

Semantic Shift from Conjunction/Causal to Conditional

Yurie Hara

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Abstract

This paper analyzes the diachronic semantic shift from temporal to conditional via causal in Japanese and German. The core semantics of the *V-e-ba* or *wande/wann/wenn* is a conditional in the sense of the suppositional view of conditionals. The temporal and causal meanings in Early Middle Japanese and Early New High German are pragmatically obtained as I-implicatures, while the reason why only the conditional meaning in Present-day Japanese and New High German is available is explained in terms of Q-implicatures.

1 Introduction

In Early Middle Japanese (EMidJ; 794–1185), *V-e-ba* appears to mark a causal adjunct clause, while in Present-day Japanese (PJ; 1945–present) *V-e-ba* appears to mark a conditional adjunct (antecedent). Incidentally, German conjunction *wande/wann/wenn* has a similar semantic shift. In Zeit I (1472–1525) of Gagel’s (2017) periodisation of Early New High German (ENHG; 1350–1650), *wande/wann/wenn* used to mark a causal clause but in New High German (NHG; 1650–present), it marks a conditional clause.

The goal of this paper is to explain how the interpretation of *V-e-ba* and *wande/wann/wenn* shifted from temporal conjunction to conditionality. The core semantics of the *V-e-ba* or *wande/wann/wenn* is a conditional in the sense of the suppositional view of conditionals, i.e., $(c \cap \varphi \cap \psi) \cup (c \cap \bar{\varphi})$ (Stalnaker, 1968; Adams, 1965; Mackie, 1973; Karttunen, 1974; Heim, 1982; Gärdenfors, 1986; Kaufmann, 2000, a.o.). The temporal and causal meanings in EMidJ and ENHG are obtained as I-implicatures (Levinson, 2000), while the reason why only the conditional meaning in PJ and NHG is available is explained in terms of Q-implicatures.

2 Periodization

The current paper adopts the periodization given in Table 1 for Japanese based on Frellesvig (2016) and Takada et al. (2018). The Middle Japanese

Table 1: Periodization in History of Japanese language

Japanese	English translation	abbreviation	period
<i>Joodai</i>	Old Japanese	OJ	–794
<i>Chuuko</i>	Early Middle Japanese	EMidJ	794–1192
<i>Chuusee</i>	Late Middle Japanese	LMidJ	1192–1603
<i>Kinsee</i>	Early Modern Japanese	EModJ	1603–1868
<i>Kindai</i>	Modern Japanese	ModJ	1868–1945
<i>Gendai</i>	Present-day Japanese	PJ	1945–present

period is further divided into early (794-1086; *Chuuko*) and late (1086-1185; *Chuusee*) when necessary.

The standard periodization for German is given in Table 2. The crucial change in the meaning of *wande/wann/wenn* had occurred during the Early New High German. For the purpose of his study on causal markers, Gagel (2017) endorses the periodization given in Table 3.

Table 2: Periodization in History of German language

German	English translation	abbreviation	period
<i>Althochdeutsch</i>	Old High German	OHG	750–1050
<i>Mittelhochdeutsch</i>	Middle High German	MHG	1050–1350
<i>Frühneuhochdeutsch</i>	Early New High German	ENHG	1350–1650
<i>Neuhochdeutsch</i>	New High German	NHG	1650–present

Table 3: Gagel’s (2017) periodization

Zeit I	1472–1525
Zeit II	1526–1599
Zeit III	1600–1680

3 Data

3.1 Japanese

In Early Middle Japanese, *e-ba* is used to mark a sequence of events/states in narrative order. In (1) from the *Tale of the Bamboo Cutter* (Taketori; 9th-10th C.), the narrator first presents the event denoted by the *e-ba*-marked clause, and then the state denoted by the other clause. There seem to be no causal relation between the two eventualities.

- (1) sore-o mir-e-ba, sansun bakari naru hito, ito utsukushiute
it-ACC see-E-BA 3.inches only COP person very lovely
witar-i.
exist-PERF

‘He (the old man) looked at it (the bamboo shoot) and then there was a person, who was only three inches tall, sitting very lovely.’
(EMidJ; Taketori)

In Late Middle Japanese, *e-ba* appears to mark a causal clause as can be seen in (2) from the *Tale of Genji* (11th C.).

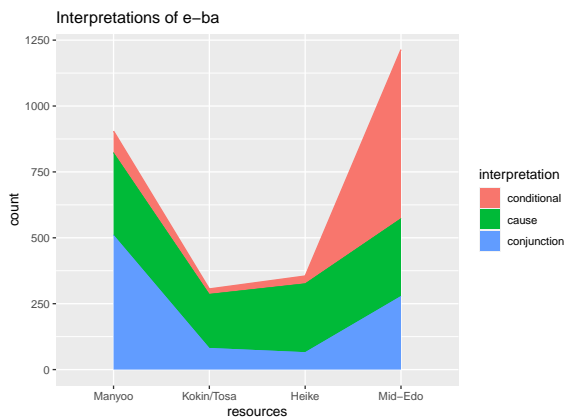
- (2) kurushiki koto nomi masar-e-ba, ito itau omohiwabitaru
harsh things only increase-E-BA, very much depressed
wo
ACC
‘Because only harsh things increased, Ko’oi was very much depressed.’
(LMidJ; Genji; Fukuda 2006, 47)

In Present-day Japanese, *e-ba* marks a conditional clause as in (3) from the PJ translation of the *Tale of Genji* (translated by Abe et al. 1998).

- (3) uramu no-ga mottomona ten-mo kawairashiku bokashite
hate NML-NOM reasonable point-ADD sweetly vaguely
i-e-ba, sorenitsukete otoko-no aijoo-mo masu koto deshoo
say-E-BA, as.it.goes men-GEN love-ADD increase NML will
‘Even the things you definitely hate, if you just mention them sweetly, men will love you more.’
(PJ; Fukuda 2006, 47)

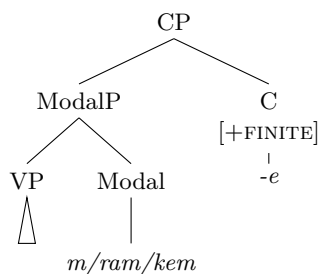
Figure 1 visualizes how the distribution of the frequencies of different usages of *e-ba* changed over time. As can be seen, in Manyoo (600-759, OJ), Kokin/Tosa (905/934, EMidJ) and Heike (1309, LMidJ), *e-ba* was used predominantly as conjunction or causal. Only after Mid-Edo Era (1700-1750, EModJ), the conditional meaning has become the primary usage of *e-ba*.

