Two Kinds of Sobel Sequences: Precision in Conditionals

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This paper presents the empirical claim that sequences of conditionals with special properties known as Sobel Sequences (Sobel, 1970; Lewis, 1973) can actually be divided into two distinct phenomena with distinct properties. One of these phenomena can be described in much the way Lewis (1973) originally does, though perhaps not exactly; I continue to term these Sobel Sequences. However, I show that one crucial property that has been claimed by many authors to be exhibited by Sobel Sequences, namely Unidirectionality, does not hold of true Sobel Sequences. I call the discourses that do show this property *Lewis Sequences*. Since Lewis Sequences have been included among the empirical quarry of recent work on conditionals in discourse, they have muddled the analysis of true Sobel Sequences. By unmuddling, I suggest that a more conservative semantic approach has a better chance to account for Sobel Sequences; furthermore I sketch a fully pragmatic account of Lewis Sequences which collapses their analysis with that of several other phenomena outside the terrain of conditionals. See Klecha (2014) for a more developed account of Lewis Sequences.

1. Introduction

Sobel Sequences (SSs) are typically taken to be sequences of counterfactuals of the type given below, where $\square\!\!\rightarrow$ is the counterfactual operator. An actual example commonly pointed to is in (2).

(1)   *Sobel Sequence schematic*
       $p \mathbin{\square\!\!\rightarrow} q$, [but] $((p \mathbin{\&} r) \mathbin{\square\!\!\rightarrow} \neg q)$

(2)   If the U.S. **threw** all its nuclear weapons into the sea, there **would be** war; but if all nations with nuclear weapons **threw** them into the sea, there **would be** peace.

It is worth pointing out, however, that (2) is arguably not a counterfactual conditional, but rather, a future-less-vivid conditional (Iatridou, 2000), indicated by the lack of *have* and its attendant verbal morphology in the antecedent clause.s This illustrates a broader point, which is that SSs may occur with all manner of non-counterfactual conditionals (Williams, 2008; Moss, 2012; Willer, 2013). Despite this, nearly all discussion of SSs outside of Williams, Moss, and Willer has centered on counterfactuals. A true counterfactual version is given in (3), and an indicative/predictive version given in (4).

(3)   If the U.S. **had thrown** all its nuclear weapons into the sea, there **would have been** war; but if all nations with nuclear weapons **had thrown** them into the sea, there **would have been** peace.

(4)   If the U.S. **throws** all its nuclear weapons into the sea, there **will be** war; but if all nations with nuclear weapons **throw** them into the sea, there **will be** peace.

A naïve analysis of conditionals says that the conditional "if p then q" means "all p-worlds are q-worlds". SSs are surprising for this analysis, since this would mean that a SS says "all p worlds are q worlds, but certain p worlds are not q worlds". What this means is that SSs show that certain worlds may be ignored in some contexts and not in others.

Lewis's (1973) view was that counterfactual conditionals actually mean "all the *best* p-worlds are q-worlds", which of course does not entail that all the best $p\&r$-worlds are q-worlds – so long as none

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of the best p-worlds are r-worlds. Thus the domain of quantification is simply different between the first and second sentence. This helps to account for one of two very special properties that SSs have been claimed to have, what I call Unequivocality. Edgington (1995) argues that counterfactual SSs are unequivocal, in her words they constitute "single pointful pieces of discourse" and not, e.g., a case of a speaker changing her mind and retracting a previous statement. Edgington's judgment of unequivocality is echoed by von Fintel (2001) and Gillies (2007).

In fact, I argue that *some* sequences which have been called SSs are actually infelicitous if uttered as a "single pointful piece of discourse", and that to be felicitous they must represent some kind of change of heart on the part of the speaker, or disagreement between speakers in the case of a variant where the two sentences are split across two speakers. I call these Lewis Sequences. Consider that after (5-b) is uttered, there is a feeling that looking back on (5-a) in retrospect, it is odd.

