context-independent and context-dependent) we need to distinguish two notions of answerhood. Thus in addition to basic answers defined with respect to the semantic notion of resolution we need to introduce the notion of *acceptable answers* which are defined relative to the issue raised in a context where a given goal is operative. Recall that in InqC, just like in InqB, truth and resolution are not defined with respect to context, which means the notion of basic answerhood should also not be context-sensitive. Namely, if something is a true answer to a question (or a truthful resolution of an issue) it must remain so regardless of the contextually salient goal. We proposed to reconcile this prediction with the intuitions concerning Travis cases by distinguishing between truth and resolution, on the one hand, and acceptance, on the other. Correspondingly, a true answer to a question need not be accepted as true in light of some goal.

5.2.1 Polar interrogatives

Let us start with the case of polar interrogatives. Consider the following polar interrogative sentence and three interpretations of it:

16. Is the leaf green?
    - (a) Is the leaf green in some way? [minimal]
        - i. Yes, the leaf is green some way
        - ii. No, the leaf is not green in any way
    - (b) Is the leaf painted green? [artist]
        - i. Yes, the leaf is painted green

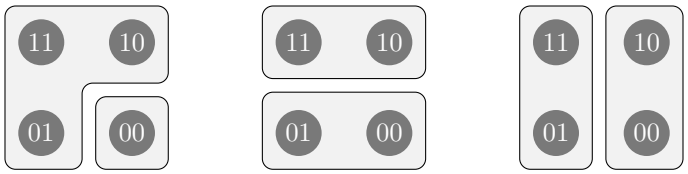
[26] Thus, "question meanings, i.e., issues, are defined in terms of what it takes to resolve them, and the basic/possible/complete/partial answers to a question are defined in terms of its meaning" (Ciardelli et al. 2015b: 74).

ii. No, the leaf is not painted green

(c) Is the leaf naturally green? [botanist]

i. Yes, the leaf is naturally green

ii. No, the leaf is not naturally green



(a) Minimal (b) Artist (c) Botanist

Figure 8: Literal and contextual interpretation of (16)

Our suggestion is that the context independent interpretation of the sentence (16) coincides with the proposition expressed by the sentence (16a) whose basic answers (corresponding to alternatives) are specified in (16ai) and (16aii). Two contextual interpretations of (16) coincide with the propositions expressed by sentences (16b) and (16c). We have depicted these three interpretations in Figure 8(a-c). Figure 8(a) depicts the resolution conditions for the issue raised by (16) in abstraction from any practical goals. However, Figures 8(b-c) do *not* depict resolution conditions for the issue raised by (16) but rather its acceptance conditions relative to two different goals. Propositions expressed by (16bi) and (16bii) represent *accepted answers* to the issue raised by (16) in the artist context, and (16ci) and (16cii) represent accepted answers to (16) in the botanist context. Notice that, on the proposed analysis, in **The leaf is green** case Pia gives a *true* answer (in world 10) to the botanist's question in the botanist context (i.e. she intends to express the proposition expressed by (16bi)), although, intuitively, her answer is *not accepted as true* in world 10 (as predicted) given that the botanist's goal is salient on that occasion.

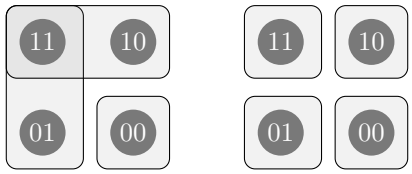
Furthermore, we observe that, unlike in the case of a simple declarative, two contextual propositions expressed by sentence (16) are *not* enhancements of the minimal proposition expressed by this sentence. Since $?\varphi$ is an abbreviation of $\varphi \vee \neg\varphi$ this is an expected consequence of the observation made in the previous section to the effect that the contextual negation of φ does *not* asymmetrically entail the minimal proposition expressed by $\neg\varphi$ (but that reverse may be the case). The relation between the literal and contextual meaning of $?\varphi$ is a direct consequence of **Fact 17**. In any case, unlike in the case of declaratives, there is *no* entailment relation *or* reverse entailment relation between literal and contextual meanings of polar interrogatives. In other words, the contextual meaning of $?\varphi$ is incomparable to its literal meaning in terms of inquisitiveness.