Figure 1: Interpretations of V-*e-ba* (plotted based on Tables 1&2 on pages 64&66 in Yajima (2013))

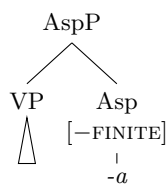


Before turning to German data, a note on the syntax of *e-ba* is in order. Traditional grammarians such as Sakakura (1958) maintain that the verbal suffixes such as *-a* and *-e* are irrealis and realis markers, respectively. The current paper partially adopts Fukuda’s (2006) analysis that argues against the traditional approach and claims that *-a* and *-e* are markers of syntactic positions. In generative terms, *-a* is a marker of infinite ([−FINITE]) Aspect Phrase (AspP) as depicted in (5), while *-e* is a marker of finite ([+FINITE]) CP as in (4).

(4)



(5)



Fukuda’s (2006) claim is motivated by the asymmetry between *-a* and *-e* regarding embedding of modals. Archaic modals of probability, *m*, *ram*, *kem* cannot be followed by *-a* (i.e., **m-a*, **ram-a*, **kem-a*), while *m-e*, *ram-e*, *kem-e* forms are available. An example of *m-e* is given in (6).

- (6) monohakanaki mi-ni-ha suginitaru yosono oboe-ha
 humble myself-DAT-TOP too.much others rumor-TOP
 ara-m-e do
 exist-might-E although
 ‘Although there might be some rumors that it is too much for a
 humble person like me.’
 (EMidJ; Genji, Fukuda 2006, 50)

This observation is also attested in the Corpus of Historical Japanese (CHJ).¹ There are zero occurrences of *m-a*, *ram-a*, and *kem-a* while *m-e*, *ram-e*, *kem-e* forms frequently occur. Similarly, the modal past *k(y)er-* frequently precedes *-e*, while it never precedes *-a* except for the four instances of *kyer-a* from *Manyooshuu* in Old Japanese. All the four

¹National Institute for Japanese Language and Linguistics (2021) “Corpus of Historical Japanese” (Version 2021.3, Chunagon Version 2.5.2) <https://ccd.ninjal.ac.jp/chj/> (accessed March 18, 2022).

instances are found as part of collocation *kyer-a-zu ya*, which functioned as a negative rhetorical question as in (7).

- (7) kadura ni su be-ku nari-ni-kyer-azu ya
hair.decoration COP do NEC-ACOP become-PERF-MPST-NEG Q
‘shouldn’t it have been made into a hair-decoration?’ (OJ;
Manyooshuu 5.817; Frellesvig (2016))

Table 4: Co-occurrences of archaic modalities *m-*, *ram-*, *kem-* and *k(y)er-* with verbal morphologies in through the period from Old Japanese to Early Modern Japanese in the Corpus of Historical Japanese (CHJ)

	<i>-a</i>	<i>-e</i>
<i>m-</i>	0	1209
<i>ram-</i>	0	203
<i>kem-</i>	0	108
<i>k(y)er-</i>	4	8416

Therefore, semantically speaking, clauses headed by *-a* denote event predicates or unsaturated propositions, while clauses headed by *-e* denote saturated propositions. Thus, φ -*e-ba* ψ is a conjunction of two saturated (epistemic) propositions, each of which denotes a specific event/state token.

In short, the primary usage of Japanese *e-ba* construction was a temporal conjunction that connects two consecutive event/state tokens in Early Middle Japanese. Then, its primary usage is shifted to causal in Early Middle Japanese and now it functions as a conditional after Early Modern Japanese. Note also that as can be seen from Figure 1, all three interpretations were already present in Early Middle Japanese. Furthermore, when *e-ba* marked conjunction or causality, its syntactic structure suggests that the clause headed by *e-ba* denoted a saturated (epistemic) proposition.

3.2 German

German *wande/wann/wenn* has a parallel semantic shift, i.e., a shift from temporal connective to conditional via causal. In particular, it has been vaguely presumed that the shift from causal to conditional occurred between 1400–1550 (Ebert et al. 1993, 473, Paul 2007, 422), but Gagel (2017) pinpoints the timing of the shift by introducing three periodizations given in Table 3.

Before looking at the causal-conditional shift, let us first observe that in (8) from ENHG, *want* (another dialectal variant of *wande/wann/wenn*) is used to mark a temporal clause, the whole sentence denotes a narrative sequence of two events, St. Peter’s speaking to our master and Christ’s answering to a question:

- (8) want sante Peter sprach zo unsen heren (...) do antworde
when saint Peter spoke to our master (...) so answered
eme cristus (...)
one.INDEF.DAT Christ (...)

‘when St. Peter spoke to our master (...) Christ gave an answer to someone’s question.’

(Linnich (at the end of the 15th century) 86, 2; from Rieck 1977: 181)

Wunder (1965, 167) conjectures that in Old High German the causal meaning of (*h*)*wanta* arose from its temporal usage (see also Arndt 1959, 394, Eroms 1980, 104).

In Gagel’s (2017) *Zeit I* (1472–1525) in ENHG, *wande/wann/wenn* was used primarily as a causal marker. For instance, in (9), *wenn* marks a causal clause.

- (9) wenn der herre hat angesehen die demutigkeit seiner dirne
because the lord has seen the humility his.GEN maid
dorumb sagen mich selig alle geslechte
therefore say me blessed all generations
‘because the lord has seen the humility of his maid, so all generations
call me blessed.’(cf. Rieck 1977: 194; Breslau (second quarter 15th
century) 79)

Finally, after Gagel’s *Zeit II*, *wande/wann/wenn* has lost its function as a causal marker and been used as a conditional marker (see also Ebert, 1986, 169). In (10) from NHG, *wenn* marks a conditional clause.