(5)   a.   *Julia:* If Karlos had come to the party, it would have been a good time.
      b.   *Jon:* If Karlos had come to the party and jumped off the balcony, it would not have been a good time.
      c.   *Jackson:* So what Julia said was a bit too strong.

von Fintel argues that if (2) is uttered "someone else can then rejoin that the initial conditional is 'no longer' true" (von Fintel, 2001:131). But he doesn't intend to say that the initial conditional is actually false in retrospect, rather that "the parameters of the discourse have changed so that the proposition expressed by the first counterfactual in the initial context can no longer be expressed by the same linguistic expression in the new context". In other words, if (5-a) is uttered again after (5-b) has been, it simply does not denote the same proposition any more.[1] But I argue that (5-a) is "no longer true" in a different sense. It is actually false in retrospect; in fact, we could say that it was false all along, and Julia (and maybe other members of the discourse) were treating it as true for pragmatic reasons. In this regard, I argue, (5) differs from true Sobel Sequences like those above.

2. Two Kinds of Sobel Sequence

Prior discussions of Sobel Sequences (Lewis, 1973, Warmbrod, 1981a,b, 1983, Edgington, 1995, von Fintel, 2001, Gillies, 2007, Moss, 2012) and Reverse Sobel Sequences (von Fintel, 2001, Gillies, 2007, Moss, 2012) have generally presented the following basic facts:

1. Unequivocality: A basic Sobel Sequences is a "single pointful piece of discourse"

2. Unidirectionality: Reverse Sobel Sequences are infelicitous

Unequivocality is not predicted by the most simple of counterfactual semantic accounts, but is famously handled by Lewis (1973), Kratzer (1981b) and Stalnaker (1984), who add an ordering component to the semantics. This analysis, called the Variably Strict Conditional analysis, says that a counterfactual $p \; \square\!\!\rightarrow q$ is true if q is true in all the worlds in which p is true *which are closest to the evaluation world*. A formal representation can be given for Lewis's analysis, adapted to the Kratzerian view on modality, below.[2]

(6) $\llbracket \text{would} \rrbracket = \lambda p \lambda m \lambda g \lambda w [\forall v \in max_{g(w)}(\cap m(w))[p(v)]]$
      iff g is a closeness ordering and m is an empty modal base

This accounts for unequivocality because the two conditionals in a Sobel Sequence will be quantifying over two wholly disjoint sets of worlds. However, neither account can handle unidirectionality, predicting that Reverse Sobel Sequences should be just as good as Sobel Sequences, since the two domains will be disjoint regardless of the order of utterance.

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[1]   von Fintel's theory is a dynamic one, so he is committed to the notion that the expression denotes the same context change potential. But since the context has changed in a way that the CCP denoted by the expression is sensitive to, the update that it effects is in some sense different.

[2]   With the added assumption that the antecedent will be added to the modal base through compositional means.

Thus recent accounts have tried to accommodate both properties of Sobel Sequences. However, this is in part misguided because prior accounts have failed to distinguish true Sobel Sequences from their cousins, Lewis Sequences (LSs). True SSs have the property of unequivocality, but not unidirectionality, while LSs have the reverse. Thus, there does not need to be any attempt accommodate both properties in a single analysis. An analysis along the lines of Lewis or Stalnaker may be sufficient to account for true SSs, while a purely pragmatic account suffices to explain LSs.

2.1. True Sobel Sequences

True SSs behave as "single pointful pieces of discouse" as Edgington (1995) claims all Sobel Sequences do. Thus, uttering the second conditional in a true SS does not invalidate the first – it neither requires the speaker to retract or qualify the first conditional, nor do they give rise to a retrospective intuition of falsity with regard to the first conditional.

(7) *Construction workers Daryl, Aaron, and Ida, stand around a construction site. Daryl is not wearing a helmet. A large beam falls from above them and lands where no one was standing, but near to Daryl.*
   a. *Aaron:* Daryl, if you had been standing there, you would have been killed.
   b. *Ida:* And if you had been standing there and wearing a helmet, you would not have.
   c. *Aaron:* Exactly.

