

Conditionals, modality, and Schrödinger's cat: Conditionals as a family of linguistic qubits

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1. Motivation and aims

According to Fillmore (1986: 163), conditionals have “a topmost bipartite structure” while “defining a single situation” (ibid.: 171). They consist of the *protasis* (P), in which a condition is expressed, and the *apodosis* (A), in which a comment related to the condition in the protasis is provided (Fillmore 1986, Sweetser 1990: 125, Dancygier 1998, Dancygier & Sweetser 2005). A large number of studies have proposed that there is a close connection between conditionality and modality. Comrie (1986: 89) claims that a conditional “never expresses the factuality of either of its constituent propositions”. Palmer (1986: 189) comments that “modality seems [...] to be doubly marked in conditionals”. More precisely, Dancygier (1998: 72) states that “the presence of *if* in the construction marks the assumption in its scope as unassertable. As a result, the assumption in the apodosis, which belongs to the same mental space as the protasis, is not treated as asserted either” (see also Bybee et al. 1994: 208). Nuyts (2001: 352) reports that “conditionals have an intimate link with the domain of epistemic qualification”. Huddleston & Pullum (2002: 741) state that “*If P (then) Q* is a weaker statement than *Q* on its own”, adding that “the conditional construction is conducive to the expression of modality” (ibid.: 744). Similarly, Turner (2003: 135) presents the intuitive view that “conditionals are not part of fact-stating discourse: conditionals, instead, express uncertainties”.

More recently, corpus-based studies have provided empirical evidence for the connection between conditionals and modality, showing that conditionals in general, and *if*-conditionals in particular, contain have a higher *modal load* (i.e. contain modal marking much more frequently) than average, and even higher than non-conditional structures (Gabrielatos 2007, 2010, 2011a, 2011b, 2013, 2019). The high modal load (henceforth, ML) of conditionals is made all the more intriguing when we consider that their protases are already within the modalising scope of their subordinators (e.g. *assuming, if, unless*), or the modal markers introducing conditionals without overt subordinators (e.g. *Should you require assistance, ...*) – the modal marking of which was not included in the calculation of the ML. Examined through the lens of Lexical Grammar (Sinclair 1996, 2004), conditionals have been described as “modal colligations”, that is, grammatical structures with a strong mutual attraction to the semantic category of modality (Gabrielatos 2007).

It has also been argued that the meaning of the construction itself influences the meaning of its constituent parts (Fillmore 1986: 164, Goldberg 1995: 10-11, 16, Goldberg & Jackendoff 2004: 534, Tomasello 2003: 161). In particular, Fillmore (1986: 170) observed that “tense forms and the perfect and modal auxiliaries have roles in conditional sentences which differ in important ways from what can be said about them when they occur in self-standing sentences”. Evidence for this has been provided in Gabrielatos (2003, 2006): the manual analysis of two random samples of *if*-conditionals in the written BNC revealed that past tense marking in protases has modal meaning, in that it expresses remoteness in likelihood, much more often than it denotes remoteness in time (about two thirds of the instances). In contrast, in the random sample of 857

non-conditional constructions from the written BNC examined in Gabrielatos (2010) no such uses were found; all past tense markings referred to past time. Of course, this does not necessarily entail that modally remote uses of the past tense never occur outside conditionals, but rather that they are rare, or, more precisely, significantly less frequent than within conditional constructions.

However, the above findings do not, in themselves, explain the nature of the connection of conditionals to modality. Therefore, this chapter will address the following interrelated questions: Can conditionals be seen as being modalising structures themselves? Can they simply be seen as being internally modalised? Or is their nature more complex and intriguing? This chapter is also motivated by the corpus-based findings of Gabrielatos (2010, 2011a, 2011b, 2013, 2019), which indicated that conditionals can be more usefully treated as constructions (Fillmore 1986: 196, 1998: 36). Therefore, the above questions will be addressed through the lens of Construction Grammar, while the discussion will also draw on the notion of *mental spaces* (Fauconnier 1994), as adapted for the examination of conditionals in Dancygier & Sweetser (2005).

2. The modal nature of conditionals: considerations

It would be helpful to start by examining the distinction between *modalised* constructions and *modal* constructions, as although the two terms are defined in the literature, they have not been contrasted. A modalised construction is modified by one or more modal markers (e.g. Huddleston & Pullum 2002: 173), in that the modal marking indicates how likely, potential, or desirable the user wants to present its content. On the other hand, a modal construction can modalise (i.e. modally mark) other constructions (e.g. Quirk et al. 1985: 120-121). In this light, we can examine whether conditional constructions are simply modalised, or are themselves modal markers.

The simplest observation is that conditionals can indeed be modalised by modal markers external to the construction, as (1) attests: the conditional is itself modalised by *perhaps*. The result of that external modalisation is that, even if the proposition in P is factual, it does not necessarily follow that the proposition in A holds. In (1), even when a patient is indeed ‘a bad case’, it is not presented as certain that they would need a special boot or iron braces.¹

- (1) Perhaps if it's a bad case the patient has to wear a special boot or keep the leg held straight with iron braces. [CHG 80]

However, the external modalisation of conditionals is not the focus of the present study, nor has it been included in the calculation of ML in Gabrielatos (2010, 2019). More importantly, the observation that constructions can be modalised by other constructions is in itself neither novel nor intrinsically interesting. If we distinguish between construction-internal and construction-external modalisation, then conditionals can be better described as being *internally modalised*. Still, the question remains whether the heavy ML of conditionals, that is, the high level of modalisation *within* the construction, justifies considering conditionals to be modalised or modal constructions.

Let us examine the nature of the modal characteristics of the component parts of conditionals in more detail, looking at the modal nature of the protasis and apodosis, as well as their

¹ Examples are from the random samples from the written BNC examined in Gabrielatos (2010, 2019, forthcoming) unless otherwise indicated.

connection in terms of meaning. Clearly, A is always modalised, as it is within the semantic scope of P, which has been seen as “the introduction to a hypothetical world” (Sweetser 1990: 127). Regarding *if*-conditionals, Dancygier (1998: 72) states that “the presence of *if* in the construction marks the assumption in its scope as unassertable. As a result, the assumption in the apodosis, which belongs to the same mental space as the protasis, is not readable as asserted either”. However, A is not modal itself, as it does not modalise another construction. The fact that A may also be internally modalised (as in (2) below) is irrelevant at this point – although it is important for the discussion of conditionals as linguistic qubits (see section 4).