5.2.2 Wh-interrogatives

Next let's see how wh-interrogatives are interpreted in InqC. A wh-interrogative is normally assumed to have a *mention-some* and a *mention-all reading*. This will be the case in the InqC system as well. Namely, in uttering a wh-interrogative a speaker may be taken to request a complete, exhaustive specification of possibilities $\alpha \in [[\varphi]]$ which have greater c-values than others. Alternatively, she may be taken to request enough information to identify at least one such possibility or otherwise establish that $\neg\varphi$. Consider the following question.

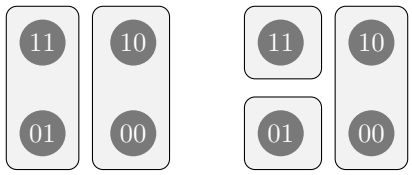
17. Which leaves are green?

Depending on which goal is salient, the wh-interrogative (17) can have different mention-some and mention-all readings. In Figure 9(a) and Figure 9(b) we have depicted mention some and mention all readings of (17) when no particular goal is considered. In Figure 10(a-b) we have depicted mention-some and mention-all readings for the botanist's goal, and in Figure 11(a-b) for the artist's goal. Notice that like in the case of polar interrogatives there is no entailment or reverse entailment relation between literal and contextual meanings of wh-interrogatives. However, the relation between mention-some and mention-all readings remains the same in InqC as in InqB: namely, the proposition expressed by the mention-all reading of a wh-interrogative is always *more inquisitive* than the proposition expressed by it on the mention-some reading.



(a) Mention-some (b) Mention-all

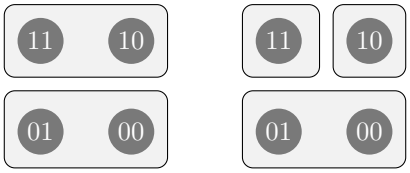
Figure 9: Mention-some and mention-all reading of (17)



(a) Mention-some (b) Mention-all

Figure 10: Mention some and mention-all in the botanist context

With this we finish looking at how our theory applies to some examples of declarative and interrogative sentences. Our main observations are the follow-



(a) Mention some (b) Mention-all

Figure 11: Mention some and mention all in the artist context

ing: (i) whenever there is a difference in c-values among the propositions denoted by a sentence, only those with highest c-values will be taken into account in context; (ii) the account doesn't distinguish between contextually relevant and irrelevant utterances of the sentences which denote propositions with equal c-values (i.e. relevance is determined wrt to other contextual parameters); (iii) positive and negative declaratives have complementary entailment orders; (iv) there is no entailment between literal and contextual meanings of questions. In the next section we discuss a couple of potential issues for our account.

6 Potential problem cases

6.1 Overgeneration

Notice that although the requirement that sets that constitute contextual meanings be downward closed allows us to capture the idea that more specific propositions will be part of the denotation of a more general proposition it, nonetheless, *overgenerates*. For, not only do we let in 'desirable' possibilities as part of the denotation of a sentence but also 'undesirable' possibilities. For instance, the leaves being naturally green, painted green, moldy green etc. are all truthmakers for The leaves are green and belong to [[The leaves are green]] – as desired. But, notice that the proposition that the leaves are naturally green *and* that it's a Tuesday is also part of its denotation on this account. This excess is not a problem in InqB; in InqC, however, since we propose that propositions also bear c-values, we need some principled way of deciding which c-value will be assigned to conjunctive propositions.