- (10) Ich weine mit, wenn dir ein Freund starb.
I cry with.ADV if you.DAT a friend die
‘I cry with you if you lose a friend of yours.’ (NHG; Klopstock
1771)

Gagel (2017, 241) speculates that the causal usage of *wenn/wann* in *Zeit I* is the prototype of the conditional *wenn/wann* in New High German and the conditional usage of *wenn* settled after the conditional usage of *swenne/swanne* and that of *wenn* converge in 15th century.²

Table 5 and Figure 2 show the change in the frequencies of each usage of *wann*.³ In *Zeit I*, *wann* was prominently used as a causal marker but its function as a causal maker was lost in *Zeit III*. Note also that in *Zeit II* and *Zeit III*, the frequency of *wann* with any usage is extremely small. Gagel (2017, 240) attributes this plummet to the emergence of other causal connectives such as *weil* and *denn*. Incidentally, In *Zeit I*, most of the *wann*-clauses had the Verb-Second (V2) word order, while in *Zeit III*, all the *wann*-clauses had the Verb-Last (VL) word order as visualized in Figure 3. As will be discussed below, this indicates that in *Zeit I*, a causal *wann*-clause was syntactically a finite/matrix clause while in *Zeit II*, a conditional *wann*-clause was an infinitive/subordinate clause. Similarly, Tables 7&8 and Figures 4&5 show that most of VL

²See Eckardt (2019) for an analysis that not only describes the diachronic development from *swenne/swanne* to *wenn/wann* but also accounts for why the semantic shift from free choice to conditional happened by investigating the competition between the conditional coordination *ob* and the free relative *swenne/swanne*.

³In Gagel’s (2017) original Tables 62 and 63, ‘temporal’ and ‘conditional’ categories are named ‘causal-temporal’ and ‘causal-conditional’.

wenn-clauses are conditional clauses although the number of *wenn*-clauses is much smaller than that of *wann*-clauses. Gagel (2017, 244) himself notes that all instances of subordinate *wann/wenn*-clauses are semantically ambiguous between causal and conditional, thus no examples are purely causal.

Figure 2: Interpretations of *wann* (plotted based on Table 62 in Gagel (2017))

Table 5: Interpretations of *wann* (Gagel's (2017) Table 62)

time	Zeit I	Zeit II	Zeit III
temporal	2	1	0
causal	114	1	0
conditional	10	2	12

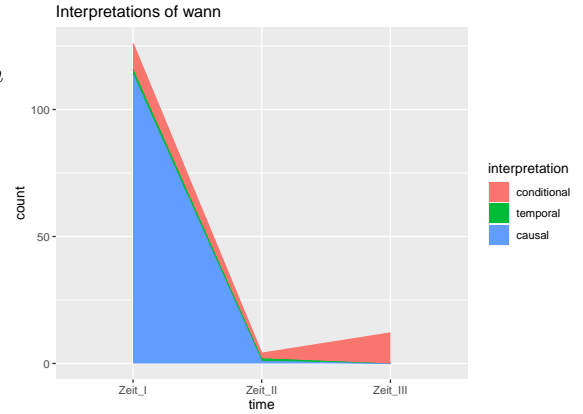


Figure 3: Distributions of V2/VL in *wann*-clauses (plotted based on Table 66 in Gagel (2017))

Table 6: V2/VL in *wann*-clauses (Gagel's (2017) Table 66)

time	Zeit I	Zeit II	Zeit III
VL	18	2	12
V2	108	2	0

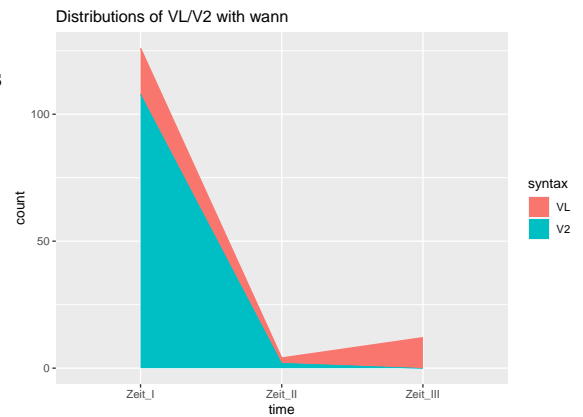


Figure 4: Interpretations of *wenn* (plotted based on Table 63 in Gagel (2017))

Table 7: Interpretations of *wann* (Gagel’s (2017) Table 63)

time	Zeit I	Zeit II
temporal	0	3
causal	3	11
conditional	5	5
conditional_temporal	1	0

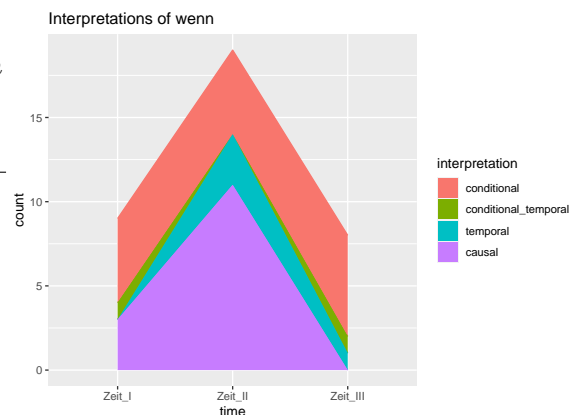
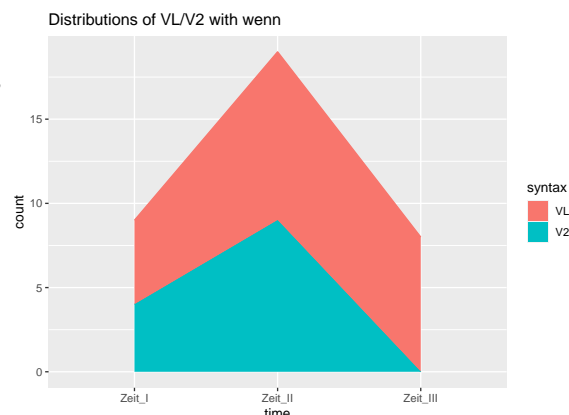


Figure 5: Distributions of VL/V2 in *wenn*-clauses (plotted based on Table 67 in Gagel (2017))