In this example, Ida is not seen as contradicting Aaron at all – in fact she is supporting his implicit argument (that Daryl should wear a helmet). Aaron is in no way compelled to retract his assertion, nor does his assertion seem false in retrospect. Its interpretation is the same in retrospect as it was in the moment: If Daryl had been standing there and *everything else was like it was in reality*, he would have been killed.

Another example:

(8) *Karlos is known for being fun at parties. But his house is small and smelly.*
   a. *Martina:* If Karlos had come to the party, it would have been a good time.
   b. *Ben:* But if Karlos had hosted the party, it would not have been a good time.
   c. *Martina:* ...Sure.

Since *Karlos hosts the party* entails *Karlos comes to the party*, this is another case of strengthening the antecedent. But again Ben's comment does not contradict Martina's or cause her to retract or qualify her assertion. Once again, her assertion seems to have the same meaning before and after Ben's utterance, namely if Karlos had come to the party and everything else was the same, it would have been a good time. This of course requires knowing what the party was like in reality.

It is worth pointing out that Ben's comment may seem like a non-sequitur, depending on what the larger question under discussion is. For example, if the party was in reality not enjoyable, and the party's organizers (who all live together) are contemplating after the fact what could have made the party better, Martina might utter (8-a), implicating that Karlos should have been invited to the party. But if Ben utters (8-b), while true and not at odds with Martina's utterance, it may seem irrelevant if the possibility of changing the location of the party was not really a 'live option'. Moreover, it does not relate to the previous utterance – Karlos's coming to the party is causally independent of his hosting the party. So while perhaps odd for independent reasons, there is no sense of equivocation. So true SSs, as advertised, display unequivocality.

Unidirectionality is slightly harder to diagnose. On its face, it may seem that true SSs display unidirectionality as well.

(9) a. *Ida:* If you had been standing there and wearing a helmet, you wouldn't have been killed.
   b. *Aaron:* # But if you had been standing there, you would have been killed.

In this case, reversing the order causes Aaron's assertion to be not just false, but infelicitous. One possible explanation for the infelicity is that Aaron is contradicting Ida's assertion. This could be because *would*

is sensitive to modal subordination, and thus, (9-b) could be interpreted as meaning that if Daryl had been standing there *and wearing a helmet* he would have been killed, i.e., a direct contradiction of what Ida asserts in (9-a).

Another possibility is that (9-b) is not false at all, but simply infelicitous, because there is a pressure to stress the antecedent of (9-b) contrastively with (9-a). Since the antecedent of (9-b) is syntactically a subset of the antecedent of (9-a), this is impossible just with prosody. The use of an exhaustive operator could suffice, as in (10).

(9)   b'.   *Aaron:* But if you had *just* been standing there, you would have been killed.

This arguably defeats the purpose since the exclusion of worlds where Daryl wears a helmet is now achieved just by the semantics of the antecedent itself.

Consider the reverse of (8).

(10)   a.   *Ben:* If Karlos had hosted the party, it would not have been a good time.
        b.   *Martina:* But if Karlos had *come* to the party, it would have been a good time.

Here simple contrastive stress is possible, and the reverse sequence is acceptable. However, it could be argued that (10-b) also carries an exhaustive interpretation as well, where the antecedent alone means *Karlos comes to the party but does not host it*. This can be remedied if the Reverse Sobel Sequence overlaps a proper Sobel Sequence.

(11)   *Karlos is known for being fun at parties. But his house is small and smelly.*
        a.   *Martina:* If Karlos had come to the party, it would have been a good time.
        b.   *Ben:* But if Karlos had *hosted* the party, it would not have been a good time.
        c.   *Martina:* Sure, but what I said is still right: If Karlos had come to the party, it would have been a good time.

This strategy works for reversing (7) too.

(12)   *Construction workers Daryl, Aaron, and Ida, stand around a construction site. Daryl is not wearing a helmet. A large beam falls from above them and lands where no one was standing, but near to Daryl.*
        a.   *Aaron:* Daryl, if you had been standing there, you would have been killed.
        b.   *Ida:* And if you had been standing there and wearing a helmet, you would not have.
        c.   *Aaron:* Exactly. But what I said is still right: If you had been standing there, you would have been killed.