- (2) If you view any of these files without the parent application running, the contents may not be legible. [FT8 2840]

What is important for the present discussion is that the factuality/actualisation of P does not necessarily point towards the factuality/actualisation of A. For example, in (2) above, viewing the files without the parent application running does not ensure the illegibility of the contents. Dancygier & Sweetser (2005: 53) argue that “*if* is not truly neutral in stance, but is indeterminate between a range of stances including almost everything except complete positive stance towards P or \sim P”.² However, Quirk et al. (1985: 1010) argue that, particularly when the time reference is to the present or future, the meaning of the protasis “may be merely one of negative expectation or assumption, the positive not being ruled out completely”. In that respect, it may be more useful to say that, by opting to use a conditional, a speaker/writer communicates an uncertain stance towards the content of both the protasis and the apodosis. That is, it is not that the possibility of a polar stance (i.e. either positive or negative) is rejected outright; rather, that the polar alternatives are merely seen as the two extremes in a range of, yet unresolved, probabilities.

The case of P requires further attention, as we need to consider whether, in terms of meaning, *if* (or any conditional subordinator) should be seen as semantically external or internal to P. Support for treating the subordinator as semantically external to the protasis seems to come from its conception as a “space builder”, in that its “job is to prompt the set-up of a mental space” (Dancygier & Sweetser 2005: 29, 140, see also Dancygier 1998: 72). However, positing the subordinator as external to P does not aid generalising to all conditionals. This becomes evident when considering conditionals with protases in which conditionality is marked morphosyntactically rather than lexically (see Dancygier 1998: 188-192, Fillmore 1986: 169, 1990: 140-141, Fortuin & Boogaart 2009: 642). For example, in (3) and (4), the marker of conditionality is the past perfect plus inversion, and the imperative, respectively.³

- (3) Had their remit been wider, they might well have discovered that many of the teachers' anxieties about LMS arose from a lack of faith in school-level decision-making and a feeling of being somehow ‘outside’ the decision-making process: a ‘victim’ of change rather than an agent of it. [B23 910]

² See also Bybee et al. (1994: 208), Comrie (1986: 79-80), Dancygier (1998: 72, 110), Dancygier & Sweetser (2005: 32, 45-49), Fillmore (1990: 140), Halliday (2004: 89, 354-356), Høye (1997), Huddleston & Pullum (2002: 117, 147-149, 172-175), Leech (2004: 14-16, 36-40, 116), Lyons (1977: 451-452, 769, 794, 805-806, 815, 820), Nuyts (2001: 29), Palmer (1986: 4-6, 97, 108-115, 126; 1987:44-46), Perkins (1983: 106-108), Sweetser (1990: 127), Werth (1997: 250-252).

³ The discussion of some examples needs to take into account relevant co-text, as it can provide helpful clues to the relevant context (Brown & Yule 1983: 22-23, 47, 59). Also, some examples contain conditionals that are not the focus of the analysis (i.e. not embedded within the conditional in focus), and are therefore treated as co-text. In such instances, the co-text will be indicated with a smaller size font, so that it is clear which conditional is the focus of discussion.

- (4) If your camcorder is one of the new low-light models which can take pictures down to levels of 2 lux, you could simply switch on the normal top lighting in your lounge and start recording some perfectly adequate pictures. For our present purpose, though, they would look rather flat and not very magical: try it and you'll probably agree. [CBP 691]

Further support for treating the subordinator as internal to P seems to come from the conception of P as setting up a possible world (Bybee et al. 1994: 208) or a mental space (Dancygier & Sweetser 2005: 11, Fauconnier 1994: 31-32), which is tantamount to recognising P as a modal construction in itself (see also Dancygier 1998: 72, Huddleston & Pullum 2002: 741). For example, in (4), the second P ('if other materials prove too expensive') modalises a conditional construction ('they could ... rendering').

- (5) Sizes range from {list of dimensions}. They could be used for perimeter walls and the like if finished with a decorative rendering, if other materials prove too expensive. [CG5 1587]

The issue of whether the subordinator should be seen as semantically internal or external to the protasis will be revisited in section 3.3. What is clear, however, is that, in either case, the subordinator is an integral part of the construction. In that respect, conditionals can be seen as being permanently modalised. Crucially, at least within the tenets of Construction Grammar, treating protases as non-assertive entails that the non-assertiveness can be expected to be formally marked (i.e. lexically and/or morphologically and/or syntactically) – this issue will be revisited in section 4.

Finally, we need to consider the question of whether the modal nature of P renders conditionals modal constructions themselves. In order for the latter to be established, it must be shown that conditional constructions (rather than only their protases) can themselves modalise other constructions. However, this has not been mentioned in previous studies, nor was it observed in the corpus samples of conditionals examined in Gabrielatos (2010, 2019). It must also be noted that this is not the case even in conditionals embedded within other conditionals, as, in these cases, the embedded conditional construction is modalised only by the protasis of the other, not by the whole construction (Gabrielatos 2005, 2010). For example, in (6), the conditional in the parenthesis ('notice if registered land') is within the modal scope of the protasis of the other conditional ('If the former ... husband'). More accurately, the apodosis of the parenthetical conditional ('notice') is an alternative apodosis for the first protasis ('If the former ... husband'), which is itself also within the modal scope of the parenthetical protasis ('if registered land').

- (6) (b) Cancellation and registration at HM Land Registry: notices.
If the former matrimonial home has been in the sole name of the husband, then on completion of the various transactions the Class F Land Charge (or notice if registered land) should be cancelled. [JXH 731]

In light of Halliday's (2004: 365) view of modality as "the intermediate ground between positive and negative polarity", the above observations support the view of conditionals as constructions of a modal nature.

At this point we need to summarise the attributes of conditionals concerning modal marking:

- They can be externally modalised – but this is not particularly interesting for our purposes.

- They do not modalise other constructions.
- The protasis modally marks the apodosis.
- The protasis is internally modalised by the subordinator (e.g. *if, in case*) or other lexicogrammatical means.
- They have a modal load that is significantly higher than average.
- Past tense marking in conditionals (particularly in their protases) expresses modal meaning much more often than temporal meaning.

Combined, the above attributes strongly indicate that merely describing conditionals as internally modalised constructions, or modal colligations (Gabrielatos 2007), does not reveal their full nature. Simply put, the riddle posed by the nature of conditionals is that they are internally modalised but not modal. The modal nature of conditionals proposed in this chapter will be discussed in sections 3 and 4, and the attributes listed above will be revisited in section 5.

3. Conditionals as linguistic qubits

Given the indeterminacy that characterises conditionals, it will be argued here that our understanding of their nature can be enhanced if we draw parallels with quantum states, which are “constituted not only by a specification of the truth or falsity of some of the eventualities, but also by the specification of the probabilities of finding truth or falsity upon actualisation of all the other eventualities. Thus a quantum state is a network of potentialities” (Shimony 1992: 374). This was famously exemplified by Erwin Schrödinger’s thought experiment (Schrödinger 1935, English translation by Trimmer 1980), popularly referred to as ‘Schrödinger’s cat’. Although the thought experiment was put forward in order to demonstrate the absurdity of applying quantum principles to objects or systems above the atomic level, it will be shown that it can be usefully adapted to the conception of the nature of conditionals without contravening aspects of the original. Let us first look at the description of the thought experiment (Trimmer 1980: 327), before further explaining its relevance to the examination of the modal nature of conditionals.