Table 8: V2/VL in *wenn*-clauses (Gagel’s (2017) Table 67)

time	Zeit I	Zeit II	Zeit III
VL	5	10	8
V2	4	9	0



The observation that the causal *wande/wann/wenn* takes a V2-clause while the conditional *wande/wann/wenn* takes a VL-clause parallels the Japanese data discussed in Section 3.1. Generally speaking, V2-clauses are syntactically larger than VL-clauses. Germanic languages such as German and Dutch are underlying SOV languages. In terms of generative grammar (see Haider, 2010, a.o.), thus in an embedded clause the verb is base-generated and stays at the final position, yielding the VL order. On the other hand, in a matrix clause, the verb moves to the C head, and the topic NP (usually the subject) moves to the specifier of CP, yielding the V2 order. Catasso (2017, 324-325) states that the parallel syntactic analysis holds for ENHG. The current paper proposes that this syntactic difference between V2 and VL corresponds to the semantic difference between the causal and *wande/wann/wenn*. That is, a causal *wande/wann/wenn*-sentence expresses the speaker’s causal (epistemic) judgment between

two saturated propositions denoted by the V2 clauses while a conditional *wande/wann/wenn*-sentence expresses quantification over event predicates (unsaturated propositions).

This parallel between syntax and semantics is also attested in other literature. Selting (1999), who investigates the positions of verbs in causal clauses from 16th to 19th centuries, observe that both V2 and VL were available inside causal *wande/wan* in 16th century. Selting (1999) analyzes that a *wande/wan*-VL-clause represents a propositional-level statement (Sachverhaltsbegründung), while a *wande/wan*-V2-clause represents an epistemic-level statement (Äußerungsbegründung). Similarly, Speyer (2011) examines causal connectives in Early New High German and shows that before 1500, most of the causal V2-clauses in East-Central German expressed epistemic causal statements (*Ein epistemischer Kausalsatz*) while some expressed propositional causal statements (*Ein propositionaler Kausalsatz*). After 1500, all the causal clauses have the VL structure and express propositional-level statements. Speyer (2011) also shows that before 1500, the causal V2-clauses in Upper German were used to express epistemic causal statements as well as propositional causal statements. After 1500, most of the causal clauses have the VL structure and express propositional-level statements.⁴ In short, the size in the syntactic structures of *wenn/wann*-clauses corresponds to the size in their semantics and interpretations. The V2-clause in a *wenn/wann*-V2 is a CP, hence syntactically larger than the VL-clause, which is a TP/AspP. Accordingly, the V2-clause denotes a saturated (epistemic) proposition and *wande/wann/wenn* functions as a causal marker that indicates the speaker’s causal judgment. In contrast, the VL-clause denotes an event predicate (an unsaturated proposition) and *wande/wann/wann* functions as a conditional marker that quantifies over event predicates.

Before closing this section, it is worth considering an alternative explanation. That is, as also suggested by Gagel (2017, 241), the causal meaning of *wande/wann/wenn* in NHG may have evolved from the free choice free relative pronouns *swenne/swanne*. Eckardt (2019) shows that the free choice *swenne/swanne* as in (11) is close to the meaning of conditionals:⁵

- (11) Svenne en man wif nimt, so nimt her in sine gewere al
 whenever a man wife takes so takes he in his possession all
 ir gut to rechter vormuntscap
 her good to right wardship
 ‘Whenever a man marries a wife, he takes all her goods in his
 possession and custody.’
 (Sachsenspiegel (1220); quoted after Daniels (1220))

Since the conditional usage of *wande/wann/wenn* is more proximate to the free choice *swenne/swanne* than the causal *wanta*, it is plausible to assume that there are two independent paths, the one for ques-

⁴Speyer (2015) collects 200 causal sentences between 1375–1475 and studies when a causal clause allows the V2 order in terms of density of information (Informationsdichte). That is, as Eroms (1980) proposed, a VL-clause indicates given information while a V2 clause indicates novel information.

⁵I owe an anonymous reviewer for example (11).

tion word-causal (*(h)wanta* > *wanta*) and the other for conditional (*sô hwenne/hwanne* > *swenne/swanne* > *wenn*). However, I endorse the following single path of temporal-causal-conditional, *(h)wanta* > *wanta* + *swenne/swanne* > *wenn*, adopted from Gagel’s (2017) idea that causal *wanta* merged with free-choice *swenne/swanne* in the 15th century.

Assuming two different paths would fail to explain the apparent morphological proximity between *hwanta* and *hwenne/hwanne* in *sô hwenne/hwanne*. As we will see in the next section, the single-path analysis of the current paper straightforwardly derives both the causal meaning of *wanta* before ENHG and the conditional meaning of *wenn* in NHG. Both meanings pragmatically arise from the conditional meaning of *wenn/wann/wande*, which is its conventional semantic denotation.

To summarize, the prototypical variants of the German connective *wande/wann/wenn* had a usage as a temporal conjunction that connects two events (Wunder, 1965).⁶ In Zeit I of ENHG, *wande/wann/wenn* was predominantly used as a causal marker but in Zeit II, the causal function was succeeded by *weil* and *denn*. In NHG, *wande/wann/wenn* has been used as a conditional. Remark also that as can be seen in Tables 5&7 and Figures 2&4, all three interpretations, temporal, causal and conditional, were observed in Zeit I (except for the temporal *wenn*) though the numbers for temporal and conditional were very small. Furthermore, as with the case of Japanese *e-ba*, when *wande/wann/wenn* marked temporal conjunction or causality, the clause had the V2 order, suggesting that it denoted a saturated epistemic proposition.

