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► **To cite this version:**

Isabel Repiso. Universal parameters yielding counterfactuals. *Theoretical Linguistics*, 2021, 47 (3-4), pp.267-276. <10.1515/tl-2021-2024>. <halshs-03426438>

**HAL Id: halshs-03426438**

**<https://shs.hal.science/halshs-03426438v1>**

Submitted on 12 Nov 2021

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## Universal parameters yielding counterfactuals

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**Abstract:** This paper presents a set of non-language-specific principles yielding counterfactual thinking that has been previously outlined by psychologists. I argue that the application of these regularities to if-clauses narrows a specific type of constructions –i.e., heuristic counterfactuals– whose semantic properties remain static across languages, resulting in the following description: [+] Restrictedness, [-] Reality status, [-] Probability, and [-] Counterfactual factuality.

**Keywords:** simulation heuristic, upward counterfactuals, if-clauses, heuristic counterfactuals.

### 1. Introduction

Klein's analysis of *if*-clauses captures some crucial ingredients pointed out by previous literature discussing transversal notions such as causality (Hume 1748, Lewis 1973, Mackie 1980), conditionality (Traugott et al. 1986, Athanasiadou & Dirven 1997) and modality (Palmer 1986). Because counterfactuality is a cross-disciplinary domain traditionally approached by philosophers, linguists and psychologists, the descriptions made so far are somehow fragmented and a global approach is missing. The main contribution of Klein's target article is the discussion of six semantic properties related to counterfactuals: restrictedness, consequence, reality status, probability, remoteness and counterfactual factuality. The terminology used by Klein is not always the same as in previously published literature but the notions behind refer to some crucial linguistics concepts. Reality status –defined as *the speaker's opinion on how 'real' the protasis and apodosis situations are* (section 2.2)– resonates with what other scholars consider as epistemic modality: the speaker's assessment of a situation in terms of the plausibility of its truth value (Verstraete 2005: 232). Similarly, probability –i.e., the speaker's assignment of different degrees of likelihood by means of an indicative or a subjunctive verbal form– recalls Comrie's *continuum* of hypotheticality which is defined as the speaker's expressed evaluation of the probability of the situation referred to in the protasis (Comrie 1986: 92). Klein's analysis covers a wide range of counterfactual constructions but omits to mention some critical non language-specific principles yielding counterfactual thinking. The purpose of my comment is to review some properties that Klein argues to be semantically salient on a specific type of counterfactual conditionals that are cognitively prominent in the human mind when making up alternatives to factual events.

### 2. Principles of the simulation heuristic

Counterfactual conditionals originate from the human cognitive ability to compare reality with what might have been. Counterfactual assessments have been depicted by psychologists as one of the biases contributing to 'the mental simulation heuristic' consisting in the production of

different alternatives or outcomes to factual states of affairs (Kahneman & Tversky 1982, Wells & Gavanski 1989). In a broader sense, counterfactual thinking plays an important role in decision-making and judgment tasks and, crucially, it appears to be governed by a few regularities.

- A. In daily life, upward counterfactuals – i.e., assessments resulting from the comparison of reality to better scenarios – are more frequent than downward counterfactuals – i.e., assessments coming from the comparison to worse scenarios – (Summerville & Roese 2008, Dray & Uphill 2009). In other words, people are more inclined to imagine how things could have been better as opposed to worse.<sup>1</sup>
- B. The prominent mechanism used to undo negative outcomes consists in restoring the normal value of a variable rather than introducing unlikely occurrences (Kahneman & Tversky 1982).
- C. Negative outcomes are judged more regrettable when failed by a small margin (Kahneman & Miller 1986, Kahneman & Tversky 1982).
- D. In two independent events, people tend to blame the agent responsible of the most recent event (Miller & Gunasegaram 1990).<sup>2</sup>

These principles depict a specific type of counterfactuals which appears to be prominent in decision-making and judgment situations. The salient role of upward counterfactuals (principle A) and the mechanism of undoing negative outcomes (principle B) can be summarized into the following:

