

Strategies for Anderson conditionals: Their implications for the typology of O-marking and X-marking*

Teruyuki Mizuno
Ochanomizu University

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Abstract This paper contributes to the recent development of the research on O-/X-marking (von Fintel & Iatridou 2023) through providing novel data on so-called Anderson conditionals (Anderson 1951). While English has to use X-marking for Anderson conditionals, I show that Japanese Anderson conditionals cannot involve X-marking, thus suggesting a discrepancy across languages with respect to the way they express relevant constructions. I suggest that Japanese Anderson conditionals involve a perspectival shift analogous to the Historical Present, which I show to help bring the same semantic effects as X-marking would do. I discuss implications of my data for the uniformity hypothesis of X-marking submitted by von Fintel & Iatridou 2023. I also suggest that the availability of X-marking for Anderson conditionals and the availability of X-marking for Future Less Vivid conditionals (Iatridou 2000) seem to stand or fall together across languages.

Keywords: Anderson conditionals, counterfactuals, O-marking, X-marking, Japanese, typology

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1 Introduction

Many languages have grammatical means to distinguish between live and non-live (counterfactual) possibilities. “O-/X-marking” has recently been proposed as a label for such a grammatical distinction (von Fintel & Iatridou 2023).¹ The semantic contribution of O-/X-marking, especially that in conditionals, has been actively debated in linguistics and philosophy.² While the debate has long centered around English, the recent literature has witnessed growing attention to O-/X-marking in other languages, urging us to find potential cross-linguistic variation and uniformity in this grammatical domain.³ This squib contributes to this recent development by showing hitherto unnoticed cross-linguistic variation concerning the contribution of O-/X-marking in so-called Anderson conditionals (Anderson 1951).

Throughout I assume the standard analysis of conditionals in formal semantics: a conditional is true if and only if for every world in the relevant domain at which the antecedent is true, the consequent is also true.⁴ I use $\mathcal{D}$ to refer to the domain which consists solely of worlds that are considered live possibilities, and $\mathcal{D}^+$ the domain which includes some non-live possibilities on top of those in $\mathcal{D}$ (i.e., $\mathcal{D} \subset \mathcal{D}^+$).⁵

2 Anderson conditionals and X-marking

Anderson conditionals, as exemplified in (1a), are conditionals in which the antecedent is an explanans for observed facts described in the consequent (Anderson 1951).

- (1) [Jones has been sent to an emergency room at the hospital, with symptoms suggesting that he was poisoned. The investigation team are figuring out what chemical was used against him. One shrewd member

¹ The exact meaning of the label is left open in von Fintel & Iatridou 2023. According to them, ““O” can stand for *open*, *ordinary*, or whatever other mnemonic the reader prefers”, whereas ““X” can stand for *eXtra*, or whatever other mnemonic the reader prefers” (p.1470). O-/X-marking corresponds roughly to “indicative”/“subjunctive” (or “counterfactual”) morphology. See von Fintel & Iatridou 2023 for issues of these traditional labels.

² The distinction of O-/X-marking also plays a role in necessity modals and desire reports. See Iatridou 2000 and von Fintel & Iatridou 2008, 2023.

³ See, for example, Karawani 2014, von Fintel & Iatridou 2023, Mizuno 2023.

⁴ See, for example, Kratzer 1986, 1991.

⁵ $\mathcal{D}$ can be considered a proxy to the Stalnakerian context set (Stalnaker 1978). Here I opt for a theory-neutral way of illustration.

suggests that, given the symptoms Jones shows, he must have taken arsenic. The boss of the team then says the following in a row.]

- a. You're right. If Jones *had taken* arsenic last night, he *would* show those symptoms which he is now showing.
- b. So, it looks like he did take arsenic.