4 Analysis

The previous sections show that Japanese *e-ba* and German *wande/wann/wenn* had a similar historical trajectory, temporal-causal-conditional. Recall also that all three interpretations were already present at the earlier stage of the trajectory, EMidJ and Zeit I. The current paper proposes that the conventional meaning of *e-ba* and *wande/wann/wenn* is a conditional conjunction in view of the suppositional semantics of conditional and shows how the three meanings, i.e., temporal, causal and conditional, are pragmatically derived from the lexical semantics of V-*e-ba* and *wande/wann/wenn*. The proposal is largely based on Hara (2019), who argues that the core semantics of Japanese V-*e-ba* construction is a sequential conjunction in the sense of update semantics. However, the formal exposition of the definition of *e-ba* or *wande/wann/wenn* as $c[\varphi][\psi]$ in Hara (2019) was oversimplified hence not appropriate.⁷ Therefore, this section first gives an overview

⁶Wunder’s (1965) conjecture is in line with the observations that *(h)wanne/(h)wenne* were indefinite forms, i.e., *wh*-question counterparts, of *danne/denne* (Dal, 1966, 208-209) and that *(h)wanne/(h)wenne*, realized as *sô hwanne/(h)wenne*, had the usage of free relative in the sense of *svenne/swenne* (New High German *so oft* ‘whenever’).

⁷Hara (2019) defines the semantics of V-*e-ba* as $c[\varphi\text{-}e\text{-}ba\ \psi] = c[\varphi][\psi]$, where c could be the utterance context or a hypothetical context. When c is the utterance context, we obtain either temporal or causal interpretations. When c is a hypothetical context, we obtain a conditional interpretation. As pointed out by anonymous reviewers, this proposal is problematic in that it does not derive the correct interpretation of conditional *e-ba*. In particular, it could only be a conjunction in a hypothetical context thus does not change the actual context.

of the suppositional semantics of conditional (Stalnaker, 1968; Adams, 1965; Mackie, 1973; Karttunen, 1974; Heim, 1982; Gärdenfors, 1986; Kaufmann, 2000). Second, I introduce Levison’s (2000; 2001) implementation of Gricean maxims, Q-principle and I-principle. Finally, I show how the suppositional semantics of conditional can semantically and pragmatically derive the three interpretations (temporal, causal and conditional) that arise from *V-e-ba* and *wande/wann/wenn*.

4.1 The suppositional semantics of conditional

Semantic investigations into conditionals can be categorized into two approaches, i.e., non-suppositional and suppositional approaches. In the non-suppositional views, a conditional statement denotes material implication $\varphi \rightarrow \psi$ or quantification over possible worlds where the antecedent clause functions as a restrictor (Lewis, 1975; Kratzer, 1991). To illustrate, let us translate the antecedent and consequent of the conditional declarative in (12) to φ and ψ , respectively. Then, (12) has the semantic values presented in the truth table (13) or it is true if and only if all φ -worlds are also ψ -worlds.

(12) If it rains, the fireworks will be canceled.

(13)	φ	ψ	$\varphi \rightarrow \psi$
	T	T	T
	T	F	F
	F	T	T
	F	F	T

In the framework of the suppositional approach (Stalnaker, 1968; Adams, 1965; Mackie, 1973; Karttunen, 1974; Heim, 1982; Gärdenfors, 1986; Kaufmann, 2000, a.o.), in contrast, the semantics of a conditional is defined using a three-step update procedure. Let a (stalnakarian) context c and propositions φ and ψ be sets of possible worlds. The conditional declarative (12) ‘If φ , ψ ’ is interpreted as follows:

- (14)
- a. A hypothetical context is created by updating the speech context with the antecedent ($c \cap \varphi$).
 - b. The hypothetical context is updated with the consequent ($c \cap \varphi \cap \psi$).
 - c. The original context learns the effects of the second step ($(c \cap \varphi \cap \psi) \cup (c \cap \bar{\varphi})$).

In interpreting a conditional like (12), first processing the antecedent clause creates a hypothetical context by removing all non- φ worlds, yielding $c \cap \varphi$ as in (14-a). Second, the consequent clause further removes non- ψ worlds from the hypothetical context, yielding $c \cap \varphi \cap \psi$ as in (14-b). Finally, the original context incorporates the update in the hypothetical context, thus the final step takes the union of the compliment of ψ and the hypothetical context, yielding $(c \cap \varphi \cap \psi) \cup (c \cap \bar{\varphi})$ as in (14-c). In other words, only the worlds that make both φ and ψ false are removed from the original context c . Note that the resulting context $(c \cap \varphi \cap \psi) \cup (c \cap \bar{\varphi})$

is equivalent to the result of the one-step update of a non-suppositional conditional (i.e., material implication), $\varphi \rightarrow \psi$:

$$(15) \quad c[\varphi \rightarrow \psi] = \{w \in c \mid w \in c \cap \varphi \text{ implies } w \in c \cap \varphi \cap \psi\}$$

Taken together, I define the semantics of conditional as follows:⁸

$$(16) \quad c[\text{if-}\varphi, \psi] = (c \cap \varphi \cap \psi) \cup (c \cap \bar{\varphi})$$

As can be seen, $\{w \in c \mid w \in c \cap \varphi \text{ implies } w \in c \cap \varphi \cap \psi\} = (c \cap \varphi \cap \psi) \cup (c \cap \bar{\varphi})$, therefore $c[\text{if-}\varphi, \psi] = c[\varphi \rightarrow \psi]$. See Kaufmann (2000); Isaacs & Rawlins (2008); Hara (2021) for why the suppositional approach to conditionals is more suitable to analyze modal subordination (Roberts, 1996; Frank & Kamp, 1997) and conditional questions.

4.2 Levinson’s Q/I-principles

Levinson (2000, 2001, a.o) reduces the four gricean maxims of Quantity, Quality, Relevance and Manner into three, Q(uality)-principle, I(nformativeness)-principle and M(anner)-principle. Among these threes, only Q- and I-principles are relevant to the current paper, thus readers interested in M-principle are referred to Levinson (2000, 2001) and Huang (2007).

Q-principle, formulated as in (17), is basically a more enhanced version of grician Maxim of Quantity:

- (17) Levinson’s Q-principle
- a. Speaker’s maxim: Do not provide a statement that is informationally weaker than your knowledge of the world allows.
 - b. Hearer’s corollary: Take it that the speaker made the strongest statement consistent with what she knows. (adapted from Huang, 2007, 50)

Consider (18) as an illustration. Suppose *and* and *or* translates to logical connectives $\&$ and \vee , respectively. Since $\varphi \& \psi$ entails $\varphi \vee \psi$ but not the other way around, *and* is semantically stronger than *or*. Thus, *or* forms a Q-scale with its alternative *and*, $\langle \textit{and}, \textit{or} \rangle$. Now in (18), the speaker decided to use the weaker form *or* of the Q-scale $\langle \textit{and}, \textit{or} \rangle$. Thus, the hearer Q-implicates that the speaker is not in a position to assert the stronger form, probably because it is false. As a result, *or* tends to be interpreted as exclusive *or* unless the discourse explicitly cancels the Q-implicature:

- (18) Mary is a vegetarian or an environmentalist.
Q-implicates
 It is not the case that Mary is both vegetarian and an environmentalist.