*If p [RESTORING normal value of a variable], (then) q [PREVENTING negative outcome]*

The constellation of possible counterfactual constructions is critically reduced when summing up principles A and B. First, because the apodosis situation should necessarily express an improvement compared to the world as we know it.<sup>3</sup> Second, because the protasis situation

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<sup>1</sup> Among Klein's examples of upward counterfactuals, there is 16c –i.e., *With a little help from my friends, I would have done it*– which can be paraphrased into *If my friends had helped me, I would have done it*. As Klein's analysis shows, *if*-clauses are not mandatory to mark counterfactuality and this can be done by other types of constructions (cf. section 3.2).

<sup>2</sup> Imagine that Isa and Ira are asked to toss a coin. Whenever Isa and Ira come up the same (both head or both tails), they could win 1,000 euros each. Isa goes first and tosses a tail. Ira tosses a head. Our simulation heuristic is such that Ira would be taken to be more responsible than his counterpart for the mutual loss.

<sup>3</sup> Note that in order to produce upward counterfactuals, the apodosis situation should express the prevention of a negative outcome. This means that the speaker must somehow apply lexical restrictions at the level of verb-noun collocations. For example, the use of the English verb 'to prevent' is frequently associated to a repertoire of nouns with negative meaning affecting an

results from a modification within a set of causes or enabling conditions allowing a negative outcome to happen. Consider the following sentences:

- (1) If Casillas had played, Madrid would have lost (= 5a, Klein's target article)
- (2) If Casillas had played, Madrid would have won
- (3) If Ramos had scored his penalty, Madrid would have won
- (4) If the rival team had suffered an alimentary intoxication, Madrid would have won

Regardless of what team is involved, the apodosis of example (1) depicts a defeat and thus, a scenario where things could have been worse whereas the apodosis of (2) depicts a victory and thus, a scenario where things could have been better. According to A, example (1) is less prominent in our minds than (2). The protasis of example (3) depicts a scenario were a normal value of a variable was restored, whereas the protasis of (4) depicts an unlikely event. This is so because a penalty belongs to the set of things likely to happen in a football match whereas an alimentary intoxication does not. According to B, example (3) is more prominent than (4). In addition, (3) can also account for regularities D –if we assume that Ramos was the last player to perform his penalty– and C, if we assume that Ramos' penalty was the only one that was missed. In examples (2) to (4), the apodosis expresses an alternative scenario to a factual defeat. However, information is omitted about when and where the match took place, or about the identity of the rival team. For the sake of clarity, my upcoming examples will involve entities related to historical facts.

### 3. Speaker's belief and actual world

One of the problems posed by counterfactuals is that the speaker's belief does not always correspond to the actual world. This idea is explained in Klein's analysis (cf. example 13b). Well informed readers will agree that the space shuttle Challenger took off in January 1986 and fatally disintegrated shortly after. Therefore the plausibility of someone producing example (5) is higher compared to (6). Counterfactuality has been described as a subcategory of *irrealis* characterized by the combination of past potentiality and the speaker's certainty about the non-actualization of an event (Verstraete 2005). The semantic feature of non-actualization predicts a low probability for conditionals whose protasis situation matches well-known historical facts, as in example (6).

- (5) If Challenger had taken off in April, the mission would have probably succeeded
- (6) If Challenger had taken off in January, the mission would have probably succeeded
- (7) If Challenger had taken off in April, the mission would have probably failed

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undergoer entity that might match semantically with the Patient: i.e., 'accident', 'injury', 'scandal', 'sunburn', 'crime', 'damage' or 'attack', among others.