A cat is penned up in a steel chamber, along with the following device (which must be secured against direct interference by the cat): in a Geiger counter there is a tiny bit of radioactive substance, *so* small, that *perhaps* in the course of the hour one of the atoms decays, but also, with equal probability, perhaps none; if it happens, the counter tube discharges and through a relay releases a hammer which shatters a small flask of hydrocyanic acid. If one has left this entire system to itself for an hour, one would say that the cat still lives *if* meanwhile no atom has decayed. The psi-function of the entire system would express this by having in it the living and dead cat (pardon the expression) mixed or smeared out in equal parts. It is typical of these cases that an indeterminacy originally restricted to the atomic domain becomes transformed into macroscopic indeterminacy, which can then be *resolved* by direct observation.

Simply put, Schrödinger’s thought experiment sought to demonstrate the absurdity of accepting that, while no observation is taking place, the cat in the box is simultaneously alive and dead. However, in natural language use, the indeterminacy described above is not uncommon, as (7) demonstrates (emphasis added).

- (7) AUTHORSHIP can be called, if anything or anyone can, dual, equivocal. The works of authors **are replicas, and they are unique**. They **are and are not** autobiographical. An author **is and is not** his book. [A05 1196-1199]

Therefore, it does not seem absurd that the factuality/actuality of P and A can be ‘in limbo’ pending comparison with the addressees’ knowledge, interpretations, wishes, intentions etc. – or, in the terms of quantum mechanics, until an observation or measurement has been made (see Stapp 1993: 25-26).

Although Schrödinger’s thought experiment posits a single box, it essentially involves two component elements: the mechanism enabling the probable release of the poison, and the cat. The former can be seen as the content of P, the latter as the content of A. However, in the adaptation proposed here, the probability of the ‘release’ covers the whole spectrum, rather than being 50% (as in the thought experiment); that is, it may have any value between 0% and 100% (see Halliday 2004: 365, Gabrielatos 2010: 62-65) – depending on the additional modalisation of P and/or A. For example, in (8), P is additionally modalised by *should* and its content is, therefore, presented as less likely than if it was only modalised by the subordinator *if*.

- (8) If you should decide to concentrate on one particular nursing specialty then you will probably want to undertake a clinical nursing studies course. [CHT 248]

As the mechanism posited in Schrödinger’s thought experiment “must be secured against direct interference by the cat” (Trimmer 1980: 327), it is compatible with both the spirit and letter of the experiment to posit that the two participants occupy two separate, but communicating, compartments within the box: that of the mechanism (protasis) and that of the cat (apodosis) – as shown in Figure 1 (the sequence of the compartments is irrelevant).

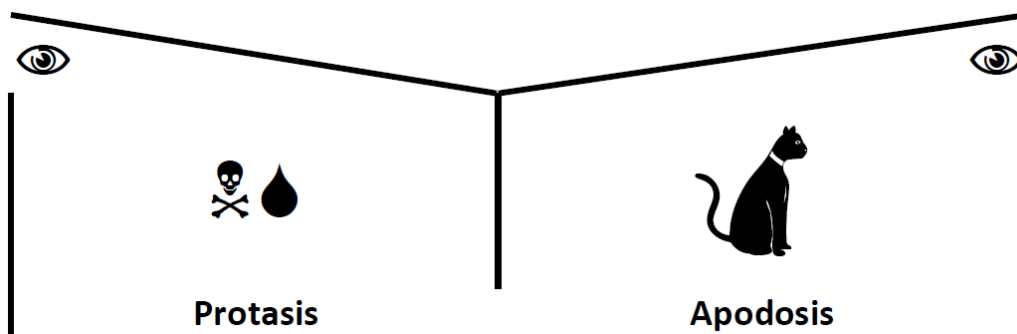


Figure 1. Adaptation of the box posited in Schrödinger’s thought experiment

The present adaptation allows for an opening large enough for the poison to enter the cat’s compartment (should it be released); however, the opening must be understood to be too small for the cat to have any access to the compartment housing the mechanism. A compatible corollary is that observers can examine not only both compartments simultaneously (as in the thought experiment), but also each compartment separately, by opening only the lid of the compartment representing the protasis or apodosis (henceforth, P-compartment and A-compartment, respectively). The examination of each compartment symbolises the existence of real-world knowledge on the part of the reader/listener, that is, it represents the contextual elements required for interpreting the user’s intended message. It must be clarified that an observation of a compartment does not refer to the identification of linguistic elements and their surface or conventional meaning, but to contextual knowledge regarding the actuality or factuality of P and A. More importantly, in natural language conditionals, there are instances when the observation of A is either impossible or irrelevant (see Section 4 for a detailed discussion).

The representation of a conditional in Figure 1 above resembles a *quantum bit* (or *qubit*) – a concept used in quantum computation. A classical bit (currently used in computing), can only have one of two values, or be in one of two states (0 or 1), and, when examined, it is determined whether its value is 0 or 1. A qubit, however, can be in any state between, and including, 0 and 1 (Nielsen & Chuang 2010: 13-16). Dancygier & Sweetser (2005: 35) argue that, in natural language, *if*-conditions are interpreted as *iff* (i.e. if and only if), and that this entails that “hearers are therefore prompted to construct not one single space involving P and Q, but also an alternative space involving $\sim P$ and $\sim Q$ ”, that is, their negation (see also Dancygier & Sweetser 2005: 36, 41, Fauconnier 1994: 109-127). However, Dancygier & Sweetser (2005: 110-111) concede that this is not always the case. Even if there is a tendency for readers/listeners to construct polar alternatives when interpreting conditionals, there are instances when positing a polar alternative seems tenuous, if not impossible – as in (9).

- (9) Phaistos Disc declared as fake by scholar
 [...]

Jerome Eisenberg, a specialist in faked ancient art, is claiming that the disc and its indecipherable text is not a relic dating from 1,700BC, but a forgery that has duped scholars since Luigi Pernier, an Italian archaeologist, “discovered” it in 1908 in the Minoan palace of Phaistos on Crete. Pernier was desperate to impress his colleagues with a find of his own, according to Dr Eisenberg, and needed to unearth something that could outdo the discoveries made by Sir Arthur Evans, the renowned English archaeologist, and Federico Halbherr, a fellow Italian. He believes that Pernier's solution was to create a “relic” with an untranslatable pictographic text.

If it was a ruse, it worked.

Evans was so excited that he published an analysis of Pernier's findings.