(adapted from Huang, 2007, 52)

⁸See Kaufmann (2000) for a stack-based implementation of the suppositional semantics of conditionals. See also Isaacs & Rawlins (2008); Hara (2021) for applications of Kaufmann’s (2000) stack-based framework to conditional questions.

I-principle enriches the semantic meaning of the original utterance so that the interpretations fit our stereotypical expectations.

- (19) Levinson’s I-principle
- a. Speaker’s maxim: the maxim of minimization
‘Say as little as necessary’, that is, produce the minimal linguistic information sufficient to achieve your communicational ends.
 - b. Hearer’s corollary: the rule of enrichment
Amplify the informational content of the speaker’s utterance, by finding the most specific interpretation. (adapted from Huang, 2007, 57)

Levinson (2001) shows that I-principle enriches the function of English conjunction *and* so that it appears to act as a causal marker. The conventional meaning of (20) is simply a conjunction of two events, but the addressee will pragmatically infer that there is a causal connection between the two events under the pressure of I-principle:

- (20) John turned the key and the engine started.
I-implicates
John turned the key, therefore the engine started.

In what follows, I use Q-principle to explain why *e-ba* and *wenn* in the latest periods are predominantly used as conditionals and use I-principle to derive the temporal and causal meanings as pragmatic enrichment of the lexical semantics of *e-ba* and *wenn/wann* as a suppositional conditional.

4.3 Deriving the interpretations

I propose that the conventional semantic denotation of *e-ba* and *wande/wann/wenn* is the suppositional conditional:

- (21) a. $c[\varphi\text{-}e\text{-}ba, \psi] = (c \cap \varphi \cap \psi) \cup (c \cap \bar{\varphi})$
b. $c[\text{wenn-}\varphi, \psi] = (c \cap \varphi \cap \psi) \cup (c \cap \bar{\varphi})$

In a nutshell, all three interpretations of *e-ba* and *wande/wann/wenn*, temporal, causal and conditional, are derived from (21). Hence, the conditional interpretation is directly derived from (21), while the temporal and causal interpretations are pragmatically derived from (21) via I-implicatures.

4.3.1 Conditional

The conditional interpretations of *e-ba* and *wande/wann/wenn* predominant in Present-day Japanese and New High German are directly derived from (21). That is, suppose a context where φ is true and in that context, ψ is true. Then the original context learns the effect of the hypothetical update:

- (22) Japanese *e-ba* (3)
Suppose a context where you mention them sweetly. In that

context, men will love you more.
 ⇒ If you mention them sweetly, men will love you more.

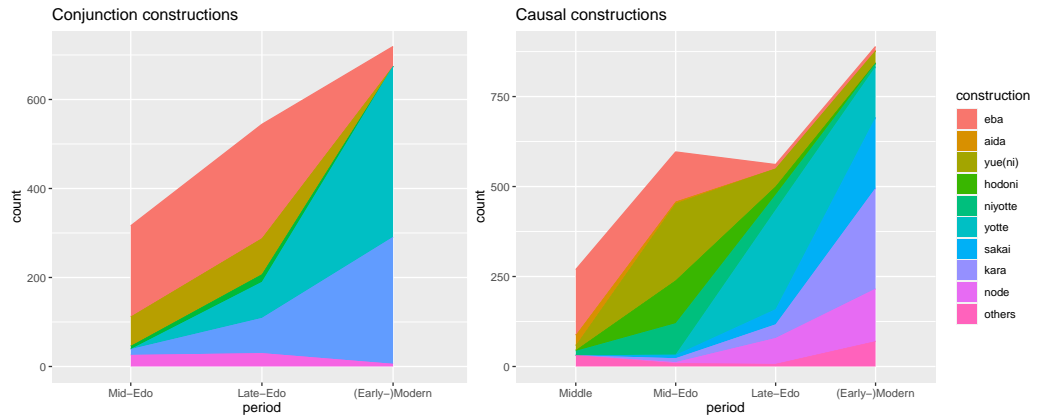
- (23) German *wenn* (10)
 Suppose a context where your friend dies. In that context, I cry with you.
 ⇒ If your friend dies, I cry with you.

The next question arises as to: Why do Present-day *e-ba* and NHG *wenn* only have the conditional interpretations? The answer is that the other meanings are excluded by Q-implicatures.

Along the diachronic development, morphemes that lexically mark causal and temporal/conjunction interpretations have appeared. In Japanese, *to* ‘and’ emerged in Early Modern Japanese (17th Century) as exemplified in (24). See Figure 6 for the diachronic distribution of conjunction constructions.

- (24) dausi ban-wo uti-kiru-to Hongaku hitori Hoozooboo-mo
 monk board-ACC hit-finish-and Hongaku alone Hoozooboo-ADD
 ihi-keri.
 say-PAST
 ‘The monk finished playing go and Hongaku alone said “Hoozooboo”’
 (EModJ; Suishooen, 1623)

Figure 6: Japanese constructions that mark conjunction (plotted based on Table 3 on page 113 in Yajima (2013)) Figure 7: Japanese constructions that mark causality (plotted based on Table 1 on page 217 in Yajima (2013))



As for causal markers, *node* ‘because’ and *kara* ‘because’ emerged in Early Modern Japanese (17th C., (25)) and in Modern Japanese (19th C.,(26)), respectively (Kobayashi, 1996). Figure 7 shows the diachronic distribution of frequencies of the constructions that mark causality.