In English, Anderson conditionals carry X-marking, specifically an additional layer of Past so-called Fake Past (Iatridou 2000). It is generally assumed that X-marking signals a shift of the domain from $\mathcal{D}$ to some $\mathcal{D}^+$.⁶ Usually, such a shift implies counterfactuality of the antecedent, that is, the domain is expanded because the antecedent holds at no world in $\mathcal{D}$. However, Anderson conditionals can be used to argue for the truth of the antecedent, as evidenced by the felicity of the follow-up in (1b). What does X-marking do in Anderson conditionals?

A simple answer is that it helps avoid *triviality* by making the domain open with respect to the truth of the consequent (Stalnaker 1975, von Fintel 1999, a.o.). In Anderson conditionals, the truth of the consequent is entailed by the non-expanded domain $\mathcal{D}$: in (1), Jones showing such-and-such symptoms is assumed as a fact, so the consequent of (1a) is true at every world in $\mathcal{D}$. In evaluating the conditional, however, the use of $\mathcal{D}$ gives rise to triviality: since the consequent is entailed, the conditional is likewise entailed regardless of the truth value of the antecedent. Such triviality can be avoided with X-marking, which, through expansion, allows the domain to include worlds at which the consequent is false. The new domain signaled by X-marking leaves open (thus does not entail) the truth of the consequent, so one can make a meaningful, contingent claim.⁷

In contrast, O-marking, which is generally defined as the absence of X-marking, is assumed to force the use of the non-expanded domain $\mathcal{D}$. This explains why (2), the O-marking counterpart of (1a), is infelicitous (see Stalnaker 1975, von Fintel 1999, Leahy 2011, a.o.).

- (2) #If Jones took arsenic, he shows just exactly those symptoms which he does in fact show.

⁶ See Mackay 2015, 2019 for an argument against the so-called “exclusion” analysis of X-marking (Iatridou 2000, Schulz 2014). Here I assume the so-called “expansion” analysis.

⁷ Conversely, one can say that what X-marking does in normal counterfactual conditionals is to suspend the falsity of the antecedent.

3 A discrepancy emerges: The view from Japanese

3.1 The puzzle

While the use of X-marking in Anderson conditionals seems to have semantically justified reasons, it cannot be considered a universal requirement, at least as far as the situation in Japanese is concerned. To set the stage, Japanese is known to have X-marking in the form of Fake Past (Ogihara 2014, Mizuno & Kaufmann 2019): (3) carries Past in the consequent that is seemingly at odds with the non-past reference of the sentence, suggesting that it is X-marking rather than real Past.⁸

- (3) [John, an ace player, has recently left the team for better pay. The team weakens considerably after losing their mainstay, and their defeat in today's game is already certain during the first half. A fan who is currently watching the game says the following.]
 John-ga ima kono siai-no naka-ni ir-eba, syoohai-wa
 John-NOM now this game-GEN inside-LOC be-COND outcome-TOP
 mada wakar-ana-**katta** daroo.
 yet be.clear-NEG-PAST MOD
 'If John were playing now, the outcome of the game would still be uncertain.'

Given that Past is X-marking in Japanese, and given the role that X-marking is supposed to play in Anderson conditionals, we would predict that Japanese Anderson conditionals likewise involve Past to avoid triviality. Strikingly, this is not borne out: (4a), the Japanese counterpart of English (1a), must involve Non-Past in the consequent so that it can be followed by (4b): the use of Past makes the entire sequence infelicitous.⁹

⁸ There is a fairly wide variety of conditional connectives in Japanese (Masuoka 1993, Arita 2007, a.o.). Here, as Mizuno & Kaufmann 2019 do, I restrict my attention to the connective *-(e)ba*, which directly attaches to sentence radicals (i.e., saturated verb phrases that lack any significant temporal or aspectual morphology). I also note that modals like *daroo* or *hazuda* in the consequent are optional, but they often make conditionals sound more natural.