[Times Online]⁴

In (9), the content of A (‘it worked’) only makes sense if P holds – that is, if the Phaistos Disc is indeed a fake. However, if the Phaistos Disc is genuine, then there was no ruse in the first place. If there was no ruse, it is unwarranted to posit that ‘it [i.e. the ruse] didn’t work’. In other words, if we posit that in (9) P does not hold, we cannot posit that, as a result, A also does not hold; crucially, neither can we posit that A does hold. Rather, if P does not hold, then the content of A becomes irrelevant. In this light, (9) can be seen to function as a modalised (i.e. indeterminate) version of ‘It was a ruse that worked’.⁵

Equally importantly, when a qubit is examined (i.e. when an observation/measurement is performed), its state cannot be determined with the certainty that the state of a classical bit can – which must be either 0 or 1. Rather, the result of a measurement of the state of a qubit is the respective probabilities that its state is 0 or 1 (Nielsen & Chuang 2010: 13-16). The latter is perfectly compatible with natural language conditionals, as example (10) demonstrates (see also (2) and (8) above).

- (10) “Besides, if I blow this open, they just might notice,” she finished dryly. [FSR 2256]

In (10), the actualisation of P does not ensure the actualisation of A; it only indicates the degree of likelihood of its actualisation. In the context of Schrödinger’s thought experiment, as adapted here, the release of the poison will not necessarily result in the observation of a dead cat, but in the probability that the cat is alive/dead. Of course, in natural language, this probability is not usually specified numerically, but in a rather vague manner through modal marking (e.g. *might*,

⁴ ‘Phaistos Disc declared as fake by scholar’, 12 July 2008,

http://entertainment.timesonline.co.uk/tol/arts_and_entertainment/visual_arts/article4318911.ece

⁵ It is not lost on the writer that the argument in this paragraph is realised as a chain of conditionals.

chances are, seems possible that) (see Channell 1994: 53, 83-87, Jucker et al. 2003, Nuyts 2001: 22). In the context of the visual depiction in Figure 1, the above considerations entail that looking into one compartment may not furnish conclusive information about the content of the other, but, at best, only clues. More importantly, Gabrielatos (2010: 270) found that in more than one-third (35.3%) of *if*-conditionals the apodosis does not express an epistemic notion (e.g. a prediction or inference), that is, something that could be factually checked, but deontic or volitional notions (e.g. a suggestion or wish). In such cases, the observation in the A-compartment cannot provide information/clues regarding the factuality of actualisation of the content of A. The above will be discussed in detail in Section 4.

4. Conditionals as qubits: their function in discourse

This section will examine instances of the types of conditionals recognised in Gabrielatos (2010), in order to demonstrate how approaching conditionals as linguistic qubits, visually represented by the box in Schrödinger's thought experiment (as adapted here), provides insights into the nature of conditionals.⁶ What will become clear through the discussion of different examples is that

- a) the interpretation of different types of conditionals hinges on observing the P or A compartment;
- b) the observation of the P and/or A compartment, and the establishment of facts (e.g. whether P or A holds), is not always necessary or, more importantly, may not be intended by the speaker/writer.
- c) observations may result in a binary resolution (e.g. P holds or does not hold), but they may also result in intermediate or indeterminate resolutions (e.g. P probably holds), or, more interestingly, positing a polar alternative may not be warranted.
- d) the assessment of likelihood described in (c) may not be provided directly, through marking for epistemic modality, but indirectly, through conventional (i.e. context-independent) or conversational (i.e. context-dependent) implicatures invited through the use of modal marking.

4.1 Classification of conditionals

The classification of conditionals in Gabrielatos (2010: 230-265) reflects their bipartite constructional nature: each conditional is classified according to the nature of the link between P and A (henceforth, P-A link), and the modal function of the construction.⁷ Regarding the P-A link, the typology adopts the core distinction between *direct* and *indirect* conditions proposed in Quirk et al. (1985: 1088-1097). In *direct conditionals* (DIR), the realisation of the content of A – that is, the action, situation, or notion expressed in A – depends on the realisation, actuality or factuality of the content of P. For example, in (11), the encouragement in A is directly contingent on the falsifiability specified in P. That is, if the criterion of falsifiability is not met, then the encouragement does not stand. In *indirect conditionals* (IND), what is contingent on P is not the content of A, but the relevance of its uttering, or the wording or clarity of its content. For example, in (12), what is contingent on the need specified in P is the relevance of the question in A – if the need does not arise, the question is moot. The difference in the semantic link between DIR and IND is mirrored in the syntactic role of A: an adjunct in DIR, but a disjunct in IND (Quirk et al. 1985: 612-631, 1072).

⁶ Please note that the sequence of the two components will not always be P-A (as in Figure 1), but may also be A-P, depending on the sequence in each example.

⁷ For a critical discussion of other classifications, see Gabrielatos (2010: 152-188).

- (11) Rash speculations are to be encouraged, provided they are falsifiable [FBE 733].
- (12) If you need a replacement lock, will the locksmith fit the best quality equipment?
[CCY 1191]

The classification of conditionals according to the modal function of the construction is in line with studies showing that conditional constructions are closely related to modality (Gabrielatos 2010: 189-229, 2011, 2013, 2019). In this dimension, four types of conditionals are recognised, as the apodosis of each expresses one of the four modality types recognised in Gabrielatos (2010: 134-147), which is a more fine-grained adaptation of the binary classification posited in Quirk et al. (1985: 219-239).

Attitude to Likelihood (LK). This type encompasses assessments of actuality, factuality, truth, possibility, likelihood, or probability. Seen from a different angle, it comprises the expression of knowledge, belief, inference, hypothesis, guess, prediction, or speculation. These notions are not treated as discrete, but are seen as overlapping. For example, a prediction can be made on the basis of observation (or inferences based on observation), or belief, or be a mere guess. In turn, belief and knowledge refer to a person's attitude towards actuality, in that the fact that a person 'knows' something does not necessarily entail that this putative knowledge corresponds to reality. For example, (13) functions as a conditional prediction.

- (13) Supposing we had grown to know and love nuclear power (as the French seem to), would we now be seeing it expanding rapidly from what the International Atomic Energy Agency claims is its present provision of 16 per cent of the world's electricity to 25 per cent or more? [AB6786]

Attitude to Propensity (PP). This type involves judgements about ability, capability, skills, aptitude, feasibility, potentiality, tendency, or propensity, as they relate to animate or inanimate entities, concepts, states, processes, or relations. This type is closely related to LK, in that assessments of likelihood may be based on inherent properties (Palmer 1990: 38, Quirk et al. 1985: 221-222). However, PP is distinct from LK, in that the speaker stops at expressing his/her attitude to the existence of the above properties – any inferences regarding the likelihood of actualisation are the prerogative of the listener/reader. For example, (14) expresses conditional potentiality.

