Introduction Biscuit conditionals (BCs) (1) differ from other conditionals in that they provide the information that the consequent is true regardless of whether the antecedent is true or not. This property is often referred to as consequent entailment of BCs.

(1) If you are hungry, there are biscuits on the sideboard.

Predominant semantic accounts of BCs propose a special semantics. In contrast, pragmatic theories ([1], [2], [3], [5]) argue that the semantics of BCs is not different from that of other conditionals. The consequent entailment is explained in these theories as a contextual effect triggered by a contextual assumption of independence at play: we observe in (1), that the truth of the consequent does not depend on the truth of the antecedent ([1], [2]).

In this paper we shortly present some problems and shortcomings of the main formalization of independence used in the literature on BCs going back to [2]. We develop a modified pragmatic framework for modeling the consequent entailment in BC interpretations. In particular, we give a formal model of the intuitive idea that a biscuit interpretation is a consequence of discourse participants striving for a coherent context balancing two elements, factual beliefs and knowledge of law-like generalizations [7]. As a corollary of this account, we also are able to throw light on the issue of how dependencies are communicated with conditionals.

Carving out the notion of independence relevant for BC interpretations should also be illuminating for regular conditionals as speakers often use regular conditionals to provide information about dependencies.

Problem [2] and [1], [3], [5] define independence relative to an information state \( \sigma \) in the following way:

(2) Propositions \( A \) and \( C \) are independent relative to \( \sigma \) iff

\[
\forall X \in \{A, \overline{A}\}, \forall Y \in \{C, \overline{C}\} : \text{if } \lozenge_{\sigma} X \text{ and } \lozenge_{\sigma} Y \text{ then } \lozenge_{\sigma} (X \cap Y)
\]

The addressee of a BC is taken to reason in the following way about the information state \( \sigma \) of the speaker: The initial assumption is that \( \sigma \) satisfies independence. Then, a conditional \( A > C \) gets truthfully uttered, i.e. \( \sigma \cap A \subseteq C \) with its presupposition that \( \lozenge A \). Given (2) the speaker has to believe in the truth of \( C \) because \( \lozenge A \) and \( \lozenge \overline{C} \) together entail \( \lozenge (A \cap \overline{C}) \), which contradicts \( \sigma \cap A \subseteq C \). But what does this mean for the independence assumption relative to the posterior information state \( \sigma^+ \)? We have to either reduce the issue \( \{C, \overline{C}\} \) to \( \{C\} \) or to accept that if \( \lozenge_{\sigma} X \) and \( \lozenge_{\sigma} Y \) then \( \lozenge_{\sigma} (X \cap Y) \) is trivially met. But for both cases the independence assumption is not informative anymore. These aspects are symptoms of a bigger problem we dub the knowledge problem, which is also considered in [1]. If \( \Box D \) with respect to \( \sigma \), every other proposition \( Z \) is independent from \( D \) in \( \sigma \). [1] shows that with this property [2]'s account predicts BC readings for cases where it is common ground (CG) ([6]) that the speaker knows about the truth value of the antecedent, which implies independence. But intuitively no BC reading or intuition about independence arises. As a solution [1] claims that independence has to be an assumption in CG. However, this is only one step towards a sufficient picture.

Our claim is that neither in case of \( \Box_{\sigma} A \) nor \( \Box_{\sigma} C \) a biscuit interpretation is triggered by the fact that the propositions are true throughout \( \sigma \). In contrast, the independence assumption has to be independent of this property as shown by (3).

(3) It is taken to be mutual knowledge that it is Thursday.

A: If you are hungry, there are sandwiches in the fridge.

B: How do you know that?

A: If it is Thursday, there are sandwiches in the fridge.

The first conditional is a BC and establishes the truth of the consequent. For the second conditional, the truth of antecedent and consequent are CG. Still, we have neither an independence
intuition, nor a BC reading for the second conditional. On the contrary, it is interpreted as stating a dependence relation.

**Analysis** We spell out two intuitive ideas: (i) The consequent entailment of BCs is an interpretational effect to retrieve a coherent CG. (ii) The notion of independence at play is the notion of *law-like independence*. (i) requires to carve out a notion of (in)dependence stable among context changes. This is achieved in elaborating on (ii).

Following [7] we draw a difference between factual (F) and law-like (U) elements in the CG. F represents the standard context set [6] encompassing all worlds regarded as live options for actuality. U comprises all worlds that are compatible with the law-like generalizations mutually shared by discourse participants. $F \subseteq U$, since all live worlds also have to be ‘law-obedient’. The framework of [7] has the advantage that it does not have to be specific about what laws are. Laws are represented indirectly via the ‘law-obedient’ worlds. However, at least, we have to think about them as default, *ceteris paribus* rules. In [7], worlds are mappings from the sentences of a language to truth values. A specific mapping of a sentence to a truth value is called a fact of a world. Law-like generalizations encode dependencies between facts. A world is individuated by base sets of independent facts together with the laws that determine which other, dependent facts hold in that world. If two facts are independent with respect to the system of laws in U, there is no law-like dependency in any world in U. Law-like independence on the propositional level translates into the structural property of U that we find worlds where all possible truth value distributions over the the conjunction of A and C are instantiated. Following [4] this structural property of U is termed orthogonality. Propositions, are associated with *subject matters*, formally partitions on U, encoding the distinctions a sentence draws among possibilities. Subject matters are always inquisitive, i.e. comprising at least two elements. Orthogonality in U is given if the subject matters in question completely cross-cut each other.

**Proposal** We claim that a coherent CG is given iff F exemplifies the law system, i.e. leaves the structural properties of U unimpaired. If we take the semantic context change potential (CCP) of an indicative conditional to primarily target F, the CG coherence requirement is threatened. The update eliminates $A \cap \overline{C}$ worlds from F. For regular conditionals, where dependence is not excluded by the laws encoded in U, we will additionally have an update on U by adding a dependency assumption and eliminating the $A \cap \overline{C}$-worlds from U. For the second conditional in (3) we only get an update on U, because A and C are already established in F. Establishing a dependency is equivalent to establishing *non-orthogonality* in U.

In the case of BCs we have to take the assumed system of laws to exclude a dependency. I.e. the semantic update with the conditional on F is incoherent with mutually assumed orthogonality in U as it induces non-orthogonality in F. The addressee cannot take the speaker to intend to state a dependency. For a BC the interpreter has to take into account that on the one hand the speaker states that all A-worlds have to be C-worlds by the semantics of the conditional, but on the other hand presupposes that A and C are independent. The reconstruction of the reasoning towards context entailment then goes as follows. How to implement the description of the F-worlds given by the conditional - all A-worlds are C-worlds - without giving up the assumptions encoded in U? Eliminating all antecedent worlds is not a possibility as the utterance of an indicative conditional presupposes $\Diamond A$. The only possibility to retrieve a coherent CG is to eliminate all $\overline{C}$-worlds from F giving us the consequent entailment. Importantly, it is not the meaning of the conditional itself that entails the consequent but the resulting F-element of the CG.
Selected References