Similar sentences are pointed out by Moss (2012), though her explanation is different; see Klecha (2014) for discussion. This strategy for reversing SSs, however, does not work for LSs.

It is still certainly true that in the simplest cases, reverse true SSs are degraded, and while I have speculated about a possible explanation for these judgments, my theory ultimately has nothing to to say about them. The most important point I would like to make is that reverse true SSs are a totally different animal from reverse LSs and require a different explanation, where the explanation of the latter is my pragmatic account. This says nothing about the debate about, e.g., Strict versus Variably Strict theories of the semantics of counterfactuals. We may regard true SSs as the phenomenon that most authors have been attempting to explain; after all, the unequivocality of true SSs is what weighs heaviest on the debate over Strict and Variably Strict theories of counterfactuals. However, the existence of LSs and their similarity to true SSs have muddled the debate about the latter. Presently, I attempt to unmuddle.

2.2. Lewis Sequences

LSs do not behave as "single pointful pieces of discourse". They give rise to a feeling of contradiction, or at least equivocation, and require a retraction or qualification on the part of the original asserter.

(13)   *Construction workers Daryl, Aaron, and Ida, stand around a construction site. Daryl is not*
       wearing a helmet. A large beam falls from above them and lands where no one was standing,
       but near to Daryl.

   a.   *Aaron:* Daryl, if you had been standing there, you would have been killed.
   b.   *Ida:* But if he had been standing there and he saw a the shadow of the falling beam and
        managed to jump out of the way in time, he would not have.
   c.   *Aaron:* #Exactly.

Even if Ida's second premise, that Daryl detects the falling beam and evades it, is very unlikely given
the first, this is enough to force Aaron to retract his prior statement; he cannot respond as he did in (7),
because there is a retrospective intuition of infelicity with regard to (13-a).

(13)   c'.   *Aaron:* Well, okay, I guess you're right. But he should still wear a hardhat.

Another example:

(14)   *Karlos is known for being fun at parties. But his house is small and smelly.*

   a.   *Martina:* If Karlos had come to the party, it would have been a good time.
   b.   *Ben:* But if Karlos had come to the party and fallen off the balcony, it would not have been
        a good time.
   c.   *Martina:* Well, alright, but he probably wouldn't have done that – my point is, we should
        have invited him.

As mentioned above, neither conditional in (14) is strictly false since conditionals obey the Principle
of the Excluded Middle. However, crucially, they are too strong and must be retracted; thus LSs do not
display unequivocality.
     But they do display unidirectionality.

(15)   *Karlos is known for being fun at parties. But his house is small and smelly.*

   a.   *Martina:* If Karlos had come to the party, it would have been a good time.
   b.   *Ben:* But if Karlos had come to the party and fallen off the balcony, it would not have been
        a good time.
   c.   *Martina:* #Well, alright, but what I said is still right: If Karlos had come to the party, it
        would have been a good time.

Since (15-b) is a refutation of (15-a), clearly (15-c) cannot be felicitously uttered in response. Thus even
if "well, alright, but what I said is still right" serves to reset the context in some way, the resetting of the
context is not enough to save LSs.
     Note that while (8-b) sounds like a non-sequitur, the second part of LSs never do – this is supporting
evidence for the claim that LSs always involve a kind of equivocation. Since the second part of LSs
are always contrary to the first, they are also always relevant, since they are (implicit) denials of the
(presumably relevant) first part.
     Next I explain why true SSs and LSs have the distinct behavior that they do.

3. Similarity and Causality

     The single feature which determines whether a Sobel Sequence will be a true SS or an LS is whether
or not there is a causal relationship between the two antecedents in the second conditional. In true SSs
there is no causal relationship, while in LSs there is. This is predicted by a very conservative semantics
for counterfactuals.
     The semantics for counterfactuals (i.e., for *would*) I adopt is indeed a conservative one, and I so
do not probe issues relating to their dynamic properties relating to modal subordination (see e.g., Asher
& McCready, 2007, Klecha (2011)), or advanced issues relating to their composition, particularly their
relationship to past tense (see, e.g., Arregui (2009)). Rather I focus on the question of how their domain
is determined, the central question bearing on this study.