- (14) Often wall mounted in or near the working area they can be a useful provision provided they are kept clean, emptied after use and operating temperatures are maintained. [APV377]

Attitude to Desirability: Directed (DD) and Non-Directed (DN). The final two types are also related, as they both express the way that the speaker would like states of affairs to have been in the past, or be in the present or future. However, attitude to desirability may manifest itself in two ways. On the one hand, speakers may actively seek to have their desires implemented, by attempting to directly manipulate the action of others (or even their own) through the use of language. The notions communicated in this way are those of obligation, duty, requirement, promise, advice, suggestion, invitation, prohibition, or permission. This type of modality is termed *directed desirability (DD)*. On the other hand, speakers may opt to use indirect ways in trying to have their desires implemented. They may, superficially, merely express what states of affairs they would like to see materialising, or how they would like an existing state of affairs to develop, without any explicit attempt to influence, through linguistic means, the thinking or

behaviour of others (or themselves) to that direction. This involves the expression of such notions as volition, intention, willingness, wish, hope, desire or need. This type is termed *non-directed desirability (DN)*. For example, (15) expresses a conditional strong suggestion, and (16) expresses a conditional volition.

- (15) Supposing, for simplicity, we are concerned only with two years, price this year should be determined by short-run marginal cost (a view not endorsed by the 1967 White Paper - see section 4.4), but investment plans for next year should be evaluated (using net present value methods) based upon long-run marginal costs. [EX21132]
- (16) She explained that she wanted someone outside her family to know about them in case anything should happen to her before she would be able to raise the issue with someone with influence in Northern Ireland. [CCC546]

The above classification is informed by, and compatible with, all other major classifications of modality, in that the types it posits can be combined to form types recognised in them (Table 1, adapted from Gabrielatos 2010: 142). All four types share the core notion of uncertainty – expressed as distance from knowledge, actuality or actualisation (for a detailed discussion, see Gabrielatos 2010: 55-151, forthcoming).

Table 1: Equivalencies of types in the different classifications of modality

Types				Source
Likelihood	Propensity	Non-Directed Desirability	Directed Desirability	Gabrielatos (2010)
Extrinsic		Intrinsic		Quirk et al. (1985)
Epistemic	Non-Epistemic (Root)			Coates (1983)
Epistemic	Agent/Speaker-Oriented			Bybee et al. (1994)
Modalization	Modularity			Halliday (2004)
Logical	Personal			Biber et al. (1999)
Epistemic	Dynamic		Deontic	Palmer (1986, 1990)

4.2 DIR-LK inferential conditionals

In this type, the apodosis expresses an inference based on the clues/premises provided in the protasis. Example (17) is a seemingly straightforward case of the speaker inviting the listener to draw inferences based on the content of P and A.

- (17)

The facts speak for themselves; if Dana had any feelings for you	she'd have refused my offer. [H8J 2736]
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More specifically, in (17), establishing the factuality of A (i.e. whether Dana refused the offer) leads to inferences regarding her feelings. In this case, the modal marking in A (*would* + perfect infinitive) provides strong linguistic clues for working out the conventional implicature that A is non-factual (Comrie 1986: 89, Quirk et al. 1985: 110), which, in turn, invites the inference that Dana does not have feelings for him. However, this inferencing process is the only straightforward aspect of (17). It would be misinterpreting (and underestimating) the function of (17) to say that it merely invites an inference. Rather, it is argued that its primary function is to express the statement ‘Dana doesn’t have feelings for you’ in a tentative (i.e. modal) manner.

In this light, the inferential function is a means to an end, as it provides the reasoning on which the tentative statement is based.

Example (18) is less straightforward and, hence, more interesting – as well as being indicative of the modal nature of conditionals.

(18)	<p>But the shadows that were deepening over Europe were reaching out to "change everything" in lives across the world, and the Burrows family were to be no exception. The house they lived in belonged to a German lady, a Miss Wacker, who had been home in her own country when war broke out and was unable to return. The night war was declared Mrs Burrows broke down in tears. Joyce tried to comfort her, assuring her that none of the boys would have to go. Of course they did. They even put their ages forward by a year, unknown to their parents, when they enlisted. Beverley became a major in an armoured tank division, Walter served with distinction and held officer rank in both the air force and the infantry, Robert Bramwell had a commission in the anti-tank corps. Both he and Walter saw service in New Guinea, suffered extreme malaria attacks and were wounded and hospitalised. The fourth and youngest boy, Bramwell Orams, was in the air force from the age of seventeen and flew on many sorties in the Pacific war zone.</p>		
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 2px;">If the sisters' husbands are included</td> <td style="width: 50%; padding: 2px;">there were seven men from the family in action, some in the thickest part of the New Guinea campaign. [H7E 383]</td> </tr> </table>	If the sisters' husbands are included	there were seven men from the family in action, some in the thickest part of the New Guinea campaign. [H7E 383]
If the sisters' husbands are included	there were seven men from the family in action, some in the thickest part of the New Guinea campaign. [H7E 383]		

In (18), the actual number of “men from the family in action” remains undetermined, pending the decision to include/exclude the sisters’ husbands from the calculation – with the decision hinging on whether they are deemed to be members of the family. In the context of the box (Figure 1 above), this would entail looking into the P compartment. Whatever the observation, the reader is invited to draw straightforward inferences (by performing simple calculations); that is, the number of “men from the family in action” is either seven or seven minus the number of the sisters’ husbands. The latter is given in the sentence preceding the conditional. In that respect, (18) is an inferential conditional. However, there are two points to be made. The least important one is that the resolution of P may be useful in drawing this inference, as this is not necessary: even lacking the knowledge of the number of the sisters’ husbands, the reader can draw the inference, ‘There were up to seven men from the family in action’. The important point is that treating (18) as merely providing the clues for an inference would under-represent its function. The co-text clearly suggests that the inference is not invited. More precisely, the co-text points to the interpretation that the function of (18) is not to provide clues in P and A, which, combined, will result in the accurate or approximate calculation of the number of ‘men from the family’ that had gone to fight in the war (depending on the addressee’s knowledge or point of view regarding inclusion in the family). Rather, it is to convey in a tentative manner (by employing the indeterminacy of a conditional construction) that their number is regarded as being large. More precisely, this is achieved by the unmodalised mention of the number seven in A, assigning the modalising effect to P – that is, leaving it up to the reader to decide whether to utilise the condition in P (i.e. whether to carry out an observation in the P compartment) in order to calculate that seven constitutes an upper limit, or to focus on the number in A.

4.3 DIR and IND rhetorical conditionals

Rhetorical conditionals can be seen as the inverse of inferential conditionals, in that the addresser does not express the inference, but invites the addressee to draw inferences on the basis of linguistic elements in P, and can be DIR or IND (Gabrielatos 2010: 258-259, Quirk et

al. 1985: 1094-1095). Here we will examine two types of rhetorical conditionals: a straightforward case of a DIR with an affirmative A, and one of an IND with an interrogative A. In (19), the observation of the clear absurdity of A (as a desire cannot be ‘nothing’) invites the strong inference that, as far as the speaker is concerned, P does not hold – i.e. the desire is indeed self-deceiving.