- (25) nandi-ga naku-node ore-mo utsu-mahi-to-ha
 you-NOM cry-because I-ADD attack-not-COMP-TOP

omohe-domo...
 think-though
 ‘Because you cry, I also thought I’d better not attack you, but ...’
 (EModJ; Kyoogenki 1660; Kobayashi 1996, 364)

- (26) gan’yaku-wo sasiage-maseu-kara sore-wo asaban-ni
 pill-ACC give-POL-because it-ACC morning.night-DAT
 ippkuku-dutu ken’yoo-nasaremasu-to musaki-ga
 one.dose-every take-POL-ADD discomfort-NOM
 hiraki-masi-te oshoku-mo susumi-maseu.
 open-POL-and meal-ADD proceed-COP
 ‘Because I will give you some pills, you take one every morning
 and evening, the discomfort will go away and your appetite will
 come back.’ (ModJ; Kokkeibon, 1802, Yajima 2013, 228)

Similarly in German, *weil* ‘because’ (27) and *dann/denn* ‘so’ (28) took over the causal meaning from *wande/wann/wenn* in Zeit II as reported by Gagel (2017, 240). The diachronic distribution of causal constructions is visualized in Figure 8.

- (27) (...) weil ich mich gegen ihm nicht wehren dörffte.
 (...) because I me against him not resist must
 ‘(...) because I am not permitted to go against him.’ (von
 Grimmelshausen, 1669)
- (28) (...) denn zu dem Ende hatte ich diese Rheyß angefangen
 (...) because to.the.DAT end had I that trip begun
 ‘(...) because at the end, I had begun that trip’ (Gagel 2017, 204,
 Raleigh, 1599, 4)

On the other hand, the diachronic distribution of the morphemes that mark temporal is rather complex. The temporal usage of *als* as the one employed in Modern German had established in Early New High German (Hartweg & Wegera, 2005, 178). The temporal *wann* had branched out from the conditional *wenn* in the 18th Century (NHG; Gagel 2017, 236, Paul 2002, 1162; cf. Kluge 2011, 982).

These morphemes that emerged later are logically stronger than the default conditional. Consider the temporal conjunction *to* (*als*) first. For simplicity, I use ‘ $\varphi \rightarrow \psi$ ’ for the denotation of φ -*e-ba*- ψ (*wann*- φ , ψ) since as discussed in Section 4.1 above, $c[\varphi \rightarrow \psi]$ is semantically equivalent to $c[\text{if-}\varphi, \psi]$. *To* (*als*) is stronger than *e-ba* (*wann*), i.e., $\langle to, e-ba \rangle$ ($\langle als, wann \rangle$), since $\varphi \& \psi$ entails $\varphi \rightarrow \psi$, but $\varphi \rightarrow \psi$ does not entail $\varphi \& \psi$ (i.e., $c \cap \varphi \cap \psi \subseteq (c \cap \varphi \cap \psi) \cup (c \cap \bar{\varphi})$). Thus, φ -*e-ba*- ψ (*wann*- φ , ψ) Q-implicates the speaker is not in a position to assert $\varphi \& \psi$.

Similarly, there is a Q-scale, $\langle node, e-ba \rangle$ ($\langle weil, wann \rangle$) because CAUSE(φ, ψ) entails $\varphi \rightarrow \psi$, but $\varphi \rightarrow \psi$ does not entail CAUSE(φ, ψ). If the speaker decided to use the weaker form φ -*e-ba*- ψ (*wann*- φ , ψ) rather than the stronger alternative, the hearer Q-implicates that the speaker is not in a position to assert CAUSE(φ, ψ). For example, the speaker is not sure whether φ and ψ are true in the actual context. Together with the Q-implicature, φ -*e-ba*- ψ is almost unambiguously used as a conditional.

Figure 8: Causal constructions in German (plotted based on Tables 25/26 (*weil*), 41/42 (*dann/denn*), and 62/63 (*wann/wenn*) in Gagel (2017))

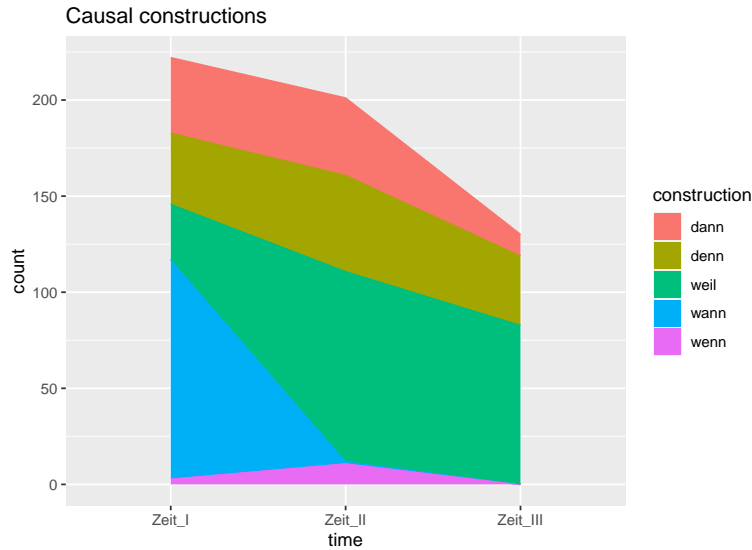


Figure 9 visualizes the diachronic distribution of the constructions that mark conditional in Japanese. The conditional function of *e-ba* becomes predominant only after the Mid-Edo Era (Early Modern Japanese).

4.3.2 Temporal

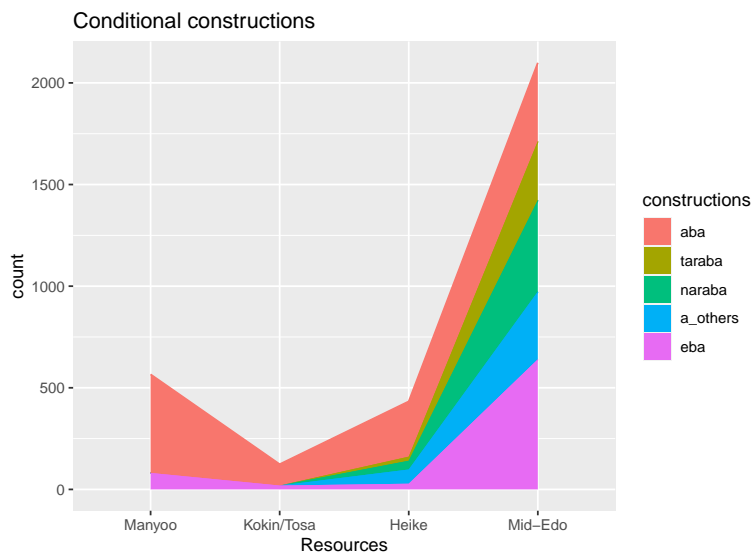
The temporal meanings of *e-ba* in EMJ and *wande/wann/wenn* in OHG are derived via pragmatic strengthening. First, note that the temporal conjunction is obtained by deleting the right side of the union in the definition of *eba* and *wenn* (21), repeated here as (29).