However, the semantic feature of non-actualization does not exclude occurrences where the apodosis situation matches well-known historical facts. Example (7) is, like Klein's examples 31a and 31b, a downward counterfactual and, according to principle A, such type of sentences are not so prominent in language use. As shown by Klein, occurrences like (7) are usually introduced by the adverb *even* (31b) or concluded by *as well* (31a). It seems reasonable to predict that the likelihood of (7) is greater than (6) but lower than (5). The problem with (6) is that the protasis-situation that narrows down the apodosis' upward outcome is coherent with what actually happened (i.e., the shuttle was launched in January). In this sense, (6) violates principle B and therefore it is not compatible with the semantic requisites of the heuristic simulation. In addition, the objective fact that January was the month of the launching is not coherent with the semantic feature of past potentiality described by Verstraete (2005), not to mention the subjunctive marking of the verb.<sup>4</sup> Similarly, (8) might be considered a fallacy because of the anachronism of situating Jackie Onassis in 1963. Still, *errare humanum est* and mismatches between the speaker's belief and the actual world cannot be ruled out. When examples like (8) occur in a conversation, repairs usually help to negotiate the propositional content between the speakers (Fauconnier 1984: 161).

(8) If Jackie O. had cancelled Dallas, she would not have witnessed JFK's murder

#### **4. Warrant of judgment**

Klein's target article introduces the notion of *warrant of judgment* to explain how the speaker judges about what is the case in the non-actual world (cf. section 6.2). This is a mechanism playing a crucial role in human communication since it makes possible for the hearer to easily access the speaker's counterfactual world. This would be possible because of an implicit convention consisting in reasoning about the actual world and applying analogous properties to the non-actual world (i.e., "we judge about what is the case in the non-actual world according to the same criteria which we use for the actual world", in Klein's words). This idea has been implicitly assumed by earlier studies in causation. Consider the following example:

(9) If he had not been born he would not have died (Mackie 1980: 37)

Australian philosopher Mackie explains (9) in the following terms: *Someone's death is a change in a field which centrally includes this person's being alive for a while, and hence (in the ordinary course of nature) his having been born.* Mackie's claim implies a warrant of judgment according to which the hearer would naturally prevent from thinking of any non-actual world where living beings' existence is not preceded by birth. Evidence of this warrant of judgment has

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<sup>4</sup> Grammars consider counterfactuality as an *irrealis* within the past. This means that the protasis-situation expressed by the *if*-clause is not actualized at the utterance time, nor has it been in the past (Grevisse & Goosse 2008, Riegel et al. 2001, Renzi & Salvi 1991). This is why subjunctive verbal forms are canonically judged more accurate than indicatives.

been indirectly shown by some usage-based language studies having tested participants on decision-making tasks (Gilabert et al. 2011, Repiso 2017a). Gilabert et al. (2011) asked 36 Catalanian native learners of English as a Foreign Language to carefully observe an image of a three-floor building surrounded by two fire trucks and one helicopter, and to retell what they would have done if they were fire-chiefs combating a fire.<sup>5</sup> The data collected depicted non-actual worlds where the trucks were used to save people located in the ground floor whereas the helicopter was used to save people on the roof. This tacitly means that subjects applied the same laws of the actual-world to the non-actual world's vehicles (i.e., helicopters defy gravity whereas trucks move on the ground level). Cause-effect relationships applying to the actual world were maintained in the non-actual worlds produced by 30 native French speakers in L1 and by 30 Spanish-speaking learners in French L2 (Repiso 2017a). Participants took part in a text reading task presenting a causal chain of events leading to a negative outcome. After the reading, they were asked to suggest three modifications that would have prevented the negative outcome to happen. In order to produce upward counterfactual scenarios, both groups modified or removed an actual world's variable enabling the undesirable outcome (i.e., having an allergy or eating a dish containing that allergen, so that death could be prevented). In other words, participants assumed that the principles applying for clinical immunology in the world as we know it were also applying in non-actual worlds.