⁹ The four Japanese speakers I consulted (including myself) all found a sharp contrast here. For Non-Past, some speakers preferred the sentence with the aspectual marker *-tei-* in the antecedent, but overall they found the sentence felicitous. For Past, regardless of the presence or absence of *-tei-* in the antecedent, the speakers found the sentence infelicitous.

(4) [Uttered in the context in (1):]

- a. Tasikani, Jones-si-ga sakuya hiso-o nom-eba,
 you're.right Jones-Mr.-NOM last.night arsenic-ACC drink-COND
 kare-ga ima mise-tei-ru syoozyoo-to mattaku onazi
 he-NOM now show-ASP-NPST symptom-as exactly same
 syoozyoo-o ima mise-{**ru** / # **ta**} hazuda.
 symptom-ACC now show-NPST PAST MOD
- b. Soosuruto, kare-wa hontooni hiso-o non-da no daroo.
 then he-TOP really arsenic-ACC take-PAST FIN MOD

The situation in Japanese is thus the opposite of that in English. In English, felicitous Anderson conditionals involve X-marking: O-marking, as shown in (2), leads to infelicity. In Japanese, felicitous Anderson conditionals involve O-marking (i.e., Non-Past): it is X-marking (i.e., Past) that leads to infelicity.

This situation raises two separate questions, which I address in the next two subsections: (i) why X-marking cannot appear in Japanese Anderson conditionals, and (ii) why O-marking can.

3.2 Why X-marking cannot appear in Japanese Anderson conditionals

There is nothing wrong with the sentence (4a) with Past by itself. It can, for instance, be felicitous if Jones took a poison that is not arsenic but causes symptoms that are identical to those of arsenic poisoning. The issue in (4a) with Past is that it invariably implies the falsity of the antecedent and thus contradicts the follow-up in (4b).

The question of why Past requires the antecedent to be false in (4a) turns on complicated issues concerning how counterfactual inference arises in X-marked conditionals, for which there have been long and controversial debates in philosophy and linguistics (Stalnaker 1975, Karttunen & Peters 1979, Ippolito 2003, 2013, Leahy 2011, 2018, a.o.). I will not go into the specific details of these issues, but I will discuss some related topics in Section 4.

3.3 Why O-marking can appear in Japanese Anderson conditionals

Why can O-marking appear in Japanese Anderson conditionals? Part of the answer, as suggested by a reviewer, seems to be that it just has to because X-marking cannot, that is, O-marking in Japanese is an “elsewhere” form that

covers cases for which X-marking cannot be used. Even so, the question remains why (4a) does not end up trivial, unlike O-marked Anderson conditionals in English. From a semantic standpoint, the domain cannot just include live possibilities for the conditional to be non-trivial. The felicity of (4a) suggests that Japanese Anderson conditionals involve a strategy other than X-marking that allows the domain to reach out to non-live possibilities.

Leaving detailed investigation for future work, I suggest that the strategy in question bears resemblance to a perspectival shift that one finds in the so-called *Historical Present* (HP). Before explaining the idea, let me briefly illustrate how HP is analyzed in formal semantics.

HP, as exemplified in (5) (slightly adapted from Schlenker 2004: p. 2), is the non-canonical use of Present/Non-Past to describe past events (the subscripts “ θ ” and “ ν ” will be clarified shortly).

- (5) Seventy-eight years ago $_{\theta}$ to this day, on January 22, 1944, just as the Americans *are* $_{\nu}$ about to invade Europe, the Germans *attack* $_{\nu}$ Vercors.