(19)	As he spoke, Deems rose, clutching the MPRP weapon. ‘I prefer my cynicism to your self-deceiving optimism.’ ‘Ibrox, my party wishes merely to see an end to conflict. We desire to finish with galactic war for ever. Is that self-deceiving?’	
	It is nothing	if not self-deceiving

It must be noted that rhetorical conditionals have a lot in common with “epistemic conditionals” (Sweetser 1990: 116-117), as in both cases, inference is involved (Gabrielatos 2010: 176, see also Palmer 1990: 175). A subtler type of rhetorical conditional is IND with a rhetorical question in A, as in (20).

(20)	If the Manic Street Preachers are so Jonathan-Kinging radical	why don't they go round Channel 4 and kick Terry Christian's smug, ugly, homophobic face in and then cut Amanda De Torybimbo's Barbie-doll head off with a rusty cake slice? [CAD 3339]
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One interpretation of the rhetorical mechanism in (20) is that the listener, by looking into A, that is, by utilising the knowledge that the situation in A has not happened or is unlikely to happen (knowledge which is assumed by the speaker to be available), reaches the conclusion that the Manic Street Preachers are not radical. However, it is not necessary to have this knowledge – that is, in the context of the thought experiment, it is not necessary to carry out an observation. Similarly to (19), it is the extremely low likelihood that the actions described in A have been, or would be, carried out that leads to the inference that the speaker wants to communicate that P does not hold. However, even if the action were deemed likely, the fact that it is expressed as a ‘why not’ question invites the inference that it was not carried out.

4.4 DIR-LK polar conditionals

Polar conditionals combine characteristics of inferential and rhetorical conditionals, as A specifies one of two alternatives presented as polar extremes in the context, representing the minimum or maximum likely alternative (Gabrielatos 2010: 254-259). In (21), P and A each propose an alternative stance towards educational practices: “partial approach to reason” in A, or “sheer irrationality” in P.

(21)	The consequence is that reason in modern society has been reduced in scope to a means-end form: debate is too often a technical discussion among experts about the means. The ends are seldom on the agenda for serious debate, for society is unable to handle that kind of discussion. We see precisely this happening in higher education. Discourse about higher education focuses on structure, finance, numbers and performance indicators: it is about means, method and systems for planning and resource allocation. The values or ends for which higher education stands are seldom raised as a serious matter for discussion.	
	What appears on the surface as a reasoned form of life is in reality a mask for a partial approach to reason,	if not sheer irrationality. [GOR 361]

This seems to entail that both compartments need to be observed, with the expectation being that one of the two alternatives will be chosen (according to the reader’s views). However, this interpretation would misrepresent the function of (21), diminishing it to merely offering a binary choice. On the contrary, (21) is not simply an alternative linguistic realisation of ‘This is either a partial approach to reason, or sheer irrationality’. Granted, A and P, respectively, only specify the weakest and strongest stance that the speaker proposes (the 0 and 1 values in a qubit). However, by virtue of being a conditional construction (a linguistic qubit), (21) also allows for the activation of intermediate alternatives. More importantly, these intermediate alternatives need not be specified by the reader, nor need they be specifiable. Simply put, the conditional, as a linguistic qubit, only delimits the range of indeterminate alternatives.

4.5 DIR-DN

As was mentioned in Section 3, more than one-third of *if*-conditionals have PP, DD, or DN functions (e.g. express conditional ability, obligation, or volition), and, therefore, the actualisation of the content of A cannot be empirically established (Gabrielatos 2010: 270). Example (22) further demonstrates the indeterminate nature of conditionals, while also supporting the premise that the truth or factuality of P does not necessarily entail the factuality of A (see also Dancygier 1998: 14-19).

(22)	If you don't go away,	I will call the police. [BN3 471]
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A first observation is that, as long as the issue of whether the addressee goes away is unresolved, it will also be unresolved whether the speaker calls the police. However, this approach is misleading, as A is marked for DN – that is, what is presented as contingent on the addressee failing to go away is not an action, but the intention of an action. In other words, even without the modalising influence of P, the content of A is not factual, but a future intention (i.e. indeterminate). Therefore, there is nothing in (22) that ensures a cause-effect relation between P and A. For example, there is nothing to prevent the speaker from calling the police even if the addressee does go away. More importantly, in real time, an observation of the P-compartment cannot resolve whether the listener went away (as it lies in the future). What *can* be resolved is whether the listener believes that the intention will be carried out. Seen from a different angle, even if we accept an observation that does resolve whether the listener went away, this putative resolution of P cannot be used to draw inferences regarding the actual action of the speaker – only regarding the speaker’s intention. Therefore, although, superficially, the conditional in (22) expresses a cause-effect relation, it functions, due to its indeterminate nature, as a more forceful version of ‘Go away’ – or, more accurately, a version of ‘Go away, or else’, in which the threat is specified.

4.6 DIR-DD

In some conditionals, the marking of uncertainty in P does not reflect the speaker’s assessment of the truth/actuality/factuality of its content, as is exemplified by (23).

(23)	Going Back to Work Now that you've thought long and hard about goals and objectives, let's get back to the nitty-gritty of finding and getting a job.	
	If you are going to work for somebody else,	then you'll need to prepare a record of your abilities and experience. [CDK 789]

On the surface, as long as no observation in P takes place, that is, as long as the issue of the reader's intention/plan regarding working for somebody else remains unresolved, it also remains unresolved whether the reader will need to prepare a record of his/her abilities and experience. However, as the immediate co-text indicates, and the wider co-text reveals, (23) is part of a text providing advice on finding employment (not on becoming self-employed or starting a business).⁸ Therefore, both writer and reader know that P is factual (i.e. the observation has already been made), at least in the context of the text's focus. This gives rise to the question of why the writer opted to express the content of P as a condition under which A becomes relevant, or, more precisely, why A is presented as if it were unresolved, when, in fact, it is "contextually given" (Dancygier 1998: 111-116). The answer, it is argued, is that, by providing the advice within a conditional construction, the writer employs its indeterminate nature to communicate the advice in a more tentative (and, therefore, potentially polite) fashion.

4.7 IND pretext conditionals

In pretext IND conditionals (Gabrielatos 2010: 247-252), the content of A is only superficially dependent on the content of P; that is, P functions as a pretext for uttering A. In this type, P appears to provide the addressee with a choice (Dancygier 1998: 90), but this choice amounts only to the addressee having the option to disregard the content of A as irrelevant if they deem that P does not hold, as the information in A has already been communicated regardless of the factuality/actualisation of P. For example, in (24), the speaker's comment on his/her father's character is expressed regardless of whether the addressee is interested in the information.

