This paper analyzes the diachronic semantic shift of the Japanese V-e-ba construction. In Old Japanese (OJ), V-e-ba appears to mark a causal adjunct clause as can be seen in the use of causal connectives node in Modern Japanese (ModJ) and because in English translations (1). On the other hand, the V-e-ba form in ModJ appears to mark a conditional adjunct (antecedent) (2b). Furthermore, in Middle Japanese (MidJ), the use of V-e-ba as logical/symmetric conjunction has emerged as in (3).

**GOAL:** The goal of this paper is to account for how the interpretation of V-e-ba shifted from causal to conditional (via logical/symmetric conjunction). The core semantics of the V-e-ba construction is a sequential conjunction in the sense of update semantics, i.e., \( c[\varphi\text{-e-ba } \psi] = c[\varphi][\psi] \).

The causal meaning in OJ is obtained by an I-implicature (conjunction buttressing), while the conditional meaning in ModJ is obtained by a Q-implicature. The proposed diachronic development is in accordance with Deo’s (2015) Evolutionary Game Theory model that underpins the grammaticalization paths from the semantic-pragmatic perspective.

**PUZZLE:** In the traditional Japanese grammar (e.g., Sakakura 1958), two verbal morphemes adjacent to -ba in OJ are said to mark whether the event expressed by the verb is settled or not: -a and -e are called mizen ‘unsettled/irrealis’ and izen ‘settled/realis’, respectively. Together with the assumption that -ba unambiguously marks conditional, the traditional grammarians conclude that the causal interpretation of V-e-ba in OJ comes from the combination of the settledness of -e and the conditionality of -ba, and the function of the construction shifted from causative to conditional as a result of losing the settledness feature of -e. This explanation is puzzling in view of Traugott & Dasher’s (2002) generalizations of language change: meanings tend to become increasingly subjective, i.e., grounded in the speaker subjectivity, and increasingly procedural, i.e., indicate constraints on the interpretation of the utterance rather than its actual content. A causal statement like (1) is more subjective and procedural in that it involves the speaker’s judgment that there is a causal dependency between two facts, while a conditional statement like (2) is less subjective and less procedural in that it merely expresses quantification over event predicates. Thus, the claim that V-e-ba shifted from causative to conditional does not fit the general rule of semantic change.

**Ba as Conjunction:** Fukuda (2006) presents convincing evidence against the traditional view (discussion and examples omitted for space reasons) and claims that ba in V-e-ba is not a marker of conditional but a marker of conjunction. Furthermore, the verbal morphemes -a and -e are not markers of (un)settledness/(ir)realis but markers of syntactic positions. I translate Fukuda’s claim in generative terms as follows: -a is a marker of infinite ([−FINITE]) Aspect Phrase (AspP), while -e is a marker of finite ([+FINITE]) CP. Thus, (2a) with V-a-ba is a genuine conditional which expresses quantification over event predicates (Kratzer 1991), while (1a) with V-e-ba is not a conditional but a conjunction of two saturated propositions.

**Analysis:** I propose that the default semantics of \( \varphi\text{-e-ba-}\psi \) is sequential conjunction in update semantics (Stalnaker 1968, Heim 1982), \( c[\varphi\text{-e-ba } \psi] = c[\varphi][\psi] \). Thus, the semantic interpretation of (1a) is: ‘only harsh events increased AND she was very much depressed’. The causal interpretation of \( \varphi\text{-e-ba-}\psi \) in (1a) arises from pragmatic/Gricean reasoning (Levinson’s (2000) I-implicature/conjunction buttressing). Indeed, (4) shows that OJ \( \varphi\text{-e-ba-}\psi \) expresses a sequential conjunction of events in chronological order rather than a causal relation. If \( c \), the input context to be updated by \( \varphi\text{-e-ba-}\psi \), is a suppositional context rather than the utterance context, we obtain the ModJ-style conditional interpretation, \( \varphi \rightarrow \psi \) (Roberts 1989, Kaufmann 2000). To recapitulate, in OJ, there was only a single construction V-e-ba to mark all three interpretations in question: sequential conjunction, logical/symmetric conjunction and causal. The OJ hearer had to use contex-
tual information to disambiguate the OJ speaker’s meaning for a successful communication. Along the diachronic development, morphemes marked specifically for causal kara/node ‘because’ and symmetric conjunction to ‘and’ have emerged (kara and to in 17th C: node in 19th C (Kobayashi 1996)). These interpretations are semantically stronger than the default sequential conjunction (\(\phi, \psi\) entails \(\phi \rightarrow \psi\), and \(\phi \& \psi\) entails \(\phi \rightarrow \psi\), but not vice versa); thus, the use of \(\varphi\)-e-ba-\(\psi\) Q-implicates \(\neg\text{CAUSE}(\varphi, \psi)\) and \(\neg(\varphi \& \psi)\).