The canonical conception of Present/Non-Past (i.e., the event time is no earlier than the utterance time) is incompatible with the past reference of the sentence. It is thus often assumed that HP involves implicit backshift of the speaker’s perspective, by which the reference point for Present/Non-Past is tacitly shifted from the utterance time to a certain past moment (Schlenker 2004, Anand & Toosarvandani 2018a,b, a.o.). Meanwhile, not all temporal items are affected by this backshift: the evaluation of the indexical *seventy-eight years ago* in (5) remains dependent on the utterance time. Previous accounts of HP have thus adopted a bicontextual semantics, assuming that different items depend on different types of context. Here I assume Schlenker’s account (Schlenker 2004), which posits what he calls the *Context of Thought* “ θ ” and the *Context of Utterance* “ ν ”.¹⁰

Schlenker assumes that tense depends on ν while temporal indexicals depend on θ . θ and ν are identical in normal discourse but diverge in some narratives, HP being one such case. Specifically, Schlenker proposes that HP affects ν by shifting its temporal coordinate into the past, while keeping that of θ intact. Thus, Present in (5) is evaluated against ν' which differs from ν in that $\text{TIME}(\nu') < \text{TIME}(\nu)$, whereas the indexical is evaluated against the

¹⁰ See Bary 2016, Anand & Toosarvandani 2018b for some criticism of Schlenker’s account.

default θ , whose temporal coordinate remains identical to the utterance time (i.e., $\text{TIME}(\theta) = t_u$). This is illustrated in (6).¹¹

- (6) a. $\llbracket \text{PRES}_i \rrbracket^{\theta, v', g}$ is defined only if $\text{TIME}(v') \leq g(i)$;
 if defined, $\llbracket \text{PRES}_i \rrbracket^{\theta, v', g} = g(i)$
 b. $\llbracket \text{seventy-eight years ago} \rrbracket^{\theta, v', g} =$ the interval lying seventy-eight years before $\text{TIME}(\theta)$

Applying this analysis of HP to Japanese Anderson conditionals explains why they can avoid triviality without the help from X-marking. Let us assume that each context is a triple of world w , time t and domain $\mathcal{D}_{w,t}$ which consists of worlds that are live possibilities at w and t . Given that Non-Past in (4a) instantiates HP, $v = \langle w, t, \mathcal{D}_{w,t} \rangle$ undergoes shift to $v' = \langle w, t', \mathcal{D}_{w,t'} \rangle$, where $t' < t$. Crucially, this shift concomitantly triggers expansion of the domain, given that live possibilities monotonically shrink as time develops (i.e., $\mathcal{D}_{w,t} \subset \mathcal{D}_{w,t'}$). Thus, if (4a) involves HP, the evaluation of the conditional does not have to depend on the set of live possibilities at the utterance time (i.e., $\mathcal{D}_{w,t}$): instead, exploiting implicit backshift, it may refer to a larger domain in which the truth or falsity of the consequent was not yet settled (i.e., $\mathcal{D}_{w,t'}$), thus avoiding triviality.¹² Furthermore, like the indexical in (5), the indexical *sakuya* ('last night') in (4a) is evaluated against the utterance time, thus supporting the parallelism with HP.

To further highlight resemblance to HP, let me show a more radical case in which the consequent clearly refers to the past despite Non-Past. Suppose that Jones is a criminal who has been on the run overseas for many years. One day, the investigation team have obtained information from reliable sources that Jones, who reportedly disguised himself as a different person, entered Korea from the Incheon Airport yesterday. They have also obtained the information about the gate that he passed at immigration. The investigation team now want to identify the country from which Jones entered Korea. One shrewd member suggests that, given the arrival time and the location of the gate, Jones must have left the Ninoy Aquino International Airport in Manila, Philippines two nights ago. Carefully investigating all the recent flights into Incheon, this turns out to be the most likely possibility. The boss now utters

¹¹ I assume the pronominal analysis of tense (e.g., Heim 1994) for illustration. g is a variable assignment.

¹² The illustration here involves a stipulation, that is, that the domain for evaluating modal expressions like conditionals is provided from the Context of Utterance v rather than the Context of Thought θ . I leave this issue for future debate.