(24)	It was never like this, and	
	my father was an Old Bastard	if you must know. [EDJ 2007]

In light of the Schrödinger's Cat metaphor, in (24), the lid of the A-compartment is open from the start; the observation of the P-compartment provides the additional information that the content of A must be seen as being expressed tentatively. This is because, by being expressed within a pretext conditional, the speech act in A is presented as cancellable (see Levinson 1983: 118-120), in that the activation of the speech act is only superficially presented as depending on P holding. However, it must be stressed that, in pretext conditionals, P is anything but surplus to the interaction. It is exactly because of the existence of P that the strong negative opinion in A is not presented as being initiated by the speaker, but as a response to a hypothetical request by the listener, and therefore, as a mitigated (modalised) version of the content of A.

4.8 Conditionals without apodosis

When a conditional lacks an A, it is not possible to assign a semantic function to the construction, as it is incomplete (Gabrielatos 2010: 234-235). To express it in terms of the analogy with Schrödinger's thought experiment, the cat compartment is unobservable. However, this is not to say that A-less conditionals lack conventionalised pragmatic functions. Let us examine (25).

⁸ In the text, advice on writing a CV is followed by advice on acquiring references and developing interview techniques; no advice on becoming self-employed is given.

(25)	<p>‘Forgive me, Fu Jen, but have you a reserved ticket for that seat?’</p> <p>She turned, straightening up, then held out her ticket for inspection, looking the man up and down as she did so. He was a squat, broad-shouldered Han with one of those hard, anonymous faces some of them had. She knew what he was at once. One of those minor officials who gloried in their pettiness.</p> <p>He made a great pretence of studying her ticket, turning it over, then turning it back. His eyes flicked up to her face, then took in her clothes, her lack of jewellery, before returning to her face again — the disdain in them barely masked. He shook his head.</p>	
	‘If you would follow me, Fu Jen ... ’ [GUG 975]	NO APODOSIS
	<p>He turned, making his way back down the aisle towards the cramped third and fourth-class seats at the tail of the rocket, but she stood where she was, her stomach tightening, anticipating the tussle to come.</p> <p>Realising that she wasn't following him, he came back, his whole manner suddenly, quite brutally antagonistic.</p> <p><u>‘You must come,</u> Fu Jen. These seats are reserved for others.’</p>	

Superficially, (25) is incomplete, as there is no information regarding the event/state/action etc. that would be expected to be contingent on P holding (as a conditional construction has been utilised). In the context of the thought experiment, the A-compartment is unobservable. The listener must infer the intended content of A by utilising the content of P, as well as co-textual and (available or inferable) contextual clues. In the specific context, Fu Jen following the speaker can only result in her moving to a different seat. Therefore, the lack of an A leads to the contextual interpretation of (25) as a polite request. The politeness also hinges on two complementary modal markings:

- a. The speaker cages the request within a protasis – i.e. a construction already marked for LK modality, which adds “modal remoteness” (Huddleston & Pullum 2002: 147-149, 173, Lyons 1977: 820, see also Perkins 1983: 107-108); in turn, the modal remoteness “adds politeness to utterances” (Quirk et al. 1985: 1097).
- b. The protasis is, additionally, marked for DN modality – i.e. it superficially presents the action as contingent on the listener’s volition.

This interpretation is supported by the repetition of the request in the last line of (25) (indicated by underline), but, this time, with politeness removed. This is shown by the use of DD modality, and the absence of any explicit politeness markers (e.g. *please*).

The discussion in this section has provided evidence supporting the conception of conditional constructions as linguistic qubits, in that their utility lies in their leaving the issue of actuality/actualisation unresolved. Even otherwise unmodalised conditionals present their content as being tentative/indeterminate – even if this is at a very small degree. Expressed from the perspective of modality, conditionals are constructions which modalise what is communicated through them.

5. Defining the family of conditional constructions

The conception of conditionals as linguistic qubits, in conjunction with their ML patterns (as identified in Gabrielatos 2010, 2019), have implications for the notion of construction family (Goldberg & Jackendoff 2004: 535-536). Constructions are seen to belong to a family if they

share similarities in their function and/or form (Bergs 2008: 181, Fujii 2004: 127, Hudson 2008: 259). The discussion so far has focused on three characteristics that signal constructional family resemblance and, therefore, sanction inclusion of a construction in the family of conditionals:

- The construction is bipartite, consisting of a protasis and an apodosis.
- In the protasis, a condition is expressed; in the apodosis, a comment related to the condition in the protasis is provided.
- The construction is an environment of indeterminacy, functioning as the linguistic equivalent of a qubit.

Indications regarding the characteristics differentiating between members of the family of conditional constructions were provided in Gabrielatos (2010, 2019, forthcoming), where differences in both the ML and the frequency of different modality types were observed in conditionals with different subordinators, as well as the protases and apodoses of DIR and IND conditionals. At the same time, it was observed that the P-A link and the semantic function of the conditional interact to produce different types and sub-types, and that there are differences in the patterns of modal load and/or type of modal marking between sub-types of the same type. In light of the discussion so far, different members of the family of conditionals can be differentiated on the basis of the following characteristics and their permutations.

- The particular subordinator.
- The nature of the P-A link (DIR or IND) and the different subtypes of IND.
- The modal function of the conditional construction (LK, PP, DD, DN).

However, the above similarities and differences do not provide the full picture. The remainder of this section will, therefore, discuss further constructional characteristics that sanction inclusion in the family of conditionals, as well characteristics that differentiate between family members.

It was hypothesised in Section 2 that the indeterminate nature of protases is expected to be formally marked. Expressed more forcefully, the hypothesis is that protases are always modalised – that is, obligatory modalisation of P is a defining characteristic of the family of conditionals. It must, however, be clarified from the outset that the claim concerns conditionals in English, as studies have indicated that the permanent modalisation of P is not a universal characteristic. For example, this seems to be the case in Japanese (Fujii 2004), but not in German (Hilpert 2010). In the vast majority of English conditionals, P is modalised via a subordinator (Gabrielatos 2010: 45-49). However, for the hypothesis to hold, we need to establish that even conditionals without a subordinator have permanently modalised protases. To this end we will examine examples of bipartite constructions lacking a subordinator which have been (tentatively) presented as being conditional (Dancygier 1998: 188-194, Fillmore 1986: 169, 1990: 140-141). Fillmore (1990: 141) presents these constructions as “other ways of identifying alternative worlds”.

The first category comprises conditionals in which P and A are linked by subordination, but this syntactic link is “marked by subject-verb inversion” (Dancygier 1998: 192-193), as in (26) and (27).

(26) Should you change your mind, let us know.

(27) Had the children been with us, they wouldn't have slept a wink.

Inversion in P can itself be seen as a modal marker, as it is syntactically related to questions, which are non-assertive (Dancygier 1998: 192, Gabrielatos 2010: 118-124, Hilpert 2010). However, it seems that, in such conditionals, P is modally marked irrespective of (or in addition to) the inversion: *should* in (26) and the past perfect in (27) – the latter marking modal remoteness twice: via the combination of the past tense and the perfect aspect (Huddleston & Pullum 2002: 150). That is, the inversion involves a modal marker. Of course, an empirical examination of corpus samples of instances of non-interrogative inversions is needed to verify if this always the case.