Put another way, as summarized in (5) and (6), OJ was at the stages of zero-CAUS and zero-LCON (logical/symmetric conjunction), where hearers had to use contextual information to disambiguate the meaning of e-ba. When the MidJ speakers started to use node ‘because’ and to ‘(logical/symmetric) and’, Japanese entered the emergent-kara/node the diachronic development, morphemes marked specifically for causal-to-conditional dichotomy, ModJ seems to be entering the generalized-LCON stage since \(\varphi\)-to-\(\psi\) has an interpretation similar to so-called “conditional conjunctions” (Culicover 1970, Kaufmann 2018) in (Modern) English as illustrated in (7).

**EGT MODELLING:** The diachronic trajectory sketched above naturally fits into the framework of Evolutionary Game Theory (van Rooij 2004, Deo 2015). In particular, Deo’s (2015) analysis of the diachronic progressive-to-imperfective path is straightforwardly carried over to the current analyses of the causal-to-conditional and conjunction-to-conditional paths. In the following, we take the causal-to-conditional path for illustration. Deo (2015) hypothesizes that “[a] semantic grammaticalization path in the functional domain must be structurally underpinned by some privative contrast between a specific and a general meaning” (p. 47). As for the causal-to-conditional path, we can indeed identify such a privative contrast: A causal statement describes a phenomenal relation between specific events (1), while a conditional statement describes a structural relation between general event types (2).

**SPEAKER AND HEARER STRATEGIES:** Deo (2015) adopts van Rooij’s (2004) model of signalling games enriched with contextual factors. A context is a probability distribution over the state/meaning space \(\{\text{caus}(\text{al}), \text{cond}(\text{itonal})\}\). Two contexts (phenomenal and structural) are considered (\(C_{\text{phen}} : P(\text{caus}) = 0.9 \& P(\text{cond}) = 0.1; C_{\text{struc}} : P(\text{caus}) = 0.1 \& P(\text{cond}) = 0.9\)). A speaker strategy is a mapping from pairs of a state and a context to forms \{node, e-ba\} and a hearer strategy is a mapping from pairs of a form and a context to states. Deo’s speaker and hearer strategies considered for the progressive-to-imperfective path are directly applied to the causal-to-conditional path as done in (8) and (9). \(S_{cd}\) is a “context dependent” strategy where the speaker employs the e-ba form invariably. \(S_{pcd}\) is a “partially context dependent” strategy where the speaker uses node to convey the caus state only in \(C_{\text{struc}}\), where the cond state is more probable. \(S_{em}\) is an “explicit marking” strategy, where the speaker employs node to mean caus and e-ba to mean cond independently of contexts. \(S_{cd}'\) is the same as \(S_{cd}\) except that the speaker invariably uses node instead of e-ba. Similarly, in \(H_{cd}\), the hearer interprets the speaker’s intention solely from the context.