An analysis following from Lewis (1973), and Kratzer (1981b, 1981a, 2012) gives *would* the following semantics.

(16) $[\![would]\!] = \lambda p \lambda m \lambda g \lambda w [\forall v \in max_{g(w)}(\cap m(w))[p(v)]]$
       iff g is a closeness ordering and m is an empty modal base

I assume that *would* is obligatorily conditional, though it does not always need to take an overt *if*-clause. See Klecha (2011). I also assume that the presupposition that m be an empty modal base hold before conditionalization, thus, $\cap m(w)$ in the above formula will always simply denote the antecedent.

The biggest question, then, is: What is a closeness ordering? A simple implementation of Lewis's (1973) analysis would be to take "closeness" as simply similarity. Consider (17).

(17)   If Gore had won in 2000, the U.S. would not have invaded Iraq.

On this view, sentences like (17) are supposedly accounted for in the following way. Begin by taking the set of worlds in which the antecedent is true (as determined by the modal base). Then take the set of worlds most similar to the evaluation world which are also in the modal base (the effect of the ordering source). Since no world can be more similar to the evaluation world than itself, if the antecedent is true, this will return only the evaluation world and the truth value of the whole counterfactual will simply be the truth value of the consequent. But if it is false (the more typical case), the counterfactual will be true in the set of worlds which diverge from the evaluation world in terms of the antecedent, but otherwise as little as possible.

However, this does not quite suffice, as Bennett (2003) explains. This is because a world where Gore wins in 2000 and the United States does not go to war with Iraq is probably more different from the evaluation world than one where Gore is actually a Republican and behaves just like George W. Bush did in reality, and thus the Iraq War, with all its geopolitical consequences, happens just as it did in reality. In other words, any counterfactual with a consequent which entails a big difference with the evaluation world is predicted to be false, which is of course a bad result.

Bennett's (2003) solution (see also Arregui (2009) for a compositional account) is to argue that our closeness measure must be indifferent to matters which follow in a causal chain from the antecedent eventuality. A simplified version of Bennett's proposal says that the closeness of two worlds is just their similarity in all matters except those which pertain to the antecedent and what follows causally from the antecedent. In other words, if two worlds differ in a way that has nothing to do with the antecedent p, then they will count as distant for that reason. But if they differ in terms of q, which is due to a causal chain begun by p, and which is true in only one of those worlds, this has no effect on similarity.

So worlds where Al Gore is actually a Republican count as distant because his being a Republican is not causally associated with his winning in 2000 (or in any case, we can imagine worlds where he wins despite being a Democrat). But the non-occurrence of the Iraq War, which follows causally from Al Gore's winning the election, does not cause those worlds to count as distant from the evaluation world. Thus, (17) is (plausibly) true, because worlds where Al Gore is a Republican are successfully kept out of the domain.

The unequivocality of true SSs is neatly accounted for by this analysis, as Lewis (1973) originally argued. Consider again a typical true SS.

(18)   *Construction workers Daryl, Aaron, and Ida, stand around a construction site. Daryl is not wearing a helmet. A large beam falls from above them and lands where no one was standing, but near to Daryl.*
       a.   *Aaron:* Daryl, if you had been standing there, you would have been killed.
       b.   *Ida:* And if you had been standing there and wearing a helmet, you would not have.
       c.   *Aaron:* Exactly.

When we evaluate the truth of (18-a), we consider worlds where Daryl was standing under the falling beam, but which are otherwise just like the evaluation world *except* in all ways that proceed causally from the counterfactual premise, Daryl's standing under the beam. Thus, the fact that he is killed in such worlds (and that his mother grieves him, and that his employer replaces him, etc.) does not count against including them in the modal domain. But we *do* exclude worlds where Daryl is standing under

the beam and is wearing a helmet, because wearing a helmet is causally independent of the standing under the beam. Such a divergence from the facts of the evaluation world *does* count as being unlike the evaluation world.