The second category comprises conditionals in which P and A are linked by coordination, and P is modally marked by the imperative (i.e. it is marked with DD modality), such as (28) and (29) below.

(28) Open the window and/or I'll kill you.

(29) Criticize him the slightest bit and he starts crying.

What is interesting with such conditionals is that “it is not immediately obvious how the conditional use of the [imperative] form is related to its more typical directive use” (Fortuin & Boogaart 2009: 642). This incongruity has led to terming constructions like (28) and (29) as “imperative-like conditionals” (Dancygier 1998: 188) and “pseudo-commands” (Fillmore 1990: 141). The incongruity can be resolved in light of the discussion so far, in that that the indeterminate nature of the conditional construction leads to interpreting the imperative (a construction that normally expresses directives) as expressing conditionality, but with the added pragmatic force (Leech 1983: 17) of a challenge or threat issued by the speaker to the listener.

Similar to imperative-like conditionals are a) constructions in which the speaker offers to perform an action in return for the listener performing another action, as in (30), and b) *so much as* constructions, such as (31) (Dancygier & Sweetser 2005: 244).

(30) You clear the table and I'll do the dishes.

(31) You so much as take another step and I'll shoot.

In (30) and (31), *clear* and *take* cannot be interpreted as habitual (i.e. as being present simple forms). Therefore, both being morphologically unmarked, the alternatives are that they are either imperative or present subjunctive forms – both marking modality. More specifically, they are imperatives in which the word *you* is “contrastive in the sense of addressee-distinguishing” (Quirk, et al. 1985: 828).

However, there are also constructions which have been presented as candidates for being conditional, but which do not seem to have modally marked protases – such as (32)-(35) below (Dancygier & Sweetser 2005: 237-268, Fillmore, 1986: 169, 1990: 141, Goldberg & Casenhiser 2006: 345).

(32) A little bit closer and we're dead.

(33) With his hat on he would look older.

(34) Anyone who does that gets what he deserves.

(35) The more chips you eat, the more you want.

It could be argued that, in (32) and (33) above, the lack of modal marking in P is due to the verb phrase being elided – and that, in both cases, the first clause can only be understood as the protasis of a conditional construction (e.g. ‘If we move a bit closer’; ‘If he puts his hat on’). However, (33) can be better seen as comprising only one clause, in which ‘with his hat on’ functions as an adjunct, and, therefore, cannot be a conditional, as it is not bipartite. Also, in (34) and (35), an elided modalisation in P cannot be posited, as in both cases, the lexical verb is in the present tense, and, therefore, clearly unmodalised. That is, it seems uncontroversial that (34) and (35) can be more accurately paraphrased by a *when(ever)*-construction, rather than a conditional and are, therefore, not conditional constructions. Therefore, it is claimed that for a bipartite construction to be deemed a conditional it needs, among other characteristics, to have an obligatorily modalised protasis. The claim is tentative, as it would need to be also examined using experimental and/or elicited introspective data (for example, see Hollmann & Siewierska 2006) – something that is beyond the scope of this chapter. A related hypothesis is that conditionals in which P and A are linked by co-ordination cannot be IND. The hypothesis stems from the protasis of IND being a “disjunct”, that is, linked to A by subordination (Quirk et al. 1985: 615). Of course an empirical study of conditionals such as (32)-(35) is needed to investigate this hypothesis.

In light of the discussion in this chapter, we can posit five characteristics distinguishing the family of conditional constructions from other families, with the fifth characteristic being tentative, pending further research.

- a. The construction is bipartite, consisting of the protasis and apodosis.
- b. The protasis modalises the apodosis.
- c. The apodosis depends on the protasis for its factuality, actuality, realisation, activation, or relevance.
- d. Conditional constructions are environments of indeterminacy, functioning as the linguistic equivalent of a qubit.
- e. The protasis is obligatorily modalised (lexically and/or grammatically).

When examining the differences between members of the family of conditionals, we need to take into account that P and A may be linked by subordination (e.g. *if, unless*) or co-ordination (e.g. *and, or*). In the case of subordination, P is modally marked lexically by the subordinator (e.g. *assuming*), or grammatically, through past tense marking plus inversion, or through the use of a modal verb (e.g. *should*) plus inversion. In the case of co-ordination, P is modally marked grammatically, through the imperative. Therefore, the characteristics differentiating between members of the family of conditional constructions are as follows:

- a. The syntactic nature of the P-A link: subordination or co-ordination.
- b. The semantic nature of the P-A link (DIR or IND).
- c. In the case of subordination, the respective syntactic role of A in DIR (adjunct) and IND (disjunct).
- d. The semantic function of the conditional (determined by the modal marking of A).
- e. The subtype of DIR or IND.
- f. The particular modal marker of the protasis (subordinator, past tense, or modal plus inversion, or imperative).

All six characteristics will be specified in the attributes of the respective construction. The syntactic component will specify whether P and A are linked through subordination or co-ordination, as well as the syntactic role of A. In subordinate linkage, the modal marker of P will be specified in the lexical and/or morphological and/or syntactic components. In co-ordinate linkage, the modal marking (imperative) will be specified in the morphological and syntactic components. The semantic component will specify the type(s) of modality marked in the protasis and the apodosis. In fact, if the hypothesis of obligatory modalisation in P holds, then the semantic component of P will permanently specify LK modalisation, while allowing for the additional marking of other modality types. The pragmatic component will specify the (range of) implicatures that the construction can be expected to invite.

6. Conclusion

It was shown that conditional constructions are linguistic environments of indeterminacy, in that the factuality, actuality, or actualisation of the content of both protasis and apodosis is indeterminate. Expressed from the perspective of modality, conditionals are constructions which modalise what is communicated through them. Also, in the vast majority of conditionals, even if the protasis holds, the apodosis only specifies (vaguely) the likelihood of its actuality or actualisation, or communicates other modal notions such as ability, obligation, or volition – all sharing the core concept of uncertainty. In this light, conditionals can be usefully regarded as linguistic qubits. More importantly, it was shown that the utility of conditional constructions does not lie in their indeterminacy being resolved, but in the implicatures that their indeterminate nature invites, and the resulting wealth of communicative functions that conditionals can perform. The types of communicative functions are determined by the type of conditional that is utilised, in combination with the relevant co-text and the available or contextually inferable context. The chapter also discussed the characteristics defining conditionals as a constructional family (and differentiating them from other bipartite constructions), as well as the multiple dimensions differentiating between members of the family of conditionals. Finally, this chapter tentatively posited that one of the defining characteristics of conditional constructions is that their protases are obligatorily modalised. The investigation of this claim is expected to shed further light not only into the nature of conditionals, but also into the nature and marking of modality.

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