$$(29) \quad \begin{array}{l} \text{a. } c[\varphi\text{-e-ba}, \psi] = (c \cap \varphi \cap \psi) \cup (c \cap \bar{\varphi}) \\ \text{b. } c[\text{wenn-}\varphi, \psi] = (c \cap \varphi \cap \psi) \cup (c \cap \bar{\varphi}) \end{array}$$

Put another way, while a conditional updates a hypothetical context and brings the effect of the hypothetical context to the utterance context, a temporal conjunction updates the utterance context directly:

- (30) Japanese *eba* (1)
 Suppose a context where the old man looked at the bamboo shoot.
 In that context, there was a little person.
I-implicates
 The context is the utterance context: The old man looked at the bamboo shoot, *and then* there was a little person.
- (31) German *want* (8)
 Suppose a context where St. Peter spoke to our master. In that

Figure 9: Japanese conditional constructions (plotted based on Tables 1&2 on pages 64&66 in Yajima (2013))



context, Christ gave an answer to someone's question.

I-implicates

The context is the utterance context: St. Peter spoke to our master, *and then* Christ gave an answer to someone's question.

Now the next question pertains to: What enables *e-ba/wenn*-clauses to update the utterance context rather than a hypothetical context? My answer is: When a single expression is ambiguous between temporal conjunction and causal, the I-principle dictates that the addressee chooses the temporal interpretation since it is more informative.

As discussed above, a (temporal) conjunction is semantically stronger than a conditional, i.e., $c \cap \varphi \cap \psi \subseteq (c \cap \varphi \cap \psi) \cup (c \cap \bar{\varphi})$. Recall also that both *e-ba* in EMJ and *wann* in Zeit I had conditional uses as well as temporal ones, as seen in Sections 3.1&3.2 and the morphemes that marked for temporal conjunction were not yet available (*to* emerged in 17th Century (Kobayashi, 1996) and *als* had established in ENHG (Hartweg & Wegera, 2005)). In the absence of competing alternatives, Q-principle will not be invoked. Thus unless the discourse context presupposes otherwise (e.g., it is presupposed that φ is apparently a hypothesis rather than a fact), the temporal interpretation is preferred over the conditional interpretation.

4.3.3 Causal

The causal meaning of *e-ba* and *wande/wann/wenn* is also pragmatically derived via an I-implicature.

First, the interpretations of (2) and (9) are temporal conjunctions of

two eventualities thanks to the I-implicatures. Another round of pragmatic inference similar to the English *and* in (20), derives the causal interpretations:

- (32) Japanese *e-ba* (2)
 Suppose a context where only harsh events increased. In that context, Ko'oi was much depressed.
I-implicates
 Only harsh events increased, *and then* Ko'oi was much depressed.
I-implicates
 Only harsh events increased, *therefore* Ko'oi was much depressed.
- (33) German *wenn* (9)
 Suppose a context where the lord has seen the humility of his maid. In that context, all generations call me blessed.
I-implicates
 The lord has seen the humility of his maid, *and then* all generations call me blessed.
I-implicates
 The lord has seen the humility of his maid, *therefore* all generations call me blessed.

4.3.4 Summary

In summary, in the earlier period, there was only a single construction V-*e-ba* or a single morpheme (a variant of) *wande/wann/wenn* to mark all three interpretations in question: temporal conjunction, causal and conditional. The hearer in this period had to use contextual information to disambiguate the speaker's intended meaning for a successful communication. In the later period, the speaker recruited a new morpheme *node/weil (to/als)* to mark the causal (conjunction) interpretation when the speaker thinks that given the utterance context, the hearer is likely to interpret V-*e-ba* or *wande/wann/wenn* as otherwise. This disambiguation effort is grammaticalized in Present-day Japanese and New High German. Hara (2019) analyzes this diachronic development of Japanese V-*e-ba* using Deo's (2015) Evolutionary Game Theory model.

5 Conclusion

This paper reviewed diachronic developments of Japanese construction *e-ba* and German connective *wande/wann/wenn*. Their diachronic trajectories are similar in that both used to denote the temporal and causal conjunction that connects two eventualities, but presently function as a conditional marker. Moreover, when these constructions marked temporal conjunction or causality, the clauses headed by them were finite, indicating that they were saturated propositions. Based on Hara's (2019) pragmatic analysis of Japanese *e-ba*, the current paper proposes an analysis that can be applied both Japanese *e-ba* and German *wande/wann/wenn*. More specifically, the conventional semantics of *e-ba* and *wande/wann/wenn* is a suppositional conditional. The temporal and causal meanings are pragmatically obtained

as I-implicatures. Only the conditional meaning in the later survives due to Q-implicatures. By then, morphemes that explicitly mark causal and conjunction have been already available, thus from the fact that the speaker chooses the weaker form, i.e., *e-ba* or *wande/wann/wenn*, the hearer implicates that the stronger meanings are false, thus only the conditional meaning is true. Since the proposed analysis is a pragmatic one, it is no surprise that a single analysis can apply to the diachronic trajectories of two unrelated languages, Japanese and German. The next question arises as to: Is this trajectory universal?

There are a lot of other remaining questions. As mentioned by Hara (2019) and indicated in Figures 7, 6 and 9, there are other constructions that denote causality, conjunction and conditional in Japanese. Similarly in German, competing morphemes/constructions complicate the pragmatic and diachronic picture. For instance, both *weil* and *denn* denote causality but have different syntactic structures, and *wann*, which used to be a variant of *wande/wann/wenn*, has branched out to be a temporal marker. Disentangling these issues will shed new light on the pragmatics and diachrony of causality and conditionality.

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