Recall that which c-value a proposition will bear depends on the capacity of its truthmaker to support a given goal; a conjunction such as The leaves are naturally green and it's a Tuesday, on Yablo (2014)'s account also have a conjunctive truthmaker. We tentatively propose that conjunctive truthmakers inherit a c-value from each of its conjuncts. Accordingly, they may be conducive in one way to the goal but not conducive to it in another way. Which one of these values counts in determining the contextual proposition expressed by a sentence would depend on the sentence's *subject matter*: if the sentence is about the greenness of a leaf (in some way) then the fact that the leaves are naturally green and that it's a Tuesday contributes the c-value from a conjunct that is in

agreement with what the sentence is about or with its *topic* (see Hawke 2017). Therefore, the c-value of the conjunct about Tuesdays will be ignored. However, we must leave a proper discussion of this issue for another occasion.

6.2 Relevance

Another potential concern stems from certain interpretive preferences that are not predicted by our theory. Consider the following dialogue taking place in the botanist's context:

18. *Zoe, the botanist seeks a green leaf for her experiment*
    (a) Zoe: Is the leaf (naturally) green?
    (b) Pia: The leaf is red

Intuitively, in the context of this dialogue, what Pia says by uttering (18b) is that the leaf is *naturally* red. However, our theory predicts that, inasmuch as *no* possibility compatible with the meaning of (18b) is more conducive than the others, the proposition expressed by (18b) relative to the botanist's goal should coincide with the minimal proposition expressed by (18b). But, intuitively, it doesn't; as an *answer* to (18a), there seems to be an expectation that the sentence (18b) be interpreted so that the leaf is *naturally* red. Is there a way to reconcile this intuition with the current theory?

One way to explain the intuition is by appealing to the fact that, in the context of this particular dialogue, the answer in (18b) is supposed to *resolve the issue* raised by (18a). Answers that are considered *relevant* are those that either resolve the issue raised by a question, or represent part of a strategy to resolve the issue (cf. Roberts 1996, 2012). Basic answers that resolve the issue raised by this sentence in the botanist context are specified in (19a) and (19b):

19. Is the leaf (naturally) green?
    (a) Yes, that leaf is (naturally) green.
    (b) No, the leaf is not (naturally) green. ($\rightsquigarrow$ The leaf is naturally not-green)

Assume, as before, that the actual world is such that the salient leaf is naturally red and painted green. So, the answer that in this context (and world) truthfully resolves the issue raised is (19b) in as much as it entails, as indicated, that the natural colour of the leaf is not green but is some other colour. Now, assuming that Pia's answer in (18b) is intended as a resolution of the issue raised by (18a), (18b) is supposed to imply the answer in (19b) and that is possible only if (18b) is interpreted so that red means naturally red since the leaf's surface colouring is *irrelevant* to the issue raised by (18a). If red is interpreted in any other way, (18b) would not be a resolution of the issue raised by (18a) in the botanist's context. In general then, the interpretation of a declarative sentence may be sensitive not only to contextual domain goals but also to the context of a discourse where it is supposed to resolve an issue therein raised (i.e. to particular discourse goals).

7 Conclusion

In this paper we have presented a uniform formal account of occasion-sensitivity for a range of declarative and interrogative sentences using inquisitive semantics as our main formal framework. We have proposed an extension to the basic inquisitive framework that takes into account goal-sensitivity of interpretation. In particular, we have argued that, among possible interpretations that a sentence may have, those that are more conducive to the contextually salient goal than others are highlighted and are preferred.

We have suggested that intuitions concerning Travis cases are primarily about when a sentence should be *accepted* as true or truthfully resolved and not necessarily intuitions about the truth-conditions or resolution-conditions of sentences. In the InqC framework, domain goals determine acceptance conditions, not truth- or resolution-conditions which here remain classical. Nevertheless, it is our view that a successful discourse is not merely about providing true information or truthfully resolving issues, but primarily about exchanging information that is not only true but also conducive to our practical goals. In general, it is not sufficient that the resolution of an issue raised in presence of a given goal is true (in some weak sense); it must also be conducive to that goal and accepted as true by the parties involved.

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