On the other hand, in (18-b), his wearing a helmet is explicitly included in the antecedent, and so the set of worlds considered in the domain is different (and in fact entirely non-overlapping). Since these two expressions quantify over different worlds, there is no reason to expect any kind of entailment relations between them; thus, unequivocality of true SSs is derived. Moreover, nothing about this theory predicts unidirectionality.

Crucially, however, this theory does *not* predict that LSs should be unequivocal, because LSs differ from true SSs precisely in terms of the causal relationship between the premises. Whereas Daryl's wearing the helmet does not causally proceed from his standing beneath the beam, and Karlos's hosting the party does not causally proceed from his coming to it, Daryl's jumping out of the way of the beam, and Karlos's falling off the balcony do, respectively.

Note here that *causally proceed from* does not mean 'caused by'. Daryl's standing under the beam caused the conditions under which he could have jumped out of the way, or not. Either outcome, avoiding or failing to avoid, would count as proceeding causally from his standing under the beam.

So the relatively conservative semantics adopted here captures true SSs, but not LSs. Both outcomes are desirable, because as I show below, the properties of LSs are seen in many other phenomena which are not conditional or even modal – thus their analysis should stem from very general pragmatic principles. In fact, this account allows us to neatly explain the difference between LSs and true SSs: LSs result from strengthening the antecedent with a causally related proposition, while true SSs result from strengthening with an unrelated proposition.

Further support for this distinction comes from non-counterfactual conditionals. Sobel Sequences do not only afflict counterfactuals, as was already seen in (2), a future-less vivid conditional (Iatridou, 2000). Williams (2008) points out that they occur in indicative conditionals as well, and Moss (2012) does the same for predictive conditionals; see also Willer (2013). And while future-less vivid conditionals may have a lot in common with counterfactuals (especially the lexical item *would*), indicative and predictive conditionals presumably have less.

(19)   *Neither Ryan nor Eva know if Karlos went to the party, or if the party was fun.*
     a.   *Ryan:* If Karlos went to the party, it was a good time.
     b.   *Eva:* But if Karlos went to the party and fell off the balcony, it was not a good time.
     c.   *Ryan:* #Right, but what I said is still true.
     c'.   *Ryan:* Well, okay, sure, but assuming nothing crazy happened, if Karlos went to the party, it was a good time.

(20)   a.   *Ryan:* If Karlos goes to the party, it'll be a good time.
     b.   *Eva:* But if Karlos goes to the party and falls off the balcony, it won't be a good time.
     c.   *Ryan:* #Right, but what I said is still true.
     c'.   *Ryan:* Well, okay, sure, but assuming nothing crazy happens, if Karlos goes to the party, it'll be a good time.

Both cases are LSs; there is a distinct intuition of equivocation, thus unidirectionality.

These non-counterfactual conditionals do not appear in true SSs, however.

(21)   a.   *Ryan:* If Karlos goes to the party, it'll be a good time.
     b.   *Eva:* But if Karlos hosts the party, it won't be a good time.
     c.   *Ryan:* #Right, but what I said is still true.
     c'.   *Ryan:* Well, okay, sure, but assuming the party is hosted by Graham, if Karlos goes to the party, it'll be a good time.

Though *Karlos goes to the party* and *Karlos hosts the party* are causally independent from each other, this is still an LS, as long as the second conjunct is sufficiently outlandish. If it is *so* outlandish as to actually be ruled out as a future possibility, (21-b) is simply infelicitous. This provides significant support for the view that there are two varieties of Sobel Sequences; one due to the special semantics of counterfactuals, and one due to very general pragmatic principles.

True SSs are derived from the similarity ordering ascribed to the semantics of the counterfactual, particularly the lexical item *would*, which does not occur in predictive or indicative conditionals. LSs meanwhile are derived from pragmatic principles which should affect all conditionals. The fact that indicative and predictive conditionals undergo LSs but not true SSs is therefore exactly what we should expect.