(7a) and (7b) in a row. Here again, the use of Non-Past is necessary in the consequent. The use of Past, like in (4), makes the sentence a counterfactual.¹³

- (7) a. Tasikani, Jones-ga **ototoi** Manila-o
 you're.right Jones-NOM two.days.ago Manila-ACC
 syuppatusu-reba, [kare-no zissai-no nyuukoku geeto-to
 leave-COND he-GEN actual-GEN immigration gate-as
 mattaku onazi geeto]-o, [**kinoo**-no tuuka zikoku-to
 exactly same gate-ACC yesterday-GEN passage time-as
 mattaku onazi zikoku]-ni tuukas-**{uru / # ita}** (hazuda).
 exactly same time-at pass-NPST PAST MOD
 'You're right. If Jones had left Manila two days ago, he would have
 passed exactly the same immigration gate that he actually passed
 yesterday, exactly at the same time as he actually did it.'
- b. Soosuruto yahari, Manila-kara ki-ta kanoosee-ga
 then as.expected Manila-from come-PAST possibility-NOM
 takai na.
 high SFP
 'Then, as we gathered, it is highly likely that he came from Manila.'

The event time of the consequent clearly lies in the past, as forced by the adverbial *kinoo-no tuuka zikoku-to mattaku onazi zikoku-ni* (lit., 'exactly at the same time as the time of his passage yesterday'): the use of Non-Past is not surprising given that the sentence involves HP. Moreover, the indexicals *ototoi* ('two days ago') in the antecedent and *kinoo* ('yesterday') in the consequent are evaluated with respect to the utterance time, further supporting parallelism with HP.¹⁴

¹³ Here as well, the four Japanese speakers all found a sharp contrast.

¹⁴ A reviewer wondered why this HP-like strategy available in Japanese seems unavailable in English. One possibility I can think of is that it is a sort of last resort strategy for languages that cannot use X-marking to express Anderson conditionals for some language-internal reasons: for languages like English, the availability of X-marking might block the use of such a marked option. The reasoning here, I speculate, could possibly be related to the idea behind the Blocking Principle from Chierchia 1998: that is, the use of covert options (i.e., HP) is banned in a language when it has overt options (i.e., X-marking) that can bring the relevant semantic effects (i.e., domain expansion).

4 Implications

4.1 The uniformity hypothesis?

Typological investigation into the semantics of O-/X-marking is a developing area of research. Recently, [von Fintel & Iatridou \(2023\)](#) have put forth a working hypothesis that starts with uniformity of the semantics of X-marking across languages, that is, with the idea that “in all languages X-marking has the same overall meaning in all its uses” (p.1471). One may further extend this working hypothesis to O-marking: O-marking, too, has the same overall meaning in all its uses in all languages.

However, as I have shown, English and Japanese differ with respect to how they use O-/X-marking for Anderson conditionals. In English, X-marking must be used for Anderson conditionals: the use of O-marking renders the conditional a trivial sentence. In Japanese, X-marking cannot be used for Anderson conditionals: Anderson conditionals have to be expressed with O-marking, plausibly through the same interpretive process as in the Historical Present.

Of course, this discrepancy between English and Japanese does not refute the overall hypothesis by von Fintel and Iatridou: it could be that the semantics of X-marking is the same but the use of X-marking in Anderson conditionals is prohibited in Japanese by a third factor. Investigation of such a potential third factor, as well as close scrutiny of the validity of the uniformity hypothesis itself, has to be left for future research, but this squib has shown that Japanese adds an interesting twist to the typological picture of O-/X-marking.

4.2 Connection to Future Less Vivid conditionals

I also point out an interesting connection to Future Less Vivid conditionals. It has been observed that X-marking in some languages can be used to imply that the antecedent is just unlikely to hold (see [Iatridou 2000](#)). X-marking in English is known to be able to induce such unlikeliness implications: one can follow up the X-marked conditional (8a) with (8b), the latter of which suggests that the antecedent of (8a) is considered unlikely, if not impossible.

- (8) a. If John came tomorrow, the party would be fun, ...
b. ...but he probably won't come tomorrow, I think.