## 5. Semantic features of heuristic counterfactuals

Principles yielding the simulation heuristic have been rarely incorporated to linguistic analyses. Still, applying principles A and B to counterfactual statements gives us a well delimited set of constructions relevant in the field of human cognition. I will henceforth refer to this type of counterfactuals as 'heuristic counterfactuals' (HC). My upcoming comments will deliberately focus on the analysis of a restricted set of HC reuniting the following criteria:

- i. Conditionals under the form *If p (then) q*
- ii. Whose finiteness marking are subjunctive verbal forms
- iii. Whose propositional content satisfies the following schema: *If p* [RESTORING normal value of a variable], *(then) q* [PREVENTING negative outcome]

So far, our examples (2), (3) and (5) fulfill these criteria. Klein's target article discusses six semantic properties affecting counterfactual conditionals: restrictedness, consequence, reality

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<sup>5</sup> The instruction was as follows: *Explain which actions you would take to save as many people as possible. Explain the sequence in which you would take these actions. Justify your choice of actions and sequence. Please, start speaking now!*

status, probability, remoteness and counterfactual factuality. My goal now is to test some of these properties on the HC defined *supra*.<sup>6</sup>

- Restrictedness. According to this parameter, the assertion made in the apodosis is somehow restricted by the condition expressed in the protasis (cf. Klein, section 7). While this semantic feature is problematic for the so-called epistemic conditionals –e.g., *If he typed her thesis, then he loves her* (Dancygier & Sweetser 1996)– it seems to be a crucial ingredient of HC since they are governed by principle B (i.e., upward counterfactual scenarios are produced by restoring the normal value of a variable having enabled a negative outcome to happen).
- Reality status. This parameter concerns the choice of the verb form by which the speaker marks the propositional content as factual (by means of the indicative) or as non-factual (by means of the subjunctive). In the case of well-known historical facts it seems inappropriate to use the indicative in English to denote past *irrealis* values. The plausibility of someone hearing *If Challenger takes off in April, the mission would succeed* is higher before the launching than today. In other words, the utterance time more likely to be assigned to indicative sentences is previous to any factual realization of the situation referred to in the apodosis. This seems to confirm the reality status feature in English. However, it may well be a language-dependent feature. Italian prominent role of the present indicative in counterfactual contexts does not exclude uses like *Se Ramos segna, il Real vince* (*If Ramos scores, Madrid wins*)<sup>7</sup> right after the end of the match and later.
- Probability. This parameter predicts that topic situations encoded by a subjunctive are presented as unlikely compared to situations encoded by an indicative which are felt to be more likely. According to Comrie (1986: 89), counterfactual conditionals represent the highest degree of hypotheticality, meaning by this the lowest degree of probability. As far as HC imply the certainty of the speaker about the non-actualization of an event, any semantic feature of non-zero probability is only accessible to the hearer if she and the speaker do not share the same background or common knowledge. But in general it can be argued that probability does not apply to HC's semantics. Excluding HC, it seems that subjunctive uses in potential constructions like *If it rained tomorrow, they'd cancel the game* denote less probability compared to indicatives (i.e., *If it rains tomorrow, they'll cancel the game*, Dancygier & Sweetser 1996).<sup>8</sup>

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<sup>6</sup> My analysis excludes Klein's property B (i.e., Consequence) because this feature has been traditionally discussed about counterfactuals involving indicative *if*-clauses.

<sup>7</sup> In Italian, empirical evidence has been shown about the prominent use of indicative tenses in counterfactual responses by native speakers (Repiso 2017b).

<sup>8</sup> Unlike counterfactuality, potentiality is characterized by the speaker's uncertainty about the realization of an event (Verstraete 2005).