Another way to frame this distinction is that a Sobel Sequence $p \Box\!\!\rightarrow q$ & p & $r \Box\!\!\rightarrow \neg q$ is consistent as long as $p \Box\!\!\rightarrow \neg r$ is true, i.e., there are no r worlds in the domain of the simple counterfactual. This is the case for true SSs, but not LSs.[3]

(22)   a.   If Daryl had been standing there, he would have been killed.
         b.   But if he had been standing there and saw his shadow and jumped out of the way, he would not have.

(23)   If Daryl had been standing there, he would not have seen his shadow and jumped out of the way. (false)

(24)   a.   If Daryl had been standing there, he would have been killed.
         b.   But if he had been standing there and wearing a helmet, he would not have.

(25)   ?If Daryl had been standing there, he would not have been wearing a helmet.   (true)

So the cut between LSs and true SSs may seem unsurprising. After all, any theory of conditionals as sophisticated as Lewis's will validate this basic point – the Sobel Sequence is truly consistent only if the corresponding counterfactual $p \Box\!\!\rightarrow \neg r$ is true. But a pragmatic theory is still needed to account for *apparent* consistency of LSs when this corresponding counterfactual is not true. This pragmatic theory is discussed below.

4. Imprecision in Conditionals

In this section I briefly sketch a pragmatic account of LSs whereby they are an instance of a much more general phenomenon, namely precisification. See Klecha (2014) for more details.

As discussed by Lewis (1973), strictly false utterances may be uttered felicitously as long as certain conditions are met. For Lasersohn (1999) this condition is that the false utterance is 'true enough' for the present context, i.e., it is sufficiently close to true for present purposes. Consider some examples.

(26)   a.   Graham arrived at three.
         b.   Everyone in this ballpark is singing along.
         c.   Tom is exactly 6 feet 5 inches tall.

(26-a) could be uttered in some contexts where the facts are that Graham arrived at 3:01. (26-b) could be uttered in some contexts where the facts are that only 99% of the people in the ballpark are singing along. (26-c) could be uttered in some contexts where the facts are that Tom is 6 feet, 5.001 inches tall.

Sentences like those in (26) can also be a part of a discourse sequence called precisification.

(27)   a.   *Kate:* This table is flat.
         b.   *Lelia:* Nothing made by humans could ever be truly flat.
         c.   *Katie:* Well, you're technically right, but you get my drift.

In (27-a) Katie says something that, like the sentences in (26), could be accepted as true in many if not most contexts. Lelia, however, takes the context to be on of those in which it cannot, i.e., one where the *standard of precision* is too high to permit (27-a).

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[3] It's worth pointing out that (21) is questionable, but can be ameliorated by a better contextual set up. Suppose the conversants continue to discuss Daryl's near miss. Aaron mentions that the contracting firm that employs them all is being fined by a government agency for Daryl's forgetfulness, since not wearing a helmet is against regulations. Ida then says she wishes Daryl *had* been standing under the beam. Aaron may then respond with (i).

(i)   Why? If Daryl had been standing there, he (still) would not have been wearing a helmet.

What is very special about contexts like (27) is that they do not go the same way that any other discourse goes where two participants disagree about some parameter of the discourse.

(28) a. *Katie:* He's not very tall.
      b. *Lelia:* What? He's the tallest person I know!
      c. *Katie:* I didn't mean that Nick, I meant the other Nick.
      d. *Lelia:* Oh, sorry, I misunderstood.

(29) a. *Katie:* Power Rangers is on right now.
      b. *Lelia:* No it isn't; it's only three o'clock.
      c. *Katie:* No it isn't; it's four o'clock.
      d. *Lelia:* Well let's find a clock and see who's right.

Discourses like (29), where the speakers disagree on the time of evaluation, is something like a factual disagreement. Either party might give in to the other, or they may maintain their disagreement and seek out some objective support for their claims. Discourses like (28), where the speakers disagree on the referent of an anaphor, is resolved as soon as the interlocutors are aware of the disagreement. The original user of the anaphor, Katie in (29-a), simply clarifies what she originally meant and the disagreement is resolved; really, it was never a disagreement, just a misunderstanding.