**CATEGORIZATION:** Let us take the “replicator-mutator” equation (10) and the mutation probabilities (11), and apply it to the causal-to-conditional path. In the zero-CAUS stage, \(\langle S_{cd}, H_{cd}\rangle\) is most common and easy to learn, although some learners may move to \(\langle S_{pcd}, H_{pcd}\rangle\) to avoid miscommunication. \(\langle S_{pcd}, H_{pcd}\rangle\) prevalent in emergent-CAUS is a demanding strategy since the speaker needs to be attentive to the context, thus offsprings tend to go for \(\langle S_{em}, H_{em}\rangle\) since the parent strategy contains node, an indication toward the grammaticalization of CAUS. \(\langle S_{em}, H_{em}\rangle\) common in categorical-CAUS is a reliable strategy but a high frequency of node may direct some offsprings to \(\langle S_{cd}', H_{cd}\rangle\), which is economic form-wise, reaching the generalized-CAUS stage.
(1)  a. kurushiki koto nomi masar-e-ba, ... (OJ)  
harsh things only increase-E-BA
b. tsurai koto bakari fueteiku node, ...(ModJ)  
harsh things only increase because

"Because only harsh events increased, (she was very much depressed)."  (Genji, 11th C)

(2)  a. uramu bekaram fushi-o-mo, nikukarazu kasumenas-a-ba, ... (OJ)  
hate should thing-ACC-ADD sweetly mention-A-BA
b. uramu no-ga mottomon ten-mo kawaireshiku bokashite i-e-ba, ... (ModJ)  
hate NML-NOM reasonable point-ADD vaguely say-E-BA

"Even the things you definitely hate, if you just mention them sweetly,  
(men will love you more)."  (Genji, 11th C)

(3)  narimono-ni obie-ru mo ar-e-ba, obieru ko mo ar-ooosi.  (MidJ)

loud噪音-DAT scare-NEG ADD exist-E-BA scare  child ADD exist-probably

‘Probably, some are not scared by a loud noise and some kids are scared.’  (Ukiyoburo, 19th C)

(4)  sore-o mir-e-ba, sansun bakari naru hito, ito utsukushiwari witar-i.  (OJ)

it=ACC see-E-BA 3.inches only COP person very lovely exist-PERF

‘He looked at it and there was a person, who was only three inches tall, sitting very lovely.’

(Taketori, 9-10th C)

b. emergent-CAUS: (node), e-ba  (MidJ)  b. emergent-LCON: (to), e-ba  (MidJ)
c. categorical-CAUS: node, e-ba  (ModJ)  c. categorical-LCON: to, e-ba,  (ModJ)
d. generalized-CAUS: node  d. generalized-LCON: to  (ModJ?)

(7)  nonbiri siteru to okureru yo.  (ModJ)

take.time PROG and late PRT

‘You take time and you’ll be late.’ ≈ ‘If you take (too much) time, you’ll be late.’

(8)  Speaker strategies

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(9)  Hearer strategies

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<td>e-ba</td>
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<tr>
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<tr>
<td>$H_{em}$</td>
<td>node e-ba</td>
<td>node e-ba</td>
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(10)  $x'_{i}$: the frequency of strategy $i$ after a time-step; $Q_{ij}$: the prob-

ability that strategy $j$ mutates into $i$; $x_{ij}$: the frequency of $j$,

$f_{j}$: the average payoff of $j$; $\phi$: the average fitness of the popu-
lation:

$$x'_{i} = \frac{\sum_{j=1}^{n} Q_{ij}}{\sum_{j=1}^{n} x_{ij} f_{j}}$$  (Taken

from Deo (2015, p. 37))

Stipulated mutation probabilities for transitions from one strategy pair to
another; each row/column represents a parent/offspring strategy. (Taken

from Deo (2015, p. 41))

$$Q = \begin{pmatrix}
S_{cd}, H_{cd} & S_{ped}, H_{ped} & S_{em}, H_{em} & S_{cd'}, H_{cd'} \\
0.94 & 0.06 & 0 & 0 \\
0.02 & 0.91 & 0.07 & 0 \\
0 & 0 & 0.97 & 0.03 \\
0 & 0 & 0 & 1 
\end{pmatrix}$$