X-marking in Japanese has been observed *not* to allow Future Less Vivid readings, but to rather induce strong counterfactuality (Ogihara 2014, Mizuno & Kaufmann 2019). As (9) shows, the counterpart of English (8a) must be expressed using O-marking (i.e., Non-Past) in the consequent. The use of X-marking (i.e., Past), as shown in (10), makes the follow-up contradictory: (10a) implies that the possibility of its antecedent becoming true is already foreclosed, so it is incompatible with the follow-up that still leaves room for the truth of the antecedent.

- (9) a. John-ga asita kur-eba, paatii-wa totemo moriagar-u
 John-NOM tomorrow come-COND party-TOP very be.fun-NPST
 daroo ...
 MOD
 b. ... kedo, tabun kare-wa asita ko-na-i to
 but probably he-TOP tomorrow come-NEG-NPST COMP
 omou.
 think
- (10) a. John-ga asita kur-eba, paatii-wa totemo moriagat-ta
 John-NOM tomorrow come-COND party-TOP very be.fun-PAST
 daroo ...
 MOD
 b. #... kedo, tabun kare-wa asita ko-na-i to
 but probably he-TOP tomorrow come-NEG-NPST COMP
 omou.
 think

I speculate that many other Indo-European languages fall into the English-type (i.e., X-marking can be used for both Anderson and Future Less Vivid conditionals). In contrast, Mandarin seems to be another Japanese-type language, in which X-marking can be used for neither Anderson nor Future Less Vivid conditionals.¹⁵ In Mandarin, the perfective marker *le* may be used as X-marking when it appears in the consequent, but, like Japanese Past, it induces strong counterfactuality rather than unlikelihood implications. For instance, the counterpart of English (8a) must be expressed using O-marking (i.e., the absence of *le*). The use of *le*, just like in Japanese, makes the follow-up that implies unlikelihood contradictory: the conditional implies that the possibility of the antecedent becoming true is already foreclosed.

¹⁵ I thank Muyi Yang for her help with Mandarin data. The judgments here are based on hers.

- (11) a. Ruguo mingtian John lai, paidui de qifen jiu neng
 if tomorrow John come party GEN atmosphere then MOD
 huoyue qilai
 be.lively get
 b. ... danshi wo jue de ta mingtian bu hui lai.
 but I think he tomorrow not will come
- (12) a. Ruguo mingtian John lai, paidui de qifen jiu neng
 if tomorrow John come party GEN atmosphere then MOD
 huoyue qilai **le**
 be.lively get PERF
 b. #... danshi wo jue de ta mingtian bu hui lai.
 but I think he tomorrow not will come

Furthermore, Anderson conditionals are infelicitous with the presence of *le* in the consequent, as shown in (13).

- (13) [Uttered in the context in (1):]
- a. Ruguo Jones zuotian he le pishuang, jiu hui chuxian
 if Jones yesterday drink PERF arsenic then MOD show
 ta xianzai shiji chuxian de zheyangde zhengzhuang { $\emptyset$ /
 he now actually show REL such symptoms
 #**le** }.
 PERF
- b. Suoyi, zuotian ta he de kending shi pishuang.
 so yesterday he drink REL definitely be arsenic

As far as these observations are concerned, the availability of X-marking for Anderson conditionals and the availability of X-marking for Future Less Vivid conditionals seem to stand or fall together, but further research is required to understand this correlation. Apparently, whether X-marking signals strong counterfactuality or not plays a role in whether it can occur in Anderson conditionals and Future Less Vivid conditionals. However, as mentioned in Section 3.2, this issue will have to be addressed carefully in connection with how counterfactual inference arises to begin with (e.g., whether the inference is a presupposition or an implicature). Further investigation must be left for future work.

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Teruyuki Mizuno
 Ochanomizu University
 2-1-1 Otsuka
 Bunkyo-ku, Tokyo, Japan
mizuno.teruyuki@ocha.ac.jp