Cases like (27) do not proceed this way. They are similar to cases like (29) in that they, in some sense, resolve as soon as the disagreement is acknowledged. But they are also similar to cases like (28) in that they feel more like disagreements than misunderstandings. And unlike (29), the original user of the expression in question does not get to hold up what she meant as support for her side. Rather, whoever takes the side of the higher standard of precision tends to 'win'. This is not to say that the going in the other direction is impossible; it's just much more difficult. This is unidirectionality, and it was originally noted by Lewis (1979).

Consider some other notable properties of (27); pedantry and partial concession. *Partial concession* is the label I give for utterances like (27-c). In it, Katie signals that she is assimilating to Lelia's understanding of the context, but does not acknowledge any factual incorrectness; she in fact maintains the truth of the proposition she intended to assert. Pedantry is an intuition that arises from Lelia's utterance; it is a kind of uncooperativeness, but can be distinguished from 'serious' uncooperativeness like in (30).

(30) a. *Katie:* This table is flat.
      b. *Lelia:* Well sure, but when is a table ever carbonated?
      c. *Katie:* #Well, you're technically right, but you get my drift.

The most charitable interpretation of (30-b) is probably that Lelia has misunderstood, much the same way that she did in (28). The less charitable one is that she is being seriously uncooperative. Either way, a partial concession by Katie is not appropriate (30-c). The pedantry displayed in (27) is not as serious a form of uncooperativity, but it is somewhat.[4]

The crucial point of this section is that LSs are like more canonical cases of precisifications in three ways: they are both unidirectional, can both involve pedantry, and can both involve partial concessions.

(31) a. *Aaron:* Daryl, if you had been standing there, you would have been killed.
      b. *Ida:* But if he had been standing there and he saw a the shadow of the falling beam and managed to jump out of the way in time, he would not have.
      c. *Aaron:* Well, okay, technically that's true, but you get my drift.

Ida's point, while strictly contradicting Aaron's, does not negate his larger point, namely that Daryl should have worn a helmet.

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[4] Note, of course, that precisification is not necessarily pedantic – in contexts where the standard of precision *really should be* higher than what one participant assumes, there is no judgment of pedantry, and instead a judgment of carelessness or something similar. So, judging an individual as pedantic or careless depends entirely one's own standard of precision.

The analysis fleshed out in Klecha (2014), which is adapted from Lewis (1979); Lasersohn (1999); Krifka (2007); Lauer (2012) says the following: Speakers can utter things that are strictly false as long as doing so leads to all the same relevant outcomes as uttering the true thing would have. Speakers choose to do this as a way of avoiding the additional effort required to uttering such strictly true things. Note the complexity of (32-b) compared to (32-a), likewise (33-b) and (33-a).

(32)   a.   Everyone in this ballpark is singing.
       b.   Everyone in this ballpark is singing, except people who are in the concession lines, or in the bathroom, or who work for the stadium, and probably a few people who just don't care to sing.

(33)   a.   If you had been standing there, you would have been killed.
       b.   If you had been standing there, you almost certainly would have been killed.

Thus, LSs can be accounted for as a simple pragmatic phenomenon; the semantics of conditionals need not be complicated to account for them.

5. Conclusion

The purpose of this paper has been to establish the empirical point that there are two kinds of Sobel Sequences: True Sobel Sequences are unequivocal and can be given a fully semantic account. Lewis Sequences are equivocal and are fully predicted by a general pragmatic theory of imprecision.

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Proceedings of the 32nd West Coast Conference on Formal Linguistics

edited by Ulrike Steindl, Thomas Borer, Huilin Fang, Alfredo García Pardo, Peter Guekguezian, Brian Hsu, Charlie O'Hara, and Iris Chuoying Ouyang

Cascadilla Proceedings Project   Somerville, MA   2015

Web access and citation information

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This paper can be cited as:

Klecha, Peter. 2015. Two Kinds of Sobel Sequences: Precision in Conditionals. In *Proceedings of the 32nd West Coast Conference on Formal Linguistics*, ed. Ulrike Steindl et al., 131-140. Somerville, MA: Cascadilla Proceedings Project. www.lingref.com, document #3164.