- Remoteness. This feature predicts that a situation marked by a subjunctive conditional is remote from the utterance situation, whereas a situation marked by an indicative conditional is less or not remote. Like feature C –i.e., Reality status–, this assumption seems not to work in all languages homogenously. In Italian, the colloquial use of the imperfect indicative to refer to counterfactual events (Renzi & Salvi 1991: 754) allows sentences like *Se Ramos segnava, il Real vinceva* (If Ramos scored [IMPERFECT indicative], Madrid won [IMPERFECT indicative]) even when referring, today, to the defeat against Bayern Munich in the Champions League in 2012.<sup>9</sup> In addition, subjunctive *if*-clauses may well be produced to refer to immediate past events (e.g., someone complaining about Ramos’ penalty right after the end of the match).
- Counterfactual factuality. This parameter predicts some exceptions to the generalized idea that protasis and apodosis’ situations are ‘against the facts’. As Klein shows, this may be the case for speech acts (cf. section 4.1, example 25). However, counterfactuals governed by the simulation heuristic’s principles seem to be inconsistent with any factual value. Examples based on objective events like (3) and (5) –i.e., Ramos having failed his penalty and Madrid having lost, and Challenger having taken off in January and the mission having failed– are against the facts.

Table 1 summarizes the semantic characteristics of HC independently of the language involved. As explained earlier, Restrictedness is a necessary ingredient of HC whereas Reality status, Probability and Counterfactual factuality are parameters that HC do not fulfill. Remoteness is a feature that may or may not be part of the semantics of HC. This is so because in English the use of the subjunctive conditional may refer to remote as well as immediate past events, not to mention the expression of counterfactual scenarios using indicative tenses in other languages. This is why in Table 1 Remoteness holds  $\pm$  as value

**Table 1:** Semantic properties of HC

	HC
Restrictedness	+
Consequence	NA <sup>10</sup>
Reality status	-
Probability	-
Remoteness	$\pm$
CF factuality	-

<sup>9</sup> Whether Italian marks remoteness by means of the imperfect indicative compared to the present in counterfactual *if*-clauses is a question that deserves a proper article on its own.

<sup>10</sup> No analysis available for subjunctive *if*-clauses.

According to Klein's analysis, the verb form plays a crucial role at least in three semantic properties: Reality status, Probability and Remoteness. These properties share the assumption that the indicative/subjunctive contrast depends on the speaker's epistemic stance (Reality status), the speaker's assignment of probability (Probability) and the speaker's marking of how remote the topic situation is from the utterance situation (Remoteness). This assumption is problematic because (a) some languages express counterfactuality non-canonically by means of indicative verbal morphology, and (b) there is no empirical evidence showing that the speaker's choice between an indicative or a subjunctive is consciously made or, in turn, influenced by some type of language variation. Still, Klein's list of semantic properties allows distinguishing between different types of counterfactual constructions. It is reasonable to think, for instance, that epistemic conditionals would differ from HC in the values assigned to them.

## **Conclusion**

Klein's target article reunites six semantic properties of counterfactuals that different linguistic approaches and traditions have fragmentally related to *if*-clauses (e.g., causation studies [Lewis 1973, Mackie 1980], mental spaces theory [Fauconnier 1984, Sweetser 1996], usage-based studies [Bowerman 1986, Repiso 2018]). The purpose of my comment was double. First, I have introduced some non-language specific regularities described by psychologists in the mental simulation heuristic. Second, I have provided additional insights about two theoretical notions mentioned by Klein –i.e., the speaker's state of knowledge and the warrant of judgment– and tested Klein's properties on a specific set of heuristic counterfactuals (HC). The list of semantic properties proposed by Klein proves to be a useful tool to narrow the linguistic description of HC and we hope it will allow providing insightful definitions of other types of counterfactual constructions. Interestingly, some of the semantic properties explained in Klein's target article seem to be universally static in HC, resulting in the following semantic description: [+] Restrictedness, [-] Reality status, [-] Probability, and [-] Counterfactual factuality.

## **Acknowledgements**

Some years ago, when Daniel Véronique was my supervisor at Aix-Marseille University, he once said in a metaphorical way that my Ph.Dissertation should somehow deliver a 3D map of counterfactuality. The present comment is one step forward in that arduous task and I am grateful to him for having read it and having shared his precious feedback with me.

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